

# **Carpet Installer Killed in Forklift Tipover at a Massachusetts Warehouse**

**Investigation #: 98-MA-033-01**

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## **SUMMARY**

On June 25, 1998, a 22 year old male carpet installer died of injuries sustained when the forklift truck he was driving overturned. The victim was making a sharp left turn in the parking lot of the carpet store when the vehicle tipped. The tipping caused the driver to fall from the forklift truck, which then continued to tip over onto the victim. The police and emergency medical services were called immediately by a number of people driving on the state road in front of the store as well as a co-worker. The victim was transported to a nearby city hospital emergency room where he was officially pronounced dead within an hour of the incident. The MA FACE Program concluded that to prevent similar future occurrences, employers should:

- **assure that forklift operators are trained in the safe operation of their vehicles.**
- **require that operator restraints when available on forklift trucks be used.**
- **develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, worker training in controlling the health and safety hazards of warehouse work.**

## **INTRODUCTION**

On June 26, 1998, the MA FACE Program learned through a newspaper article that a 22 year old forklift operator had died of injuries received when he was crushed by the forklift he was operating on the previous evening. An investigation was immediately initiated.

On July 14, 1998, the MA FACE Program Director and industrial hygienist traveled to the incident site where a review of the scene took place and where the owner and a manager were interviewed. The police report, death certificate, photographs, local newspaper clippings and the vehicle operating manual were obtained during the course of the investigation. The vehicle involved in the incident was not available for investigation at the time.

The company was a carpet sales and installation company in business for approximately three years at the time of the incident. It employed twelve full-time and two part-time workers at

two locations. At the time of the incident, there were two company employees on site including a salesperson and the victim. There was not a designated safety person on the incident site and there were no written company safety policies and procedures in place on the day of the incident.

The victim was a carpet installer who also worked in the warehouse and did some selling. He had worked for the company for approximately four years, having started while he was in high school. His background included on-the-job training in carpeting work and driving the forklift.

## **INVESTIGATION**

On the day of the incident, a carpet installer was working in the warehouse of a carpet sales and installation company. It was almost 7 pm and business was slowing down. He had filled the water in the battery of the electric forklift which was used in the warehouse. It was overfilled and leaking on the smooth concrete floor. He decided to drive the forklift truck around the yard until the water stopped dripping. On a typical evening, he would plug the forklift into the charging station before leaving.

The yard was covered with asphalt and used as a driveway around the building. The store building was located on a busy divided state highway, which was lined with stores, shopping areas and strip malls. This store was located at the intersection of the highway and a small street. The intersection had a traffic signal.

The installer drove the forklift truck outside the back of the building and turned right through the gates into the side yard which was also a parking lot. Before reaching the street, approximately 140 feet from the gates, he turned the vehicle sharply to the left, apparently to turn around. As the vehicle turned it began to tip to the right. When it tipped, the operator fell out of the vehicle and the vehicle landed on top of him. He was trapped between the overhead guard and the ground. Several motorists who were stopped at the intersection witnessed the incident and called for emergency services.

The police and emergency medical services responded immediately. They summoned a tow truck to lift the vehicle off of the victim. He was then transported by ambulance to the city emergency room where he was pronounced dead approximately thirty minutes after the incident.

The incident was investigated by a police officer trained in accident reconstruction. He noted in his report that a very clear yaw mark had been left by the right front tire as it was making a very sharp turn. There was also a gouge in the asphalt corresponding to a part of the frame of the forklift truck. This gouge was made as the vehicle turned and tipped. The officer calculated that the vehicle was traveling at 9 mph. This was approximately the maximum speed of the vehicle.

The forklift truck had three wheels and cushion (solid) tires, which are intended for interior use as indicated by the manufacturer's operating manual. Pneumatic tires are used for improved surfaces indoors or outdoors. The vehicle was equipped with power steering. The drive wheels were on the front and the single rear wheel turned in order to steer the vehicle. Each drive wheel had a

separate drive motor. The vehicle was also equipped with a microswitch connected to the steering which would cut off power to the motor on the drive wheel on the inside of a tight turn.

