
INCIDENT HIGHLIGHTS

**DATE:**

October 21, 2020

**TIME:**

8:30 AM

**VICTIM:**

52-year-old male mechanic
employed for six years

**INDUSTRY/NAICS CODE:**

Other General Government
Support/921190

**EMPLOYER:**

Town highway department

**SAFETY & TRAINING:**

Some training in general
Lockout-tagout but not
specific

**SCENE:**

Town highway department
garage

**LOCATION:**

New York

**EVENT TYPE:**

Compressed by

REPORT#: 20NY030

REPORT DATE: 6/01/22

Town highway department mechanic crushed when truck fell off jack stand —New York

SUMMARY

On October 21, 2020, a mechanic for a town highway department was fatally injured around 8:30 AM in the morning while he was in the process of changing air brake canisters on a truck in the town highway department garage. The truck at the time was undergoing routine maintenance in preparation for the winter months. The decedent had placed a jack under the passenger side rear axle wheel hub of the truck after removing the wheel to access the air brake canister. The truck transmission was in neutral, and the wheels were otherwise not chocked, with no supplemental support or cribbing except for a 12-ton jack stand under the passenger side rear wheel hub. [READ THE FULL REPORT>](#) (p.3)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Truck wheels were not chocked
- Truck had been left in neutral, with keys in cab of truck
- No secondary support methods were used besides the 12-ton jack stand

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RECOMMENDATIONS

- **New York FACE investigators concluded that, to help prevent similar occurrences, employers should:**
- Ensure employees use wheel chocks and cribbing during truck maintenance
- [LEARN MORE>](#) (p.8)



NEW YORK

State **FACE** Program

Fatality Assessment & Control Evaluation

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The New York State Fatality Assessment and Control Evaluation (NY FACE) is a research program funded by the National Institute for Occupational Safety and Health and administered by the New York State Department of Health. NY FACE collects information on work-related fatalities, investigates the incidents to identify the causes and contributing factors, proposes prevention measures, and shares the injury prevention information with employers, workers, and other organizations interested in promoting workplace safety. NY FACE does not determine fault or legal liability associated with a fatal incident. Names of employers, victims and/or witnesses are kept confidential. Additional information regarding the NY FACE program can be obtained from:

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SUMMARY

On October 21, 2020, a mechanic for a town highway department was fatally injured around 8:30 AM in the morning while he was in the process of changing air brake canisters on a truck in the town highway department garage. The truck at the time was undergoing routine maintenance in preparation for the winter months. The decedent had placed a jack under the passenger side rear axle wheel hub of the truck after removing the wheel to access the air brake canister. The truck transmission was in neutral, and the wheels were otherwise not chocked, with no supplemental support or cribbing except for a 12-ton jack stand under the passenger side rear wheel hub. Between approximately 8:25 AM and 8:30 AM in the morning, the truck rolled while the decedent was working on it, causing the truck to roll off the jack stand, crushing the employee with a portion of the truck called a chipper bar that was positioned behind the passenger side rear wheel well of the truck. The decedent was discovered shortly after the incident by the office secretary. 911 was called and emergency responders including volunteer firefighters and emergency medical technicians including a nearby neighbor responded almost immediately, but the employee died at the scene due to mechanical asphyxiation and crushing injuries to the chest.

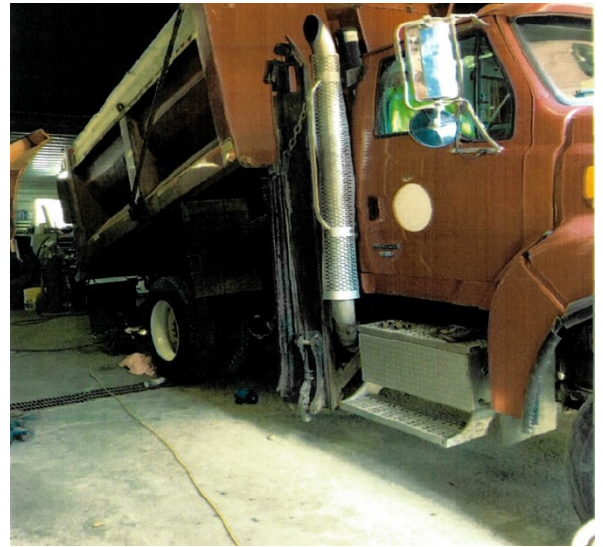


Photo 1: Truck involved in incident with right rear wheel missing (photo courtesy of PESH).

