



## **Massachusetts FACE • Occupational Fatality Report**

Massachusetts Department of Public Health  
Occupational Health Surveillance Program  
Fatality Assessment and Control Evaluation Project



### **Municipal Laborer Dies after Falling Off the Back of a Forward Moving Refuse Collection Truck – Massachusetts**

**Investigation: # 09-MA-020-01**  
**Release Date: November 6, 2009**

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#### **SUMMARY**

On May 5, 2009 a 49-year-old male municipal laborer (victim) was fatally injured while performing the task of collecting refuse from private residences. The victim and a co-worker were riding on the rear step of a refuse collection truck while traveling from one residence to the next. The truck drove over a depression in the roadway causing the victim to fall from the back of the truck. The victim landed on the asphalt roadway with the back of his head striking the ground. The truck driver noticed the victim and stopped the truck. The co-worker climbed off the truck's rear step and ran to the closest house to call for emergency medical services (EMS). The truck driver stopped a passing motorist to help him attend to the victim. Within minutes EMS and the local police arrived at the incident location and the victim was transported to a local hospital where he died two days later from his injuries. The Massachusetts FACE Program concluded that to prevent similar occurrences in the future, employers should:

- **Ensure that employees are never positioned on refuse collection trucks' rear riding steps when the trucks are traveling faster than 10 miles per hour or traveling more than 0.2 mile;**
- **Ensure that alternative transportation options are available for employees when there is not enough legal seating within a refuse collection truck's cab for all work crew members and the truck will be traveling faster than 10 miles per hour or further than 0.2 mile;**
- **Consider adequate legal seating for the entire work crew inside a truck's cab when building and/or purchasing refuse collection trucks;**
- **Help ensure employee safety on the road by developing a traffic safety program and promoting traffic safety principles;**
- **Routinely provide employees with refresher trainings that are updated as needed;**
- **Ensure that employees have access to a communication device that can be used during emergency situations; and**
- **Consider the feasibility of implementing automated processes for refuse collection.**

## **INTRODUCTION**

On May 11, 2009, the Massachusetts FACE Program was notified by a local clerk's office through the 24-hour Occupational Fatality Hotline that four days earlier a 49-year-old male city employee had died from injuries sustained during a May 5, 2009 incident. An investigation was initiated. On July 13, 2009, the Massachusetts FACE Program Director and a representative from the Massachusetts Division of Occupational Safety traveled to the main office of the city's department of community maintenance and met with the department's director to discuss the incident and visit the incident location. The police report, death certificate, and information about the truck were reviewed during the course of the investigation. Photographs were taken of the location where the incident occurred.

The victim had been hired by the City's department of community maintenance as a laborer. He primarily performed the task of collecting refuse (thrower). When hired, the victim was one of 80 throwers employed by the city. The victim had worked for the city's department of community maintenance for five months when 20 laborers, including the victim, were laid off due to budget constraints. After the layoffs, the city was falling behind in refuse collection and negotiated an agreement with the union representing the laid off employees. The agreement allowed the city to bring in some laid off employees on an as-needed basis during the afternoons to collect refuse. These afternoon shifts were five hours long and each employee could work a maximum of 15 hours per week. When the incident occurred, the victim had been back to work for less than two weeks, after being laid off for about two months. He was in the middle of his third afternoon shift, the first that week, since his return to work. The normal day shift started at 7:00 a.m. and ended at 3:00 p.m. and the afternoon shift that the victim was working at the time of the incident started at 3:00 p.m. and ended at 8:00 p.m.

