





FATALITY ASSESSMENT AND CONTROL EVALUATION


Truck Driver Fatally Struck When Fencing Materials Fell from Flatbed Trailer During Unloading (Case #: 17NY014)


INCIDENT HIGHLIGHTS

-  **DATE:**
May 13, 2017


-  **TIME:**
9:27 a.m.

-  **VICTIM:**
53-year-old truck driver


-  **INDUSTRY/NAICS CODE:**
Specialized freight trucking, Long-distance / 484230

-  **EMPLOYER:**
Freight company

-  **SAFETY & TRAINING:**
No safety training for loading and unloading operations

-  **SCENE:**
Fence sales company

-  **LOCATION:**
New York

-  **EVENT TYPE:**
Struck-by materials

SUMMARY

On Saturday, May 13, 2017, a 53-year-old truck driver was fatally struck when fence pipes fell from a flatbed trailer. The truck driver, who was employed by a freight company, was delivering the fence pipes at a fence sales company and the incident occurred during unloading. It was raining when the driver arrived, and the owner of the fence sales company was the only person onsite to unload. The flatbed trailer carried 18 bundles of fence pipes that were arranged in three tiers, with six bundles in each tier. The owner started to unload the pipes with a telehandler. The owner could not see the other side of the trailer, since his view was blocked by the pipe bundles...

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CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- The driver was inside the danger zone, or area where cargo could fall, during unloading.
- The load was unstable: The fence bundles were long, heavy, easy to roll, and slippery, which was compounded by the rain.
- The flatbed trailer lacked a backstopping device, which may have prevented the load falling from the trailer.
- The telehandler operator’s view was obstructed by the load.

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RECOMMENDATIONS

NY FACE investigators concluded that, to help prevent similar occurrences, employers should:

- Employers should develop and implement standard operating procedures for loading and unloading operations to ensure the safety of their own employees and delivery drivers.

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SUMMARY

On Saturday, May 13, 2017, a 53-year-old truck driver was fatally struck when fence pipes fell from a flatbed trailer. The truck driver, who was employed by a freight company, was delivering the fence pipes at a fence sales company and the incident occurred during unloading. It was raining when the driver arrived, and the owner of the fence sales company was the only person onsite to unload. The flatbed trailer carried 18 bundles of fence pipes that were arranged in three tiers, with six bundles in each tier. The owner started to unload the pipes with a telehandler. The owner could not see the other side of the trailer, since his view was blocked by the pipe bundles. At approximately 9:27 a.m., the owner lifted the fifth bundle on the top tier with the telehandler. From his vantage point, the owner observed the sixth bundle sliding and falling to the ground on the opposite side of the trailer. As the owner backed the telehandler away from the trailer, he observed the delivery driver underneath the fallen 1,400-pound bundle on the opposite side of the trailer. The right side of the driver's body and right arm were pinned and crushed. The driver had been standing on the other side of the trailer, winding the securement straps, when the fence bundle fell and crushed him. The owner immediately dropped the fence pipe bundle, drove to the driver, and lifted the bundle off him with the telehandler. The owner called 911, and an emergency medical services (EMS) team arrived at the site. The driver was transported to a hospital where he died from his crushing injuries three hours later.

INTRODUCTION

At 9:27 a.m. on Saturday, May 13, 2017, a 53-year-old truck driver for a freight company was fatally struck when fence pipes fell from a flatbed trailer. The truck driver was delivering fencing materials to a fence sales company at the time of the incident. New York State Fatality Assessment and Control Evaluation (NY FACE) staff initially learned of the incident from news media reports. The Occupational Safety and Health Administration (OSHA) investigated the case. A NY FACE investigator collected case information from the fence sales company, discussed the case with the OSHA compliance officer who investigated, and interviewed transportation safety and engineering experts. The NY FACE investigator also reviewed records including the OSHA casefile, NYS Police reports, 911 call records, and death certificate. The freight company, later involved in civil litigation, declined to provide information. This report summarizes the findings of the NY FACE investigation.

EMPLOYER

The employer of the driver was a long-distance freight company based in Arizona. The company, which was founded in 1999, privately owned, and nonunion, employed approximately 1,600 employees and operated in twenty-seven states.

The fence sales company, where the incident occurred, had been in business since 1995. It was a family-run business with less than five workers including family members.