INTRODUCTION

On October 21, 2020, a mechanic for a town highway department was fatally injured around 8:30 AM while he was in the process of changing air brakes on a truck in the town highway department garage (Photo 1). The New York State Fatality Assessment and Control Evaluation (NY FACE) staff learned of the incident from news media reports and contacted the employer to initiate an investigation. Additionally, NY FACE contacted the Public Employee Safety and Health Bureau (PESH) in the New York State Department of Labor (NYS DOL) to request information regarding the investigation. PESH is the regulatory body for NYS public employee safety, and initially investigated the case after the incident. NY FACE staff discussed the case with PESH to gather specific details of the incident.

The employer was contacted by NY FACE staff in March of 2021 and agreed to cooperate with the NY FACE investigation. NY FACE staff visited the Town Highway Department garage and interviewed the Town Highway Supervisor, the Deputy Town Highway Supervisor, as well as a few employees of the department. NY FACE also inspected the garage bay where the incident took place, observed the truck involved in the incident, and reviewed town written safety and health programs, worker training records, and equipment maintenance and inspection logs. This report summarizes the findings of the NY FACE investigation.



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EMPLOYER

The employer is a municipal town highway department located in a town with a population of approximately 2,800 people. The department employs six people full-time, with four part-time personnel who are called in for seasonal work. The highway department is a union shop. All employees are members of a public employee union except the highway supervisor who is the only elected official. The town highway department primarily performs maintenance and continuity-of-service functions for 78 miles of town-owned roads and highways, performs tree work along town-owned roads and highways, and helps run and maintain a municipal waste transfer facility. The staff truck drivers provide in-house maintenance and mechanical work on the department's seven large dump/plow trucks and multiple other pieces of equipment including tractors, road graders, small pickup trucks, backhoes, loaders, public transportation vehicles, bulldozers, forklifts, rollers, and other types of motorized equipment. Many of the department employees are on or were a part of local emergency response services in their community, specifically in the volunteer fire department as well as in emergency medical response.

WRITTEN SAFETY PROGRAMS and TRAINING

Employees at the facility had trainings for multiple safety and health facets including lockout-tagout (LOTO), Hazard Communication, Right-to-Know, personal protective equipment (PPE), Emergency Response, workplace violence, bloodborne pathogens, drivers' safety, chainsaw and chipper safety, loader and backhoe trailing, aerial equipment training, and work zone traffic control. A written LOTO program was available for review and included a lock box, lock hasps, locks, and a lockout-tagout log, and a generalized procedure for how to isolate energy systems on trucks owned by the highway department. However, no specific LOTO procedures existed for any of the town highway trucks, as well as other large pieces of machinery including a backhoe, roller, skid steer, and grading machine. The last department wide LOTO training was provided in 2015, five years prior to the incident. The training did not provide equipment specific LOTO information and procedure, and no inspections of LOTO procedures were logged on any equipment still in service to the highway department. The last time the LOTO log had been used was four years earlier on May 10, 2016.

WORKER INFORMATION

The worker involved in the incident was a 52-year-old white male whose official job title was Equipment Operator 2. He had been working at the town highway department since November of 2014 and had a working mechanical background before joining the highway department. He was a well-known and well-liked member of the town who had grown up there alongside many of his coworkers. The decedent had been the town District Fire Chief and spent several years as a member of the Town Volunteer Fire Company.

EQUIPMENT

The machinery involved in the incident was a 2007 Sterling LT9500 tandem wheel dump truck named Truck 22. The gross vehicle weight of the truck was 30,200 pounds, which is what the truck weighed at the time of the incident. The truck has three axles: one front axle and two rear axles. The front axle has two wheels. The middle and rear axle have tandem sets of wheels, or four wheels per axle. In total there are ten wheels on this truck. The decedent was working on the passenger side rear air brake canister at the time of the incident, which is positioned behind the passenger rear wheel hub of the truck adjacent to the chipper bar. The chipper is a steel bar attachment that is positioned

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approximately 12 inches off of the ground. The purpose of the chipper bar is to allow a self-propelled chip sealer to attach to the truck, allowing the chip sealer to tow the truck along as the truck supplies aggregate stone for road surfacing. The chipper bar is held to the truck frame with four bolts. Removing the chipper bar requires removing the bolts and pulling the bar off the truck frame.

The truck drivers at the highway department were responsible for maintaining and servicing the department trucks. The decedent was very familiar with the vehicle and had years of experience working on it, including changing air brake canisters. The truck operator manual and maintenance manual did not have specific procedures for servicing or maintaining the air-brake canisters. The truck maintenance manual and Highway Department LOTO procedures did not mention of lowering the dump box, removing the chipper bars, or use of cribbing and chocks as steps for controlling potential hazards.