The city owns 22 trucks that are used for refuse collection. Sixteen of the trucks, including the truck involved in the incident (Figure 1), are packers and are used for trash collection; six trucks are recyclers used to collect materials to be recycled. Of the 16 packers, five are newer trucks and the cabs of these trucks seat three people. The remaining 11 packers are older cab-over style trucks where the cabs seat two people. The city has 12 collection routes on Monday and Tuesday, and 10 collection routes on Wednesday and Thursday. Friday is usually the scheduled maintenance day for the trucks, which is typically performed in-house. The city has collection routes that require both two and three man crews, with twice the number of routes that require the three man crews. The three man crews are made up of two throwers and a truck driver, compared to the two man crews that are made up of one thrower and one truck driver. It was reported that on average 18,000 stops per day are made between trash and recycling collection and over 200 tons of trash and 35 tons of recycling are collected each day. The throwers are part of a collective bargaining unit.

The city provides new employees with a week-long orientation and a handbook. Topics covered during orientation are summarized in the handbook and include, but are not limited to, climbing on and off the back of trucks, proper gripping of the truck's handles when the truck is in motion,

operating the truck's compactor and proper lifting techniques for barrels and other objects. During the orientation a supervisor and/or a foreman provides hands-on training to the new hires by demonstrating proper procedures on available department trucks. It was reported that during the orientation, the city's rules were reviewed. Specifically, these included the National Institute for Occupational Safety and Health (NIOSH), recommendation that employees only ride on the back of trucks when the truck is moving forward for short durations and slow speeds.<sup>1</sup> Employees are only assigned to go out on a truck after going through the orientation and receiving approval from either a supervisor or foreman.

## **INVESTIGATION**

On the day of the incident, the city did not have enough throwers show up for work to cover the normal shift for the scheduled refuse collections. Therefore, the city called in some of the laid off workers, including the victim, to work the afternoon shift. The victim was assigned to a three member refuse collecting crew. The victim and another co-worker were the two throwers and the third member was the truck driver. The co-worker assigned as the second thrower on the truck held a fulltime job with the city as a custodian. It was reported that this second co-worker would typically take on the extra hours as a thrower when offered. The victim and the second thrower were wearing bright green T-shirts, boots and gloves. Their shift started at 3:00 p.m., and the route they were assigned was located in a section of the city where the houses are mostly single family structures with yards and driveways.

The truck involved in the incident is a cab-over design manufactured in 2001 with two bucket seats inside the cab. The truck's body is a rear loading compacting unit that was also manufactured in 2001. The truck is equipped with riding steps located on both the left and right rear sides of the truck (Figure 1). The riding steps start approximately two feet in from either side of the rear of the truck and wrap around the sides of the truck. Located at both rear corners of the truck are vertical grab handles. There are also horizontal grab handles located on the rear sides of the truck above where the riding steps wrap around from the back of the truck to the sides (Figure 1). On the day of the incident, the victim was working from the driver's side of the truck and the second thrower was working from the passenger side of the truck.

At the time of the incident, the roadway was dry and the temperature was approximately 50 degrees Fahrenheit. The roadway on which the incident took place is a non-divided two-lane secondary roadway paved with asphalt. The roadway is 29 feet wide and does not have markings that would distinguish individual lanes or the roadway edge. Traffic moves in the easterly and westerly directions with a maximum posted speed limit of 30 miles per hour. At the incident location, there is a slight rectangular depression in the roadway (Figure 2). It was reported that this depression is from a trench that had been dug across the roadway and patched with asphalt sometime during the 1990's. The depression is as long as the width of the roadway (29 feet) and eight feet wide.

Immediately prior to the incident, the two throwers placed refuse from a residence into the truck's hopper and climbed onto the truck's riding steps. The truck took off in an easterly direction for the next stop which was one of the next houses. While traveling to the next stop, the truck passed over the depression in the roadway. The depression caused the truck to bounce and it appears that this is when the victim fell from the truck. The co-worker on the back of the truck with the victim kept his grip/balance and did not see the victim fall off the truck. The truck driver reported that after traveling over the depression, he looked in the driver's side rear view mirror and observed the victim falling from the truck. As the victim fell from the back of the truck, the back of his head struck the roadway. The truck driver immediately slowed down and stopped the truck.

