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# Massachusetts Laborer Dies When Caught in Conveyor Machinery at Scrap Metal Business

Massachusetts FACE 94MA021

## SUMMARY

On July 26, 1994, a 46-year-old laborer (the victim) died from injuries sustained when his left arm became caught between the belt and pulley of a conveyor system at a Massachusetts scrapyard and recycling plant. The victim was working alone removing fallen debris from the conveyor frame at the time of the incident. The local fire department was summoned to the scene for assistance after a co-worker heard the victim's cries for help. Upon arrival, the emergency workers found the victim on a platform approximately 25 feet off the ground with his left arm caught up to the shoulder in the turning wheel of a machine. He was bleeding heavily and had also suffered wounds to the head. The worker was transported to the hospital by an emergency medical flight and went into cardiac arrest while en route. He was pronounced dead of multiple traumatic injuries at the hospital. There were no witnesses to the incident. The MA FACE investigation concluded that to prevent similar future occurrences, employers should:

- **require that conveyors be de-energized while they are cleared of fallen or jammed material**
- **install guarding at nip points of conveyor belts to prevent employee contact with moving parts of machinery**
- **equip conveyor machinery with prominently displayed and functioning emergency stop buttons along conveyor or an emergency stop cable running the length of the conveyor.**
- **provide training to workers on machine safety and emergency situations, including instruction to all workers in areas where machines are operating on how to disengage machinery.**
- **consider special communication needs when organizing worksite safety programs when the workforce is comprised of workers who speak different languages.**

## INTRODUCTION

On July 26, 1994, a 46-year-old laborer (the victim) died from injuries sustained when his left arm became caught between the belt and pulley of a conveyor system at a Massachusetts scrapyard and recycling facility. The MA FACE Program learned of the fatality on August 25, 1994 when it received a local newspaper article on the incident through its newspaper clipping service. The employer was subsequently contacted by telephone, but declined through its attorney to cooperate with the investigation. Information from several public information sources was utilized to complete a report of the fatality. To assist the investigation, MA FACE obtained the fire department report, death certificate, newspaper articles, and public information from OSHA. The employer was a scrap metal processing and wholesale business employing nearly 100 people in four locations. There were 60 persons employed at the incident site. The number of laborers at the worksite varied, but approximately 30 other persons worked in the same job title as the victim. The employer had a full-time safety director/environmental health specialist responsible for overseeing safety and environmental health issues at all four company locations. Although the employer had parts of a safety plan, it had no comprehensive written safety plan. There were no written safety rules addressing the task performed by the victim. The company had been in business for over 40 years and had not experienced any previous fatalities. The victim was a 46-year old Hispanic immigrant who had worked at the establishment for several years at the time of his death.

## INVESTIGATION

The employer was a scrap metal company which sold metal parts wholesale and processed scrap metal material. It procured such material as crushed automobile parts, construction aluminum, and other types of scrap metal. Scrap that was not sold as parts was processed through a number of heavy machines that crushed, shredded, and separated material. Approximately 30 conveyors were used in the facility to feed metal into machines, transfer material between processes, and stack processed material. Most of this work took place outside. The weather conditions on July 26, 1994 were described as hot, humid, and overcast. The victim was tending a feed conveyor as part of his normal inspection duties as a laborer on a Shredder/Cyclone Separator. Several processes took place in this work area. The Shredder crushed and shredded metal parts. After shredding, metal was transported by conveyor to a Cyclone Separator, which separated light-weight non-metal material from metal. Metal was then further separated into ferrous and non-ferrous metals through a system of magnets and conveyors. Part of the victim's job entailed visually inspecting the feed conveyor where shredded metal enters the Cyclone Separator. He performed this task from eight to 10 times a day. The area was situated on a platform approximately 25 feet in height. The purpose of the inspection was to prevent debris from accumulating on the frame of the conveyor between the in-running and return belts and to ensure that incompletely shredded material did not obstruct the opening to the separator. When material jammed the machine or built up on the conveyor, the employee would clear it with a pole approximately 3 feet in length, usually while the machine was still in operation. The victim was working alone on the platform at the time of the incident. There were no witnesses, so the specific sequence of events remains unclear. However, he is believed to have been removing scrap. It appears as if his shirt became caught in an unguarded nip point of the machinery. He was discovered when his cry for help was answered by a co-worker who was working on the ground level, but noisy conditions are likely to have delayed response by hindering the ability to hear him. The co-worker found the victim with his left arm caught up to the shoulder between the belt and head pulley on the conveyor to the Cyclone Separator. The responding employee did not know how to shut off the conveyor, and, as he was a non Spanish-speaking immigrant, he did not understand instructions from the victim in how to disengage the conveyor. There was no emergency stop button accessible in the victim's work area. The co-worker consequently had to leave the victim in search of