INVESTIGATION

For five days before the day of the incident, the decedent and his colleagues had been working on Truck 22 and preparing it for the upcoming winter in the town highway department in garage bay 1. Truck 22 was considered the decedent's responsibility as he was the primary driver of the truck throughout the year for highway department work activities. The decedent had worked on the transmission of the truck, the tires of the truck, the brake lines of the truck, the salt spreader (sander) on the truck, the bed chain of the truck, and other air brake canisters on the truck with help from his colleagues at times. For maintenance tasks that required going under the truck, a 22-ton pneumatic floor jack (Photo 4) was placed under the rear tandem axels of the truck, and wheel hubs were supported by a 12-ton jack stand. This was considered common practice but was not included in a written procedure. Both jack stands could support the weight of the elevated truck, which weighed 30,200 pounds, or 15.1 tons, while unloaded. There weren't written procedures on how to work on trucks safely. Maintenance activities and safeguards were left to the best judgement of the highway department mechanics and management staff. Eyewitness interviews noted that in the days before the incident, both the 22-ton pneumatic floor jack and the 12-ton jack stand were used during Truck 22 maintenance. Interviews do not mention the use of wheel chocks, blocks, cribbing, or other devices used to prevent Truck 22 from rolling or falling off the 12-ton jack stand in the days before the incident.



Photo 2: Chipper bar behind right rear tires of truck

The day of the incident, the decedent was working on changing out the passenger side rear axle air brake canister on Truck 22 in Bay 1 (Photo 3). The passenger side dual rear axial wheels had been removed from the wheel hub to better access the air brake system. The wheel hub was supported by the 12-ton jack stand seen in photo 7. According to eyewitness statements and PESH investigation, the 22-ton pneumatic jack was not being used in conjunction with the 12-ton jack stand on the day of the incident. Additionally, there was no cribbing under the truck, no wheel chocks were being used, the keys to the truck had been left in the truck's ignition, and the truck had been left in neutral. The truck's braking system, including the parking brake, was not operable because the maintenance activity the decedent was performing required releasing air from the truck's systems, which included the parking brake. The box of the truck, which was elevated and held up by its support arm, was not cribbed on the day of the incident. The box of the truck being elevated may have affected the truck's center of gravity, placing more weight on its rear wheels and the 12-ton floor jack. The floor of Bay 1 where the decedent had been working had a floor gradient of approximately 3-4 degrees sloping towards a central floor drain, which was an approximate slope angle based on the photo 6, supplied by PESH for this investigation.



Photo 3: Air brake canisters or 'air cans' involved in routine maintenance of truck braking system

The decedent was performing the work lying on his back on a mechanics creeper under the truck. The mechanics creeper is a low-lying rolling dolly meant to be laid down on by mechanics for servicing the underside of vehicles without needing the mechanic to lie directly on the ground (Photo 5). To work on the air brake canisters, the decedent was required to position his body underneath the chipper bar behind the right rear wheel hub (Photo 2). The creeper's height off the ground was approximately 3 inches, and the chipper bar was positioned about 12 inches off the ground, which allowed for approximately 9 inches of clearance between the chipper bar and the mechanics creeper for the decedent to fit between in order to work on the passenger side rear axle air brake canister.



Photo 4: 22-ton pneumatic jack typically used to support truck during air brake maintenance (photo courtesy of PESH)

At 8:15 AM the day of the incident, the Highway Superintendent called to inform the decedent that he was to take care of a tree down on a local road. After the decedent finished speaking with the Highway Superintendent, he informed the Deputy Highway Superintendent, who was in the highway department office, of the call and asked if a coworker could be dispatched to respond to the downed tree so that the decedent could continue working on his truck. The Deputy Highway Superintendent gave the decedent permission to continue working on his truck, and the decedent's coworker was sent out to deal with the tree. The Deputy Highway Superintendent then left the premises to take a vehicle to get inspected at a nearby town garage. The decedent then continued to work on the air brake canisters while lying on the mechanic creeper underneath the chipper bar of Truck 22.