The vehicle was equipped with a seat belt but it was not being used at the time of the incident. The truck was also equipped with a long pole-like attachment called a “rug ram” which was used to lift rolled carpets from shelves in the warehouse. This attachment would not necessarily affect the lateral stability of the vehicle since it is carried low and on the front of the vehicle. The “rug ram” was empty at the time of the incident.

## **CAUSE OF DEATH**

The medical examiner listed the cause of death as multiple injuries due to blunt trauma.

## **RECOMMENDATIONS:**

**Recommendation #1: Employers should assure that forklift operators are trained in the safe operation of their vehicles.**

**Discussion:** The company involved in this incident had no training program for forklift drivers. The operators learned on the job with training from other workers. Recently OSHA has passed a forklift operator training standard, 1910.178 (I). This standard mandates:

“a training program that bases the amount and type of training required on: the operator’s prior knowledge and skill; the types of powered industrial trucks the operator will operate in the workplace; the hazards present in the workplace; and the operator’s demonstrated ability to operate a powered industrial truck safely. Refresher training is required if: the operator is involved in an accident or a near-miss incident; the operator has been observed operating the vehicle in an unsafe manner; the operator has been determined during an evaluation to need additional training; there are changes in the workplace that could affect safe operation of the truck; or the operator is assigned to operate a different type of truck. Evaluations of each operator’s performance are required as part of the initial and refresher training, and at least once every three years.” (OSHA web site)

One specific requirement (Appendix A) of this safety training is that operators understand the limits to the stability of their forklift truck. Many factors influence the longitudinal and lateral stability of a forklift truck. These include: the weight of the load, the location of the load, the angle at which the truck is leaning, the movement or shifting of the load and the movement of the vehicle. The operator in this case was apparently turning the vehicle 180 degrees while traveling at maximum speed. Had he been aware of the effects of this maneuver on the stability of the vehicle, he may have not attempted it.

**Recommendation #2: Employers should require that operator restraints when available on forklift trucks be used.**

**Discussion:** The ASME Standard B56.1- 1993, requires that forklift trucks be equipped with operator restraints and that these restraints be used. Operator restraints include seat belts as well as

seat configurations that help prevent operators from falling from the vehicle. The OSHA regulations incorporate this industry consensus standard and will issue citations under the General Duty Clause. It has been determined that when a forklift tips over the operator is least likely to sustain a serious injury if he remains in the driver's seat. Forklift manufacturers have designed operator restraints that do not interfere with the driver's mobility and visibility because they recognize that these improvements save lives. Many are available to retrofit into earlier truck models.

Of all forklift-related incidents including falling loads and striking pedestrians, tipovers of forklift trucks are the leading cause of fatalities. The best way to protect an operator during a tipover is to remain in the driver's seat through the use of seat belts and other operator restraints in the vehicle.

**Recommendation #2: Employers should develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, worker training in controlling the health and safety hazards of warehouse work.**

**Discussion:** The company did not have any comprehensive written safety, health and/or training programs in effect at the time of the incident. Employers, with the participation of employees, should develop, implement, and enforce a comprehensive safety program. The program should begin with an analysis of hazards associated with warehouse work and the equipment involved. Appropriate controls for injury prevention should be identified and provided. The program should also include training for all employees in hazard recognition and the use of controls.

When a smaller company does not have the resources to implement a safety program, they should either make use of the free OSHA Consultation Program in their state, investigate programs and services offered through trade organizations or their workers' compensation insurer, or hire professional safety consultants to assist them.

In this case, a thorough hazard analysis may have identified that forklift operators require safety training in the operation of their vehicles. Much of the necessary safety information was contained in the Operators' Manual which came with the equipment. Employee involvement in recognizing hazards and suggesting controls will often result in better implementation of controls on site and a safer workplace. Frequent discussions with employees about the safety of their jobs leads to their ability and willingness to raise questions they may have and offer ideas and solutions for the control of unsafe conditions.

## **REFERENCES**

Code of Federal Regulations, Labor 29 Parts 1910.178

American National Standards Institute, Safety Standard for Low Lift and High Lift trucks, ASME B56.1-1993

U. S. Department of Labor, OSHA Web Site, [www.osha.gov](http://www.osha.gov)

Clark Equipment Company Web site, [www.clarkmhc.com/SafetyLiftTrucksRestraint.html](http://www.clarkmhc.com/SafetyLiftTrucksRestraint.html)