Once the truck was stopped, the co-worker climbed off the back of the truck and ran to the closest house to place a call for emergency medical services (EMS). The truck driver exited the truck's cab and stopped a passing motorist asking for help in attending to the victim. Within minutes EMS and the local police arrived at the incident location and transported the victim to a local hospital, where he died two days later from his injuries.

It was reported that after the incident, the local police inspected the truck and found the truck to be in sound working condition. Three violations were found during the inspection, including expired registration, the license plate light was not working, and there was no fire extinguisher on the truck. It was estimated by the city's police Accident Reconstruction Team that the truck's weight at the time of the incident was 40,700 pounds and that the truck's speed was around 30 – 33 miles per hours when the victim fell. It was reported that, in the near future, the city will be piloting a new automated refuse and single stream recycling pilot program for refuse collection in four neighborhoods within the city. This new automated program would impact the throwers positions by reducing the amount the throwers are lifting per shift and reduce the number of throwers positioned on the riding steps of the trucks. The city plans to expand the pilot program throughout the city.

## **CAUSE OF DEATH**

The medical examiner listed the cause of death as blunt force trauma to head with fractures of skull and injuries to brain.

## **RECOMMENDATIONS/DISCUSSION**

**Recommendation #1: Employers should ensure that employees are never located on refuse collection trucks' rear riding steps when the trucks are traveling faster than 10 miles per hour or traveling more than 0.2 mile.**

**Discussion:** The *Preventing Worker Injuries and Deaths From Moving Refuse Collection Vehicles* publication released in 1997 by the National Institute for Occupational Safety and

Health (NIOSH), recommends that “Riding steps should be used only when moving forward for short distances (0.2 mile or less) at slow speeds (10 miles per hour or less)”.<sup>1</sup>

In this case, the victim and a co-worker were standing on the rear riding steps of the refuse collection truck as it traveled from one refuse pickup location to the next. Although, it appears that the distance between the two locations was less than 0.2 mile, the speed the truck was traveling was approximately 30 – 33 mile per hour, far faster than 10 miles per hour recommended by NIOSH. Employers should routinely state and enforce these rules for all work crew members, throwers and especially truck drivers.

**Recommendation #2: Employers should ensure that alternative transportation options are available for employees when there is not enough legal seating within a refuse collection truck’s cab for all work crew members and the truck will be traveling faster than 10 miles per hour or further than 0.2 mile.**

**Discussion:** Even though a work crew of three employees, including the driver, was normally assigned to the truck involved in this incident, the truck could legally transport only two people, including the driver, inside the cab. When the truck needed to travel further than 0.2 mile or faster than 10 miles per hour, only one of the two throwers technically had a seat inside the truck’s cab. This typically resulted in both throwers staying on the rear riding steps. To ensure that employee(s) are not located on the rear riding step during these situations, the employer should make alternative transportation, such as another motor vehicle with the appropriate number of legal seats, available to safely transport employees to the next location.<sup>1</sup>

In this case, the incident took place on a secondary roadway and the distance between the stops appeared to be less than 0.2 mile. Therefore, the truck could have traveled safely to the next collection location at a speed less than 10 miles per hour with the workers still positioned on the riding steps.

**Recommendation #3: Employers should consider adequate legal seating for the entire work crew inside a truck’s cab when building and/or purchasing refuse collection trucks.**

**Discussion:** Most manual collection routes, especially in more suburban areas, will have crews of three workers. These same routes typically will have sections where the distance between collection locations will be more than 0.2 mile and/or where the truck will have to increase travel speed to more than 10 miles per hour. Therefore, when building and/or purchasing refuse collection trucks, it is important to ensure that the cab of the trucks can legally transport the number of workers that will be assigned to the truck at one time. If at anytime there is not enough legal seating inside the truck’s cab, alternative transportation options should be implemented (Recommendation #2).

