MO FACE INVESTIGATION 97MO037

SUBJECT: Asphalt Roller Operator Dies Following Rollover Incident In Missouri

SUMMARY:

On April 14, 1997, a 24-year-old female asphalt roller operator was fatally injured when a 10-ton asphalt roller rolled over her. The victim was working with a small crew on a highway outer-road resurfacing project. She had a total of 30 hours experience operating the roller on street repairs. This was her first resurfacing project. Her task was to compress the freshly poured asphalt, working around a driveway to a private business. She was rolling the transition of the fresh asphalt and a concrete driveway. In an attempt to drive the roller back onto the main road it slipped off the edge of the road and slid toward a small ditch. The equipment rolled over on its side. The victim, who was not wearing her seat belt, was struck by the Roll Over Protective Structure (ROPS).

The MO FACE investigator concluded that in order to prevent similar occurrences, all employers should:

- **ensure that all employees wear seatbelts during operation of any heavy equipment equipped with Roll Over Protective Structures;**
- **provide workers training on how to react in the event of an equipment rollover;**
- **implement a training program specifically tailored to operators and their assigned equipment;**

- **provide worker training for hazard recognition and avoidance, along with safe work practices.**

INTRODUCTION:

On April 14, 1997, the MO FACE Program was notified of a fatality incident involving a 10-ton asphalt roller. The female operator (victim) was operating the asphalt roller when she drove it onto sloped unstable ground causing the equipment to roll over. On April 15, 1997, the MO FACE investigator traveled to the incident site and interviewed the employer's safety officer.

The employer in this incident has been in operation since the 1920's. The victim had been employed for one year at the time of the incident and this was the first day of work at this incident site. She had approximately 30 hours of experience with the asphalt roller involved in the incident and this was the first time she had worked the equipment on a road resurface project.

The employer has an occupational safety and health plan as well as written safety rules and procedures. The victim was trained on the operation of the roller but it is not known if she had received any training that specifically addressed the hazard involved in this incident.

INVESTIGATION:

On April 14, 1997, a female equipment operator died as a result of injuries suffered when the asphalt roller she was operating rolled over. The victim was not wearing her seat belt and was thrown into the path of the equipment's Roll Over Protective Structure (ROPS). She was part of a 10-person crew working on a road resurface project and was operating the asphalt

roller. Her task was to compress the freshly poured asphalt working around the driveways. The street had an upward slope of 5 to 10 degrees and was 23 feet wide. The road curved slightly to the left with no banking. The depth of fresh asphalt on the street was about three inches with overflow asphalt on the sides of the road about ten inches. The entire project covered approximately one-half mile.

The victim was compacting the overflow of freshly poured asphalt at an established driveway to create a smooth transition. There was a ditch on the left side of the roller with an approximate 45 degree downward slope from the road surface, with no shoulder present.

At the time of the incident the victim was operating the roller in a forward motion and had approached the edge of the driveway area. She did not stop at the edge of the driveway but proceeded forward towards the road. As she did this, only a portion of the front steering roller was on the asphalt road bed and began pushing up a small mound of fresh asphalt. When the back drive roller left the established driveway surface the back end slid toward the ditch. The operator, attempting to correct this, turned the front steering roller to the right and revved the engine in an attempt to pull the roller back onto the asphalt. On the surface of the driveway, marks can be seen where the edge of the front and back rollers were tracking as the victim was packing down the asphalt. It can be clearly seen where the front roller started pushing into the asphalt overflow instead of rolling over and compressing it. The point where the back drive roller came off the driveway showed that the roller began slipping down hill and then wedged into the earth. Then the front roller slid down hill several feet from the road bed before it wedged into the earth. As the unit began to roll over the operator slipped out of her seat and fell into the

direction of the roll over and into the path of the ROPS. Co-workers were able to pull the victim clear of the roller and called EMS.

CAUSE OF DEATH:

Traumatic Asphyxia

RECOMMENDATIONS/DISCUSSION:

The following recommendations are intended to educate all employers and employees on how similar occurrences can be avoided.

Recommendation #1: Employers should ensure that all employees wear seat belts during operation of any heavy equipment equipped with Roll Over Protective Structures (ROPS).

Discussion: Roll Over Protective Structures (ROPS) save lives. Operators must wear the seat belt to take advantage of this protection. To survive an equipment roll over the operator must remain inside the protective structure. Only the seat belt is designed to do this. In this incident the operator was not wearing the seat belt and fell into the path of the ROPS. Employers should enforce the use seat belts on ROPS-equipped equipment.

Recommendation #2: Employers should provide workers training on how to react in the event of an equipment rollover.

Discussion: Equipment equipped with ROPS can still roll over. Employers should train workers to be prepared for the roll over. The training will re-enforce the need to wear the seat belt and why not to try to

jump away of the rolling equipment. Unfortunately, most operators who try to jump away become victims and are crushed by the ROPS actually designed to protect them. Training for the roll over will also re-enforce the need to do a roll over hazard assessment. The operator will be trained to identify those areas where a roll over could happen and take appropriate control measures. The training will impress on the operator that it can happen and to be prepared when it does. Do not jump, keep your seat belt on and hang on. Keep your knees and elbows close to the body and ride it out. You can survive a roll-over.

Recommendation #3: Employers should implement a training program specifically tailored to operators and their assigned equipment.

Discussion: The operator in this incident may have attempted to operate the equipment in a fashion for which it was not designed. Employees were trained to always stay one foot away from the edge of the road bed. There may not be suitable base rock on the edge of the road bed. This would increase the likelihood of a roll over if the roller is operated there. Additionally, revving the engine and attempting to drive the roller back onto the road bed may have increased the risk of equipment roll over. Employees should review the operator's manual to ensure that all aspects and limitations of the equipment are known. With this knowledge an employee would be less likely to exceed the units operating capabilities.

Recommendation #4: **Develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, training in hazard recognition and avoidance.**

Discussion: **All employers should emphasize the safety of their employees by developing, implementing, and enforcing a comprehensive safety program. The safety program should include, but not be limited to, training workers in the proper selection and use of personal protection equipment, along with the recognition and avoidance of hazards in the work environment.**

The Missouri Department of Health, in co-operation with the National Institute for Occupational Safety and Health (NIOSH), is conducting a research project on work-related fatalities in Missouri. The goal of this project, known as the Missouri Occupational Fatality Assessment and Control Evaluation Program (MO FACE), is to show a measurable reduction in traumatic occupational fatalities in the State of Missouri. This goal is being met by identifying causal and risk factors that contribute to work-related fatalities. Identifying these factors will enable more effective intervention strategies to be developed and implemented by employers and employees. This project does not determine fault or legal liability associated with a fatal incident or with current regulations. All MO FACE data will be reported to NIOSH for trend analysis on a national basis. This will help NIOSH provide employers with effective recommendations for injury prevention. All personal and company identifiers are removed from all reports sent to NIOSH to protect the confidentiality of those who voluntarily participate with the program.

SIGNATURES:

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