WRITTEN SAFETY PROGRAMS AND TRAINING

The freight company had a written safety program addressing road transport safety and delivery procedures. The company performed its own road tests and background checks on all drivers. It also provided safety orientation for employees and had a handbook with personal protective equipment (PPE) recommendations. The company was required to comply with the regulations of the Federal Motor Carrier Safety Administration (FMCSA) and the Administration's Compliance, Safety and Accountability (CSA) program. CSA is designed to improve road safety and prevent crashes, injuries, and fatalities in the commercial freight industry. The fence sales company did not have a standard operating procedure for loading and unloading operations.

WORKER INFORMATION

The driver, a 53-year-old white male, was hired by the freight company as a commercial truck driver in 2016. He drove for the company for 11 months prior to the fatal incident. The driver had previously worked at an auto parts manufacturing company for many years.

MACHINERY INVOLVED IN THE INCIDENT

Two pieces of equipment were involved in the incident: the flatbed tractor-trailer driven by the delivery driver and a telescopic handler, or “telehandler”, operated by the owner of the fence sales company. The tractor, which pulled a 48-foot 2004 International flatbed trailer, was a 2016 International Pro-Stars model (Photo 1). An outside fleet maintenance company performed the tractor trailer’s maintenance. Both the tractor and the flatbed trailer had passed annual inspections. The trailer was last inspected in accordance with FMCSA regulations in April 2017, passing inspection one month prior to the incident.

The telehandler (Photo 2), a 1986 JCB LOADALL, Model 525B-4HL had the following specifications:

- Maximum lift height of 16.41 ft.
- Maximum forward reach of 9.26 ft.
- Maximum load at maximum reach of 2204.7 pounds
- Maximum lift capacity of 5511.6 pounds
- Extended boom of 21 feet



Photo 1. The flatbed tractor trailer driven by the decedent while delivering fencing products to the fence sales company (photo courtesy of OSHA)



Photo 2. The telehandler operated by the fence sales company owner during the incident (photo courtesy of OSHA).

INVESTIGATION

The freight company had a freight contract with a fencing product manufacturing/wholesale company in New York. The freight company drivers delivered fencing products for the manufacturer using the freight company's tractor trailers. Some freight company drivers, including the driver involved in the incident, worked out of the fencing product manufacturer's site. Tractor trailers were usually loaded by the manufacturer's employees, and the receiving companies were responsible for unloading at delivery sites. Although the freight company drivers did not load or unload their trailers, they performed certain tasks during loading and unloading. The drivers tarped, secured, strapped, measured, and inspected loads at loading sites. They also removed tarping, load straps, and securements at delivery sites.

On the date of the incident, the freight company was to deliver a load of fencing materials, including pipes, fabric, and brackets, to the fence sales company. The fence sales company was a regular customer receiving approximately two deliveries per month. The original delivery, scheduled for Thursday, May 11, was rescheduled to Saturday, May 13, at 7 a.m. The driver, new to this delivery site, was assigned to deliver the load.

The driver arrived at the site early that day to pick up the loaded flatbed tractor trailer. The flatbed trailer was loaded with fencing fabric and steel fence pipes with black vinyl coating. The stacks of fencing fabric were placed in the front and rear of the flatbed trailer, and the fence pipes in varying lengths and diameters were in the middle. The vinyl pipe coating could be damaged from direct contact with the banding materials or material handling equipment. To protect the coating, the pipes were wrapped with plastic into hexagonal bundles. There were 18 bundles stacked in three tiers of six on the trailer. Six pipe bundles, each 20 ft. long and 2000 pounds in weight, were wrapped in blue plastic and placed in the bottom tier. The bundles in the second and top tiers were wrapped in white plastic. These were each 1,400 pounds and 14 ft. long (Photo 3).



Photo 3. One of these hexagonal fence pipe bundles wrapped in plastic, 14 ft long and 1,400 pounds in weight, fell from the flatbed trailer and fatally struck the truck driver (photo courtesy of OSHA).

Figure 1 shows the rear view of the flatbed trailer and the cross section of the fence pipe bundle on the top tier. The hexagonal bundle had a maximal diameter (D) of 16.2 inches, a side length (t) of 8.1 inches, and a minimal diameter (d) of 14 inches. There were straps over the second and top tiers that were secured to the sides of the flatbed trailer. Two to three wooden four-by-fours were used as dunnage to separate the tiers. The surface of the flatbed trailer was 4.9 feet above ground, and the height of the top tier was 8.8 feet (Figure 1). The driver performed a walk-around inspection and secured the cargo before heading to the fence sales company that was approximately 160 miles away.

