TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: A punch press operator dies when struck by a piece of metal in the abdomen.

SUMMARY
California FACE Report #00CA008

A 39 year-old male machine operator died when he was struck in the abdomen by a piece of metal that came from the punch press he was operating. The decedent was using the machine to center punch holes into metal plates when the incident occurred. The machine guarding was in place but was not properly adjusted. According to the owner of the company who witnessed the incident, the machine made a strange noise during the punch cycle just prior to the incident. The owner said he yelled at the decedent to stop when he heard the noise. The decedent looked at owner, bent over to look at the machine, then stepped on the machine pedal. This caused the punch to punch through a steel plate then engage the edge of the hole in the misaligned die. The hydraulic pressure on the punch finally forced the punch into the hole in the die. A half moon shaped piece from the edge of the punch sheared off and shot out from underneath the steel plate striking the decedent in the abdomen. The machine manufacturer recommends documented scheduled maintenance on the machine, which the employer could not verify. The employer did not have a written Injury and Illness Prevention Program, or a documented training program for machine operators.
The CA/FACE investigator determined that, in order to prevent future occurrences, employers, as part of their Injury and Illness Prevention Program (IIPP) should:

- Provide a program of documented scheduled maintenance on the machine in accordance with the manufacturers recommendations.

- Provide a program of documented training and safe work practices.

INTRODUCTION

On August 25, 2000, at approximately 12:30 p.m., a 39-year-old male machine operator died from injuries received when he was struck in the abdomen by a piece of metal that came from the punch press he was operating. The CA/FACE investigator learned of this incident on September 1, 2000, through the local legal office of the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA). On September 19, 2000, the CA/FACE investigator traveled to the decedent's place of employment and interviewed the company owner, a human resources consultant retained by the company, and two employees of the company. He also inspected the work site and photographed the machine involved in the

incident. The CA/FACE investigator also obtained copies of the Fire and Sheriff's Department's reports.

The decedent's employer was a steel distributor and fabricator and had been in business for nine years and at the site where the incident took place for three years. The company had on average 19 employees with 12 employees at the work facility on the day of the incident. The decedent had worked for the employer for the past 2 years, and according to the owner, the decedent had two prior years of experience operating similar machines. The employer did not have a safety program or a written IIPP or any of the written required elements. There were no written task specific safe work procedures available for employees, except for the operator manuals for the machines. There was no employee or management safety committee, however the owner stated that they held monthly safety meetings, although these were not documented. Training was given on an as-needed basis. Training was accomplished by on-the-job-training (OJT) by experienced co-workers. This training was not documented.

INVESTIGATION

The site of the incident was a steel fabrication shop, located within a steel corrugated building with various types of steel formation machines located throughout the shop. The machine involved in this incident was a 4,000-pound multi-purpose, shearing, punching, and forming machine. It had a hydraulic system operating at a maximum pressure of 2,500 PSI and was protected from overload by a pilot operated relief valve. The machine was equipped with a "stripper" which holds the material down when the punch is retracting and acts as a guard. The machine required routine lubrication as well as scheduled documented maintenance every 250 hours or three months and every 500 hours or six months. The owner was not aware of any problems with this machine prior to this incident.

On the day of the incident, the decedent was center punching 1 3/16″ diameter holes into 20 metal plates 6″-x-6″-x-½″ thick. The stripper was out of adjustment allowing a gap between the stripper and the material being punched. According to the owner, he was walking into the shop to check on all the jobs in progress. As he approached the decedent he heard a strange noise come from the punch press the decedent was operating. The sound was similar to a strain or consistent with an overload condition. He immediately yelled to the decedent "STOP, there's something wrong with the machine." The decedent looked at the owner who was approaching him, backed off the machine and leaned to one side, then stepped on the machine pedal. The punch and die were not properly aligned because the setscrews holding the die in the die holder were stripped. The punch re-engaged the piece of material it had only partially punched on the previous cycle. It then punched through the material and a piece of metal broke off the edge of the punch as it made contact with the misaligned die. This piece of metal shot out from underneath the sheet of metal and struck the decedent in the abdomen. The decedent stepped backwards as the owner and other employees ran to his assistance. The owner ran to the office and called 911.

The paramedics responded within 5 minutes and transported the decedent to a local medical center where death was pronounced at 1:24 p.m.

CAUSE OF DEATH

The cause of death, according to the death certificate, was a sharp force injury to the abdomen.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Provide a program of documented scheduled maintenance on the machine in accordance with the manufacturer recommendations.

Discussion: The inspection of the punch press revealed the misalignment of the punch and die. This misalignment occurred because the setscrews holding the die in the die holder were stripped, allowing the die to move when a piece of metal was punched. The manufacture recommends a program of documented scheduled maintenance on this machine, depending on frequency of use, to detect and correct any problems. The owner was unable to produce any documentation suggesting that this recommended scheduled maintenance had been performed. Had such a scheduled maintenance program been provided, the malfunction might have been detected and this incident might have been prevented.

Recommendation #2: Provide a program of documented training and safe work practices.

Discussion: Employers need to ensure that when assigning an employee to operate a particular machine, they are adequately trained to perform all the functions for which they assigned. Although the owner of the company stated that the decedent was well trained and understood the machine, there was no documentation to support his claim. On the job training programs are prone to missing crucial elements of training if they are not well documented or if they are not combined with classroom/didactic training. The decedent made two errors that a well-trained operator generally wouldn't make; operating the machine with stripped threads on the die holder bolts and operating it after it started making overload sounds. Had a documented program on training and safe work practices been in place, this incident might have been prevented.

References:

California Code of Regulations, Vol. 9, Title 8, Sections 3302, 3314
Scotchman Industries, Inc. Operator's Manual, Model 9012-24M Ironworker, Revision #1.03, March, 1998
Scotchman Video SAFETY 6509-24m/9012-24m, November, 1995
Accident Prevention Manual for Industrial Operations, Administration and Programs, National Safety Council, 8th Edition, 1983

Hank Cierpich
FACE Investigator

Robert Harrison, MD, MPH
FACE Project Officer

Laura Styles, MPH
Research Scientist

December 14, 2000

****

FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the California Public Health Institute, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on 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: Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

****

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

California FACE Program
California Department of Health Services
Occupational Health Branch
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804