

**SUBJECT:** A temporary production worker died when he was caught in a tread scrap machine.

## SUMMARY

A 49-year-old production worker died on April 10, 2005 from chest and abdominal trauma he received after being pulled into a tread scrap machine. The victim was employed by a temporary staffing agency and placed in a manufacturing facility as a production worker to operate a tread scrap machine. As the victim was feeding tread liner into the take-up spool of the tread scrap machine, his right hand became entangled between the liner and take-up spool and he was pulled into the machine. No witnesses were present during the incident and coworkers did not hear the victim call for help. A cleaning employee found the decedent's body wedged in the take-up spool and notified the occupational health staff who immediately called 911. Employees dismantled part of the machine to free the victim and cardiopulmonary resuscitation (CPR) was initiated. Emergency medical services (EMS) arrived and transported the victim to a local hospital where he was pronounced dead in the emergency room.

Oklahoma Fatality Assessment and Control Evaluation (OKFACE) investigators concluded that to help prevent similar occurrences, employers should:

- Ensure that all machines have adequate engineering controls and guards to minimize employees' exposures to hazards.
- Monitor compliance of safe machine operating procedures through random inspections and observations by a competent person.
- Develop written, machine-specific safe operating procedures to assess and mitigate employees' exposures to hazards.

In addition, temporary employment service agencies should:

- Work with secondary employers to establish specific job descriptions, training criteria, and hazard analyses of each job assigned to temporary employees.

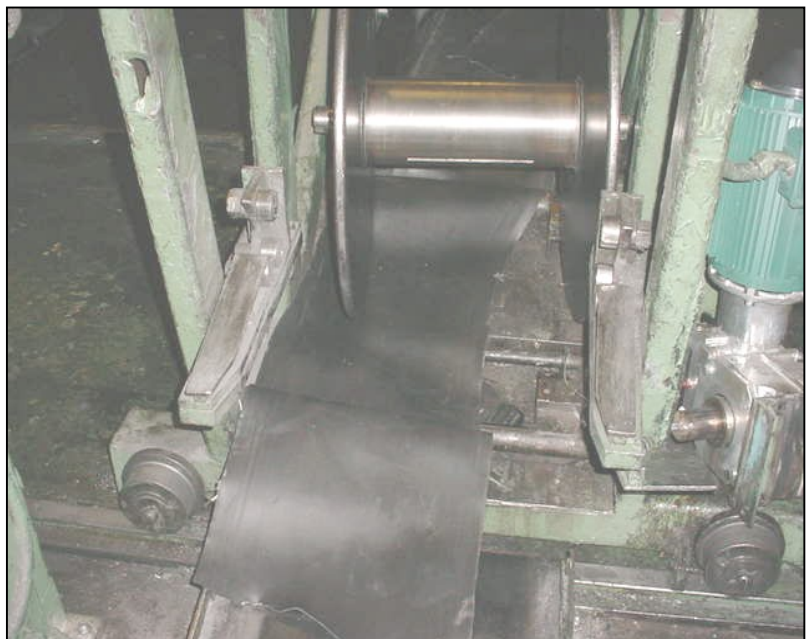


Figure 1. Tread liner and take-up spool on the dismantled tread scrap machine involved in the incident



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## INTRODUCTION

A production worker died on April 10, 2005 from chest and abdominal trauma received when he was caught in a tread scrap machine. OKFACE investigators were notified of the incident and an interview with a company official was conducted on June 7, 2005. OKFACE investigators also reviewed the death certificate and reports from the Medical Examiner, investigating law enforcement officer, and Occupational Safety and Health Administration (OSHA).

**Employer:** The victim was employed by a contract temporary staffing agency and was placed to work in a tire manufacturing facility. The staffing agency had been in business for 15 years. The manufacturing facility employed 2,400 people, operated 24 hours per day seven days a week, and had been in business for 26 years. There were 78 staffing agency employees working at the manufacturing facility when the incident occurred. The staffing agency had been providing personnel services to the manufacturing company for three years. The staffing agency had a management safety and health committee and an incentive program for recognizing outstanding employees in the area of safety.

