DATE: November 23, 1998

FROM: Minnesota Fatality Assessment and Control Evaluation (MN FACE) Program
Minnesota Department of Health

SUBJECT: MN FACE Investigation 98MN04401
Laborer Dies After Being Crushed By Caterpillar That Fell From Railroad Trestle

SUMMARY

A 17-year-old male laborer (victim) died when he was crushed beneath a caterpillar that fell from a railroad trestle. On the day of the incident, the victim and ten other workers were working along a section of railroad tracks that was being dismantled. The victim and two coworkers used a caterpillar equipped with a bucket to pick up steel rail connector plates that were scattered along the railroad bed. Shortly before the incident, the caterpillar was driven toward a wooden trestle that had a catwalk along one side. The catwalk was designed to support railroad workers walking across the trestle when railroad equipment was stopped on the trestle. As the caterpillar neared the trestle, the victim and another coworker climbed onto it, one on each side of the cab. When the caterpillar reached the trestle, it wasn't centered on the load bearing portion of the trestle but instead it's right track traveled onto the catwalk. When the caterpillar reached the middle of the trestle, the catwalk began to break. The operator accelerated the caterpillar but before he reached the end of the trestle, a portion of the catwalk collapsed. The passenger riding on the right side of the caterpillar was thrown into a shallow creek at the base of the trestle. The caterpillar tipped on it's side and landed on the victim. The operator and the other passenger climbed from the scene and ran to a nearby road. They stopped a passing motorist and requested that a call be placed to emergency personnel. Emergency personnel arrived shortly after they were contacted, removed the victim from beneath the caterpillar and pronounced him dead at the scene. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- minors should not be employed in any occupation identified by state or federal

agencies as hazardous or detrimental to their well-being;

- equipment operators should never allow passengers to ride along on equipment.; and

- employers should design, develop, and implement a comprehensive safety program.

INTRODUCTION

On July 30, 1998, MN FACE investigators were notified of a work-related fatality that occurred on July 10, 1998. The county sheriff's department was contacted and a releasable copy of their report of the incident was obtained. A site investigation was conducted by a MN FACE investigator on September 16, 1998. During MN FACE investigations, incident information is obtained from a variety of sources such as law enforcement agencies, county coroners and medical examiners, employers, coworkers and family members.

The employer in this incident was a small construction and trucking company. The majority of their work was associated with hauling gravel for public roads, plowing snow from public roads during the winter and grading and construction of private driveways. The employer had recently been awarded a contract to remove thirty miles of railroad tracks that were no longer in use. The employer had only 3-4 employees prior to receiving the contract to dismantle the railroad tracks. At the time of the incident the company employed eleven workers. The company did not have a formal employee training program concerning the operation of heavy equipment such as the caterpillar associated with this incident. Operators of the caterpillar were informally trained in it's use at the railroad track site.

INVESTIGATION

On the day of the incident, the victim and approximately ten other workers were working at various locations along a twenty mile section of railroad tracks that was being dismantled. The process of dismantling the tracks had begun approximately seven weeks before the incident. The dismantling work consisted of removing all of the steel rails, pulling up all of the wooden ties and removal of all of the wood and metal material such as steel spikes, rivets and rail connector plates from the railroad bed.

At the time of the incident the victim and two coworkers, each 17 years old, used a caterpillar

equipped with a general purpose bucket to pick up steel connector plates that were scattered along the railroad bed. The caterpillar was 12 years old, equipped with an enclosed cab and weighed approximately 31,800 pounds. While the operator of the caterpillar drove down the railroad bed, the victim and a coworker walked along either side of the bed, picked up connector plates and threw them into the caterpillar bucket. Shortly before the incident, the operator drove the caterpillar with a full bucket of steel plates across a railroad trestle to a material collection site and dumped the bucket of plates. Several material collection sites were established along the railroad bed for temporary collection of material before final removal from the site. On many occasions prior to the incident, the caterpillar involved in this incident and several semi-trucks used at the site had been safely driven across the load bearing portion of the trestle.