**Recommendation #4: Employers should help ensure employee safety on the road by developing a traffic safety program and promoting traffic safety principles.**

**Discussion:** In this incident, the posted speed limit was 30 miles per hour, the speed of the truck at the time of the incident estimated by the police Accident Reconstruction Team was between 30 – 33 miles per hour, but while workers are on the riding steps the truck should not be traveling faster than 10 miles per hour. The National Institute for Occupational Safety and Health (NIOSH) has recommended steps for employers to help protect their employees who drive as part of their job (NIOSH Publication No. 2004-136).<sup>2</sup> Although employers cannot control roadway conditions, they can encourage safe driving behavior by providing safety information to workers and by setting and enforcing driver safety policies. When developing a traffic safety program employers should:

1. Assign a member of management the responsibility and authority to set and enforce comprehensive driver safety policy.
2. Develop work schedules that allow employees to obey speed limits and to follow applicable hours-of-service regulations.
3. Teach workers strategies for recognizing and managing driver fatigue and in-vehicle distractions.
4. Emphasize to workers the need to follow safe driving practices on and off the job.
5. Adopt a structured vehicle maintenance program.<sup>2,3</sup>

**Recommendation #5: Employers should routinely provide employees with refresher trainings that are updated as needed.**

**Discussion:** In this case, the city provides a week-long orientation for employees. During the orientation, employees are provided with a handbook and hands on training. Topics covered in the orientation should be included in a shorter refresher training that can be provided to employees routinely and when an incident or a near miss occurs. Topics that should be covered in the refresher training for the city's collection crews include, but are not limited to, proper techniques for lifting and throwing items, climbing on and off the back of trucks and appropriate speed limits and distances for when workers are on the back of trucks. The refresher training should be continually evaluated and updated to include information on new tasks, equipment and when hazards are identified. In addition, providing the refresher training to employees who are returning to work after being out of work for an extended period should be considered.

**Recommendation #6: Employers should ensure that employees have access to a communication device that can be used during emergency situations.**

**Discussion:** In this case, immediately after the incident, the truck driver went to the victim and flagged down a passing motorist for help as the other co-worker went running to try and find a

person at home to place a call for help. To ensure the quickest response possible and safety of co-workers, every truck should be assigned a communication device that employees can use during an emergency situation to either get directly in touch with emergency medical services or the employer. The communication device could be part of a larger emergency kit located in each truck that could also include items such as a first aid kit, traffic cones or flares.

**Recommendation #7: Employers should consider the feasibility of implementing automated processes for refuse collection.**

**Discussion:** In this case, the city was preparing to pilot an automated refuse and single stream recycling pilot program for refuse collection in four city neighborhoods. This program will implement the use of large wheeled carts (65-gallon and 95-gallon) that residents wheel to the street curb. Most collection trucks will have crews of two workers, including the drivers. The trucks will be newly purchased with or retrofitted with an automated arm that will hook onto the carts and dump the cart's contents into the truck's hopper (Figure 3).

Automated systems will reduce the need for workers to ride on the truck's rear riding steps and limit the amount they are lifting each day. As with all new processes, a complete hazard analysis should be performed prior to and during the implementation stages of this program.<sup>4</sup>