**Victim:** The 49-year-old male victim had been working for the staffing agency for 18 months and working at the manufacturing facility for 13 months. The victim was performing his usual work tasks in his usual work area at the time of the incident. He had just over one year of experience in his job.

**Training:** The staffing agency had a comprehensive written safety program that included safety and health certificated training, quarterly toolbox meetings, and annual OSHA compliance training. Documents were on file with the staffing agency to verify that the decedent had completed tread extruder scrap operator and safety awareness training and certification requirements. The manufacturing company provided task-specific and machine-specific hands-on training for machine operators and tested them annually for proficiency. All required licensing records were maintained by the staffing agency. The tire manufacturing company was responsible for providing written task-specific work procedures, machine-specific safe operating instructions, and facility-specific training. A complete and certified job safety analysis was not on file for the tread scrap machine process to determine the hazards associated with the operation.

**Incident Scene:** The incident occurred during tire production involving a tread scrap machine. The machine was installed at the facility in 1989 and all original machine guards were in place at the time of the incident. The exact time of the incident is unknown, but it was near the end of the victim's shift and workweek.

**Weather:** Weather was not a factor as all work was performed inside a climate-controlled production facility.

## INVESTIGATION

This incident involved the use of a tread scrap machine, which was used to separate tread liner from tread during tire production (Figure 1). Safe operating procedures called for the following steps to occur. The tread liner and tread began the process as two sheets of material rolled together on one large spool called a tread spool. After the tread spool was

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loaded into the machine, the tread liner was to be pulled through three rollers and threaded into a slot in the take-up spool. The take-up spool was attached to an electric drive motor that was operated by a control panel (Figure 2). Once the tread liner was threaded into the take-up spool, the operators were to apply pressure to the liner within the take-up spool with their right hand, while pressing the jog button with their left hand. The jog button was to be used until a loop of tread liner had been formed around the take-up spool. After the liner was looped around the take-up spool, the operator was to pull four feet of tread onto a conveyor. As the tread liner separated from the tread and loaded onto the take-up spool, the conveyor moved the tread to the next step in the manufacturing process.



Figure 2. Control panel involved in the incident

When the incident occurred, the decedent was threading the liner into the take-up spool. Instead of using the jog button, he had the machine set in automatic mode. The machine allowed for automatic mode to be activated during loading, threading, and unloading tasks, but the operator had to press reset and then the automatic mode button in order for it to run. Safe operating procedures specified that operators should only place the tread scrap machine in automatic mode after they had threaded the tread liner into the take-up spool, loaded the tread onto the conveyor, and moved away from the take-up spool. With the tread scrap machine in automatic mode, the take-up spool rotated at approximately 34 rotations per minute. In manual mode, the take-up spool rotated only when the jog button was pressed and would stop when the jog button was released.

The decedent was wearing cotton gloves, which other employees reported could sometimes stick to the rubber. While attempting to thread the material, the victim got his right hand caught between the liner and the take-up spool and was pulled into the machinery. The emergency stop button was within reach of his left hand. There were no witnesses to the incident and coworkers did not hear the victim call for help. The decedent was last seen alive at 7:10 p.m. and a cleaning employee found him caught in the machine at 8:45 p.m. The cleaning employee immediately notified the occupational health staff who immediately called 911. When the occupational health nurses arrived, the decedent was found unresponsive with his body wedged in the take-up spool with tread liner wrapped over him. Employees dismantled part of the machine to free the victim and CPR was initiated. EMS arrived and transported the victim to a local hospital where he was pronounced dead in the emergency room.

## CAUSE OF DEATH

The Medical Examiner's report listed the cause of death as thoracoabdominal crush injuries.



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## RECOMMENDATIONS

### **Recommendation #1: Employers should ensure that all machines have adequate engineering controls and guards to minimize employees' exposures to hazards.**

Discussion: Engineering controls should be designed to minimize hazards encountered by operators during compliance and noncompliance of safe operating procedures. Engineering controls work continuously and can disable a machine's operation in the event that an employee moves any part of his or her body into a hazardous area protected by the control. Physical barriers, two-handed tripping devices, pressure sensors, or light curtains can be utilized as engineering controls to protect an operator from a machine's points of operation.