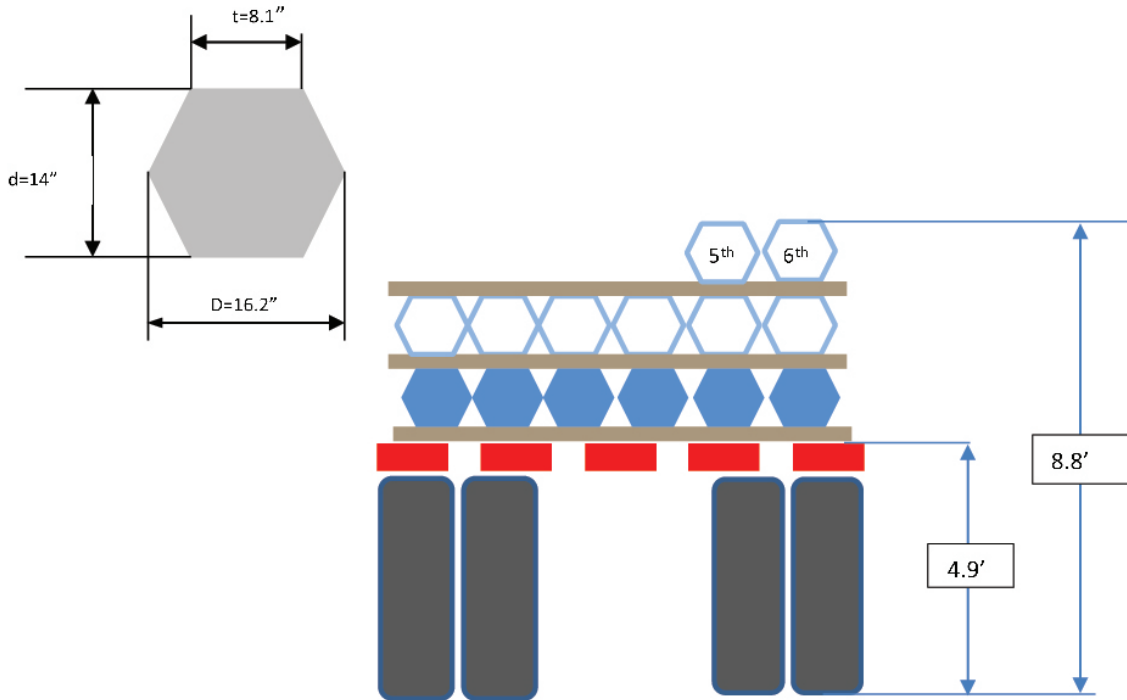


Figure 1. The rear view of the flatbed trailer and the cross section of a fence pipe bundle. While the fifth bundle was being unloaded from the left side, the sixth bundle slid from the trailer on the right side and struck the driver who was standing on the same side winding the securement straps.

En route to the delivery site, the driver had a flat tire. He called to inform the owner of the fence sales company that he was behind schedule. It was raining when the tractor trailer arrived at about 9 a.m., and the owner was the only person onsite.

The owner directed the driver to park his tractor trailer in the unloading area. As the rain continued, the driver released the straps on the top tier of the pipe bundles. The owner directed the driver to bring a box of fencing brackets to a garage approximately 75 feet from the tractor-trailer. The owner later stated to investigators that while preparing to unload, he observed the driver walking from the trailer towards the garage with the box of fencing brackets. According to the owner, the drivers who usually delivered the loads had, almost always, stayed at the rear end of the trailer during unloading.

The owner started unloading with the telehandler. The ground surface was level, but rough and wet. The owner had previously unloaded the vinyl-coated steel pipes wrapped in plastic from the same manufacturer. He had, in the past, observed and experienced these bundles slipping or falling from the equipment during icy, wet, or snowy conditions. The owner later communicated to investigators that on the date of the incident he had anticipated a longer unloading time due to the rain, which made these already slippery bundles even more challenging to handle.

The owner first unloaded the fencing fabric from the rear of the flatbed trailer. He then began removing the pipe bundles from the left side, one at a time and setting them in the staging area on the same side (Figure 1). The owner could not see the other side of the trailer, since his view was obstructed by the load. He described his unloading movement as smooth: He picked up the bundle vertically with the fork tips, raising and tipping the fork to slide the bundle back slowly and cradle the load, as he backed the telehandler away from the trailer.