assistance outside the immediate work area. The first co-worker brought another co-worker to the scene who then ran approximately 100 yards to the machine operator's booth. The operator then shut down the conveyor. The Fire Department described the victim as conscious but bleeding heavily, with his arm still caught in the machinery and three-quarters amputated upon their arrival. The worker had also suffered a severe injury to the left side of his head and had lost an eye. Emergency personnel were themselves unable to remove the trapped arm from the nip point. Due to the large loss of blood, EMTs were forced to amputate the rest of his arm with trauma shears in order to extricate him from the machinery. Trauma pressure dressings were applied to the shoulder to stop bleeding. The patient was placed on a Medical Flight that had landed on the company grounds, but he went into cardiac arrest during the 12-minute helicopter flight to the hospital. The victim was pronounced dead at the hospital approximately one and a half hours after the call for assistance was made to the fire department.

## CAUSE OF DEATH

The medical examiner listed "multiple traumatic injuries" as the cause of death.

## RECOMMENDATIONS/DISCUSSION

**Recommendation #1: Employers should require that conveyors be de-energized when machinery is cleared of fallen or jammed material.**

**Discussion:** Removal of material from conveyors at this workplace resulted in worker exposure to machine safety hazards that were not addressed in the design of the system. Workers should not be placed in the danger zone of operating machinery in order to correct problems that are regular consequences of the work process. Requiring that the machinery be de-energized while the maintenance takes place is an acceptable control in lieu of re-engineering the process.

**Recommendation #2: Employers should install guarding at nip points of conveyor belts in order to prevent employee contact with moving parts of machinery.**

**Discussion:** OSHA regulation 29 CFR 1910.212(a)(1) requires employers to provide machine guarding to protect operators and other employees from hazards created by in-running nip points. Adequate machine guarding should be placed in areas where workers might contact and be drawn into operating machinery. One or more methods of guarding should be employed to protect employees from dangers posed by rotating parts and ingoing nip points. Such guarding could be installed at the actual point of machinery operation, but may also include physical barriers at the perimeter of machinery. If necessary, employers should retrofit guards on machinery.

**Recommendation #3: Employers should equip conveyor machinery with prominently displayed and functioning emergency stop buttons along conveyor or an emergency stop cable running the length of the conveyor.**

**Discussion:** Prompt shut-down of the conveyor after the victim's entanglement was inhibited by an inadequate system for turning the machine off. No emergency stop button was located in the victim's immediate work area. A red contact button was missing from the emergency stop device in another area. In order to permit quick response, emergency stop systems must be properly maintained, clearly recognizable, and in sufficient and strategic locations so as to permit disengagement at points of contact or anywhere along the system.

**Discussion:** The worker who first responded to this emergency did not know the location of emergency stop devices or how to disengage the machinery. Training in basic machine operation should not be limited to those workers who actually operate the machinery or work in its immediate vicinity, but should include all workers. In addition, such workers should receive broad training in machine safety to enhance employee awareness and encourage safe work practices. Such instruction and any written materials should be provided in languages understood by the targeted workers.

**Recommendation #5: Employers should consider special communication needs when organizing worksite safety programs when the workforce is comprised of workers who speak different languages.**

**Discussion:** Response to this emergency was apparently slowed by an inability of the first worker on the scene and the victim to converse in the same language. Effective ways to deal with such situations in the future include the provision of safety training in the languages in which individuals are conversant, using readily understood visual aids in written materials, and utilizing visual displays on emergency response signs on machinery and in work areas where hazards exist.

To contact **Massachusetts State FACE program personnel** regarding State-based FACE reports, please use information listed on the Contact Sheet on the NIOSH FACE web site Please contact **In-house FACE program personnel** regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.

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