According to OSHA standards, one or more methods of machine guarding should be provided to protect the operator and other employees in the machine area from hazards such as those created by points of operation, ingoing nip points, rotating parts, and flying chips and sparks. The National Safety Council recommends guarding where the machine contacts the material, part, or stock and performs operations such as cutting, punching, grinding, boring, forming, or assembling. Also, guarding should be considered near power transmission components, including flywheels, pulleys, belts, connecting rods, cams, spindles, chains, sprockets, clutches, feed rolls, cranks, gears, and robots.

### **Recommendation #2: Employers should monitor compliance of safe machine operating procedures through random inspections and observations by a competent person.**

Discussion: Once employees are fully trained on the safety procedures and potential hazards of their job tasks, employers should follow-up with a compliance monitoring program. Random inspections and observations for compliance with regulations, company policies, and safe operating procedures should be conducted by a person who is knowledgeable and experienced in the operation of the machine and the hazards associated with its use. Inspections and observations should be accompanied by an enforcement policy to address noncompliance and offer opportunities for correction and retraining.

### **Recommendation #3: Employers should develop written, machine-specific safe operating procedures to assess and mitigate employees' exposures to hazards.**

Discussion: Written safe operating procedures should be in place for all machinery that could cause harm to the operator or other employees in the area. The procedures should include steps to ensure that exposures to hazards are reduced or eliminated. In addition, employers should provide the appropriate personal protective equipment. Employees should have the procedures available to them at all times for review. Written lockout/tagout procedures should also be included for processes that are not part of normal tasks and for performing servicing or maintenance on machines. Employers should complete a job safety analysis for all tasks to identify the hazards associated with the job's steps and how to minimize the identified hazards. Results of the assessments should identify areas that necessitate particular personal protective equipment, the installation of engineering controls or guards, and specialized training and instruction.



**Recommendation #4: Temporary employment service agencies should work with secondary employers to establish specific job descriptions, training criteria, and hazard analyses of each job assigned to temporary employees.**

Discussion: When utilizing temporary/contract workers, both the placement agency and the temporary employer should be responsible for ensuring the worker’s safety. The contract should identify how training responsibilities will be allocated and if one or both groups will provide the necessary general and job-specific safety and health training. Temporary workers have the right to be fully trained and informed of potential worksite hazards and should be monitored and retrained as necessary.

**REFERENCES**

- Occupational Safety and Health Administration, 29 CFR 1910 Subpart O, *Machinery and Machine Guarding*.
- Occupational Safety and Health Administration, OSHA Publication 3170, 2001, *Safeguarding Equipment and Protecting Workers from Amputations*.
- Occupational Safety and Health Administration, OSHA Publication 3071, 2002, *Job Hazard Analysis*.
- Occupational Safety and Health Administration, OSHA Publication 3067, 1992, *Concepts and Techniques of Machine Safeguarding*.
- National Institute of Occupational Safety and Health, NIOSH Publication No. 99-110, *Preventing Worker Deaths from Uncontrolled Release of Electrical, Mechanical, and Other Types of Hazardous Energy*.
- Occupational Safety and Health Administration, 29 CFR 1910.132 (d) (1 & 2), *Hazard Assessment and Equipment Selection*.
- National Safety Council, Publication No. 15250-0000, *Machine Safeguarding*.
- National Institute of Occupational Safety and Health, *Traumatic Occupational Injuries: Machine Safety*, <http://www.cdc.gov/niosh/injury/traumamc.html>.

The Oklahoma Fatality Assessment and Control Evaluation (OKFACE) is an occupational fatality surveillance project to determine the epidemiology of all fatal work-related injuries and identify and recommend prevention strategies. FACE is a research program of the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research.

These fatality investigations serve to prevent fatal work-related injuries in the future by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in injury, and the role of management in controlling how these factors interact.

For more information on fatal work-related injuries, please contact:

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