At approximately 9:27 a.m., when the owner lifted the fifth bundle, he observed movement of the dunnage. The dunnage lifted at the left end, causing the sixth bundle to slide from the trailer on the opposite side. As his telehandler backed away from the trailer, the owner observed the driver on the opposite side of the trailer. The driver was underneath the fallen 1,400-pound bundle, which remained intact although the bundle's plastic wrapping had ripped.

Immediately dropping the bundle on the ground, the owner drove to the driver and lifted the bundle off him with the telehandler. The driver was in a seated position, facing the cab, and his right arm and the right side of his body were pinned and crushed. The driver had been standing on the right side of the trailer, winding the securement straps, while the owner was unloading from the other side. There was neither verbal communication nor visual contact between the driver and the owner during unloading. The driver did not wear a high visibility safety vest, nor did he wear a hard hat.

Due to the lack of cell phone service, the owner left the driver and ran to the office to call 911 from a land line. 911 emergency services dispatched both local fire department and volunteer EMS. The fire department arrived at the site in nine minutes. Initially, the 911 dispatcher could not reach the local EMS team but was able to reach a second EMS team that was 14 miles away from the incident site. The second EMS team arrived at the site 19 minutes after 911 received the initial call. The driver was transported to a hospital with a Level III Trauma Center that was 20 miles away. He died in the operating room, three hours after the incident.

The telehandler was inspected after the incident. The inspection did not identify any equipment defects. The brakes, lift mechanism, lights, and wipers all functioned properly.

At the time of the incident, the freight company's written safety program and employee training did not specify where drivers should be during loading or unloading. The freight company's management learned that another trucking company required its drivers to stay out of cargo-falling zone or danger zone and decided to issue the same requirement a few days before the incident. The company subsequently developed a memo to require that all drivers maintain clear visual contact with the material handling equipment operator, and that they stay clear of any areas where freight could fall from the trailer during loading and unloading at customer sites. The memo was sent to all company drivers, including the deceased, via email on Friday, May 12th, the day before the fatal incident. It could not be verified whether the deceased had accessed and read the email. According to the company email, the new policy was not supposed to be in effect until May 15th, two days after the fatal incident.

Although OSHA did not issue any citations to the freight company, the agency recommended the company update its Job Safety Analysis and employee training program to include the requirement for drivers to stay outside the "NO GO", or danger zones during loading and unloading, along with measures to ensure employee compliance with such work rules.

CAUSE OF DEATH

The death certificate lists the cause of death as multiple blunt force injuries of the torso and extremities.

CONTRIBUTING FACTORS

Occupational injuries, including traumatic fatal injuries, are often the result of multiple contributing factors in a sequence of causal events. The following key contributing factors were identified in this incident:

- The driver was inside the danger zone, or area where cargo could fall, during unloading.
- The load was unstable: The fence bundles were long, heavy, easy to roll, and slippery, which was compounded by the rain.
- The flatbed trailer lacked a backstopping device, which may have prevented the load to fall from the trailer.
- The telehandler operator's view was obstructed by the load.
- Verbal communication and visual contact were not maintained between the telehandler operator and the driver.
- The freight company lacked a policy outlining how to ensure driver safety during loading and unloading at customer sites.

- The freight company did not train its drivers on loading and unloading safety.
- The fence sales company lacked a standard safe loading and unloading procedure.
- Emergency medical treatment was delayed due to the distance between the incident site and the hospital and the lack of cell phone service.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should develop and implement standard operating procedures for loading and unloading operations to ensure the safety of their own employees and delivery drivers.

Discussion: Loading and unloading cargo from tractor trailers are high-risk operations. Workers suffer serious injury and death in loading and unloading areas, and where material handling equipment is in transit. Between 1984 and 2018, OSHA investigated 2,633 loading and unloading incidents that resulted in injury or death. Of these, 1,439 (55%) were fatalities. Many of these injuries and fatalities resulted from workers being run over by the tractor-trailer or material handling equipment, or workers being crushed or struck by hoisting equipment or cargo falling from equipment or trailers. This hazardous condition requires a clearly defined danger zone for ground workers and delivery drivers to stay out of, and a safe zone for them to stay in. Additionally, a communication procedure for ground workers, equipment operators, and drivers is necessary and must be followed. Such measures can prevent serious injuries and deaths.