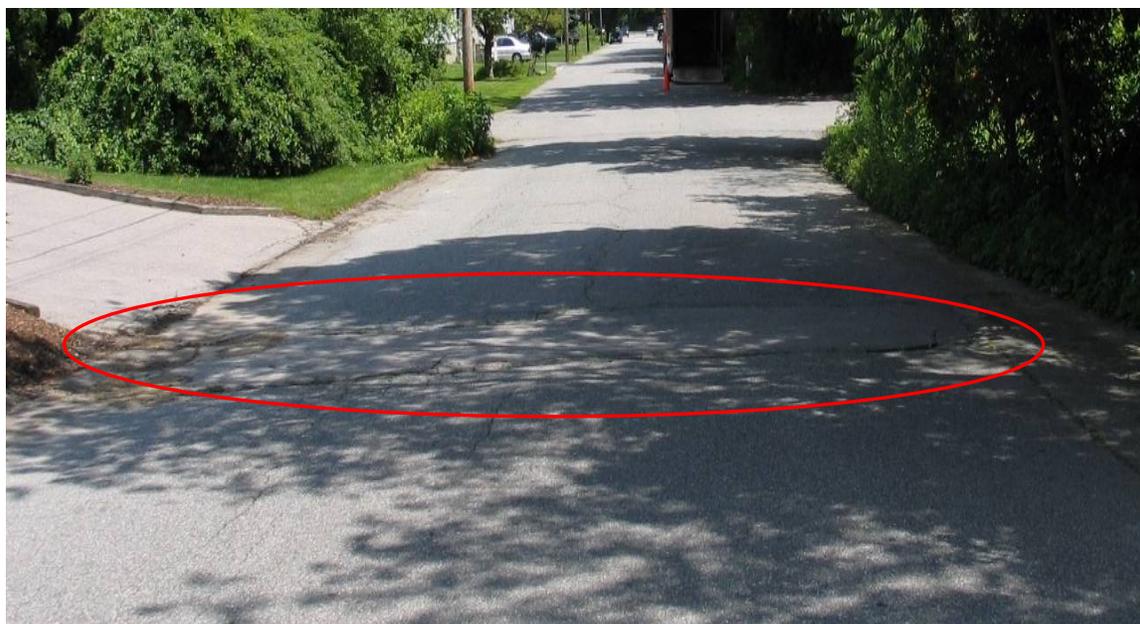
**REFERENCES**

1. CDC. *NIOSH Alert: Preventing Worker Injuries and Deaths From Moving Refuse Collection Vehicles*. DHHS NIOSH Publication No. 97-110.
2. CDC. *Work-related Roadway Crashes. Prevention Strategies for Employers*. DHHS NIOSH Publication No. 2004-136.
3. CDC. *NIOSH Alert: Preventing Worker injuries and Deaths from Traffic-Related Motor Vehicle Crashes*. DHHS NIOSH Publication No. 98-142.
4. DOL. *Job Hazard Analysis*. OSHA Publication No. OSHA-3071, 2002 (revised).

**Figure 1 – Truck involved in the incident.**



**Figure 2 – Location of the incident. Roadway depression is circled in red.**



**Figure 3 – Automated collection truck.**



Photograph from [www.allwaste.com](http://www.allwaste.com)

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### **FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM**

The Massachusetts Department of Public Health, in cooperation with the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on the causes of work-related fatalities. The goal of this program, known as Massachusetts Fatality Assessment and Control Evaluation (Massachusetts FACE) is to prevent future fatal workplace injuries. Massachusetts FACE aims to achieve this goal by identifying and studying the risk factors that contribute to workplace fatalities, by recommending intervention strategies, and by disseminating prevention information to employers and employees.

Massachusetts FACE also collaborates with engineering and work environment faculty at the University of Massachusetts at Lowell to identify technological solutions to the hazards associated with workplace fatalities.

NIOSH funded state-based FACE Programs currently include: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington.

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Additional information regarding this report is available from:

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### **Evaluate this report**

We would appreciate your feedback on these reports so we may continue to improve the MA FACE project and our investigation reports. A feedback form can be found at:

[http://www.mass.gov/Eeohhs2/docs/dph/occupational\\_health/report\\_evaluation.doc](http://www.mass.gov/Eeohhs2/docs/dph/occupational_health/report_evaluation.doc)

The completed form may be returned by fax to (617) 624-5676, by mail to FACE, 250 Washington Street, 6<sup>th</sup> Floor, Boston, MA 02108, or by email to [ma.face@state.ma.us](mailto:ma.face@state.ma.us).