The wooden trestle spanned a small creek and was approximately ten feet high and fifty feet long. It's total width was ten feet which included a four foot wide catwalk along one side of the trestle. The six foot wide load bearing portion of the trestle had a carrying capacity of 300,000 pounds and was supported by vertical columns directly beneath it's wooden expansion beams. The steel rails had been removed from the surface of the trestle several days before the incident. The catwalk was designed to support railroad workers walking across the trestle when a train or other rail equipment was stopped on the trestle. The catwalk was supported by about one third of the trestle's wooden ties that were four feet longer than the other two-thirds of the ties on the trestle. The longer ties that extended to one side of the trestle and supported the catwalk were not directly supported from the ground below by any type of vertical columns.

After the caterpillar operator dumped a bucket full of connector plates, he drove down the rail bed to pick up more plates. A short distance from the trestle, the victim and another coworker climbed onto the caterpillar, one on each side of the cab, to ride along to the location where they were going to continue picking up plates. When the operator reached the trestle, the caterpillar wasn't centered on the load bearing portion of the trestle but instead the right track traveled onto the trestle's catwalk. During the FACE site investigation, scuff marks from the caterpillar's right track were visible on the boards of the portion of the catwalk that didn't collapse. When the caterpillar reached the middle of the trestle, the catwalk began to break. The operator accelerated the caterpillar but before he could safely reach the other side of the trestle, a portion of the catwalk collapsed. As the caterpillar fell from the trestle, the passenger who was riding on the right side of it was thrown into the shallow creek at the base of the trestle. The caterpillar tipped on it's side and landed on the victim. The operator and the other passenger were not

injured during the incident. After they climbed from the scene, they ran to a nearby road, stopped a passing motorist and requested that a call be placed to emergency medical personnel. Emergency personnel arrived shortly after they were contacted, removed the victim from beneath the caterpillar and pronounced him dead at the scene.

CAUSE OF DEATH

The cause of death listed on the death certificate was not available when this report was completed.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Minors should not be employed in any occupation identified by state or federal agencies as hazardous or detrimental to their well-being.

Discussion: The employment of minors in certain industries is prohibited by Minnesota Statue 181A.04 Subdivision 5 and Minnesota Rules 5200.0910 Parts F, I, and S. Minors under the age of 18 years are not as likely as trained adult workers to recognize and identify dangerous and hazardous work situations. In this incident, a 17 year old minor was allowed to operate a caterpillar along a railroad bed where the unused railroad tracks had been removed. The caterpillar was driven across a railroad trestle that had a catwalk along one side of it. Although the load bearing portion of the trestle supported the caterpillar, an experienced adult operator may have realized that the catwalk probably would not support the weight of the caterpillar. In addition, an experienced trained adult operator may not have allowed passengers to ride along on the caterpillar at any time. If all of the workers hired by the employer to dismantle the railroad tracks had been experienced and properly trained adult workers, this incident may not have occurred.

Recommendation #2: Equipment operators should never allow passengers to ride along on equipment.

Discussion: The victim in this incident was fatally injured when he fell from a machine that was not designed to carry workers. Whenever workers ride on equipment they are at risk of being seriously injured if they either fall from or are thrown from the machine. Equipment operators should never allow passengers to ride along on equipment. Self-propelled machines such as the caterpillar associated with this incident are designed to carry only one person, the

operator. In addition, the proper place for the operator to ride at all times is sitting in the operator's seat. Passengers may be thrown from machines as the result of unexpected movements such as bumps or sudden turns. Passengers can also cause additional problems such as interfering with the operator's vision, interfering with the operation of machine controls, and distraction of the operator's attention from the tasks being performed.

Recommendation #3: Employers should design, develop, and implement a comprehensive safety program.

Discussion: Employers should ensure that all employees are trained to recognize and avoid hazardous work conditions. A comprehensive safety program should address all aspects of safety related to specific tasks that employees are required to perform. OSHA Standard 1926.21 (b) (2) requires employers to "instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Safety rules, regulations, and procedures should include the recognition and elimination of hazards associated with tasks performed by employees.

REFERENCES

1.Minnesota Department of Labor and Industry, OSHA Chapter 182, Extract from Minnesota Statutes through November 30, 1994, Minnesota Rules Chapter 5200.0910 and Minnesota Statue 181A.04 Subdivision 5.

2.Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR Part 1926.21 (b) (2), 29 CFR 1926.28 (a) and 29 CFR 1926.105 (a) U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1997.

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