Companies responsible for loading and unloading cargo, such as the fence manufacturer and the fence sales company in this case, are best positioned to implement controls to prevent injuries to both their own employees and delivery drivers. These companies should implement a standard operating procedure (SOP) for loading and unloading. The SOP should include the following:

- Conduct a hazard assessment specific to the loading and unloading of each haul, to define and establish the danger zone, as the zone will vary. Factors such as cargo size, loading and unloading methods, type of material handling equipment, weather conditions, escape route, and safe areas for drivers and ground workers should be assessed and identified.
- Require delivery drivers wear proper PPE such as hard hats and high-visibility vests. Employers are required to select and provide the proper types of PPE by following the OSHA requirements in 29 CFR 1910, Subpart I, and American National Standards Institute standards (ANSI/ISEA 107-2015)
- Require drivers to always maintain a safe distance from the danger zone. Specifically, drivers should never be on the opposite side of the trailer from the equipment operator during loading or unloading. Since drivers have been killed in their cabs by falling loads, they should not stay in their cab during loading and unloading.
- Establish methods of communication, such as hand signals or two-way radio, between equipment operators and drivers. Cell phones should not be used because they pose distraction from the task. Drivers should always maintain a clear line of sight with equipment operators.
- Cease all loading and unloading activities until the ground workers and drivers complete their tasks and have left the danger zone. An operator should never start loading or unloading unless he visually locates the driver outside the danger zone and in a safe area. A driver should never enter the danger zone unless he receives positive communication from the equipment operator, and the operator stops loading or unloading.

Recommendation #2: Employers should implement measures to safely handle cargo that is slippery, slick, and easily rolls, shifts, or falls from trailers or material handling equipment.

Discussion: Worker injuries or deaths are often caused by cargo slipping from material handling equipment or trailers. Employers should assess the hazards associated with handling unstable cargo that is easy to roll, shift, tilt, or fall from trailers and material handling equipment. Manufacturers may consider designing special dunnage to secure the cargo. The following measures should be considered for mitigating the hazards:

- Use stanchions and backstop devices during loading to prevent material from rolling off the sides of a trailer.
- Alternate unloading of cargo from both edges of the trailer bed to prevent the lifting equipment from overreaching and/or bumping the cargo off the trailer bed from the other side.

- Consider using a different attachment or material handling equipment to prevent inadvertent contact with the cargo.
- Consider designing specialized dunnage with cradles that can hold the pipe bundles in place and prevent them from rolling and falling from trailer bed.

Recommendation #3: Freight companies should develop and implement a SOP for their drivers to follow during loading or unloading at customer sites.

Discussion: Although the freight company drivers in this case were not directly involved in loading or unloading, they performed tasks that were closely related to loading and unloading operations at the customer sites. If drivers perform these tasks without the knowledge of the material handling equipment operators, they could be run over by mobile equipment or crushed by materials falling from trailers or material handling equipment.

Freight companies should develop and implement a SOP for drivers to follow during loading or unloading at customer sites. The SOP should require that all drivers wear high visibility safety vests and hard hats, stay away from the danger zone, and never enter the danger zone without the equipment operators' knowledge and permission. The SOP should be shared with the employers of customer sites to ensure delivery driver safety.

Recommendation #4: Freight companies should provide loading and unloading safety training and ensure that their drivers understand the contents of the training and strictly follow the safety procedure.

Discussion: It is challenging for freight companies to effectively manage driver safety at customer sites where they have limited control over the hazards and safety policies.

Freight companies should communicate their safety policies to customer sites where deliveries are made, so that the site employers can implement measures to protect both their own employees and freight company drivers. Timely implementation and communication of new safety policies for safe loading and unloading, to both the driver and the fence sales company in this case may have prevented the fatality.

The freight company delivered its new safe loading and unloading policy through email in this case. Opening an email does not necessarily indicate that the recipient has read, understood, or mastered the content. Employers whose staff work across large distances and at remote worksites should consider using nontraditional training formats, such as webinars, videoconferencing, E-training, and periodic, in-person onsite training. These forms of training are more interactive and offer opportunities for employers to receive trainee feedback and assess training quality.

DISCLAIMER

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INVESTIGATOR INFORMATION

This investigation was conducted by NY FACE, Bureau of Occupational Health and Injury Prevention, Center for Environmental Health, New York State Department of Health.

ACKNOWLEDGEMENT

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