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Photo 5: Mechanics Creeper used by decedent for maintenance under Truck 22



Photo 6: Floor gradient at Bay 1 central drain over 10-foot span (phot courtesy of PESH)



Photo 7: Floor jack stand involved in incident

Security cameras existed at the time of the incident at the town highway department garage, which provided the following information around the timing of the incident. However, no security camera caught the incident itself. Around 8:26 AM, the coworker left the garage to respond to the fallen tree. At 8:29 AM, the highway department secretary arrived at the highway department and went into the garage to say hello at which time she heard sounds coming from Bay 1. When she approached the truck, she saw the decedent lying on the ground under the truck, pinned by the chipper bar behind the right rear wheel hub of Truck 22. The decedent was lying on the mechanics creeper when the truck came down on him. The truck came down with enough force on the decedent that a wheel from the creeper was broken off. The truck then rolled approximately 1.5 feet downgradient with the decedent trapped under the chipper bar. Upon discovery the secretary immediately called 911 and went across the street to the home of a firefighter/EMS member to get assistance.

The firefighter/EMS neighbor responded immediately and began assessing the decedent. As he did that the Town Fire Department District Chief responded to the site and began working on getting the decedent out from under the truck by placing a 2.5-ton hydraulic jack under the right rear axle and began to jack the truck up off the decedent. Once the truck was raised approximately one inch off the decedent, the emergency responders pulled the decedent out from under the truck by his ankles. The decedent had no pulse and was not breathing. CPR was initiated immediately, but the victim died as a result of his injuries.

CAUSE OF DEATH

According to the medical examiner, the decedent died of mechanical asphyxia as a result of compression of chest.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. New York FACE investigators identified the following unrecognized hazards as key contributing factors in this incident:

- *Truck wheels were not chocked*

- *Truck had been left in neutral, with keys in the cab of the truck*
- *No secondary support methods were used besides the 12-ton jack stand (cribbing, wood blocks, other backup support)*
- *Truck was parked on garage floor with slight incline towards floor grate in center of floor*
- *The chipper bar attached to the truck had remained attached to the truck, instead of being removed to allow for greater clearance and access to the air brake canister.*
- *Decedent was not adequately trained in controlling hazardous energy through LOTO regarding Truck 22.*

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure employees use wheel chocks and cribbing during truck maintenance.

Discussion: During the PESH investigation, it was determined that the decedent did not use any wheel chocks or additional cribbing under the vehicle to prevent truck movement or the potential failure of the 12-ton jack stand. Employers should ensure that employees use wheel chocks and cribbing to prevent truck rolling or falling. Using chocks and cribbing in addition to the 12-ton jack stand would have prevented the truck from rolling, which is ultimately what caused the incident. Wheel chocks and cribbing use should be included in an Employer's LOTO procedure for maintenance items that require personnel to work under trucks.

Recommendation #2: Employers should develop LOTO procedures for specific maintenance items on equipment.

Discussion: Equipment listed on an employer's inventory list should have multiple LOTO procedures for the maintenance tasks required to service and upkeep equipment. One piece of machinery may only have a few maintenance items where hazardous energies can be controlled in the same way each time, but other pieces of equipment may have many different maintenance tasks that will require different energy controls for each task.

In this case, the decedent was working on replacing air canisters under the truck, which is a part of the braking system of the truck. Although the truck was off, and the air in the system had been released, the truck's transmission had been left in neutral instead of in gear, and the wheels had not been chocked, creating not only the potential energy of an elevated truck on a jack stand, but also the potential energy of the truck's ability to roll freely, which eventually led to the death. To ensure worker safety and prevent fatal injuries, cribbing or other alternatives should be utilized under the truck to provide support and additional protection against a truck falling from elevation. Devices such as chocks should be utilized under truck wheels to prevent the vehicle from rolling, and the truck should be left in gear which could help stop the wheels from rolling freely.

Since equipment maintenance items can vary in many ways even in the same piece of equipment, employers should develop individual LOTO procedures and list the steps to controlling hazardous energies for each maintenance item. Manufacturer maintenance manuals should be used as reference to create LOTO procedures where possible. If equipment does not have a maintenance manual, or maintenance tasks are not listed in a maintenance manual, employers should consult equipment manufacturers to determine best safety practices and LOTO requirements.



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Recommendation #3: Employers should ensure employees are using all required safety devices when performing maintenance tasks on equipment.

Discussion: During the PESH investigation, it was determined that the decedent had not used safety devices to properly secure the truck he was working on, including LOTO devices such as locks and tags for the key to the truck as well as the truck steering wheel. The key to the truck had been left in the cab of the vehicle, opening the possibility of unauthorized use of the truck while it was being worked on, which is contrary to the employer's LOTO program. Supervisors should ensure that all employees routinely use all methods available to secure equipment being worked on from unauthorized use, such as locking keys to vehicles being maintained in a lockbox, and ensuring that wheel chocks, cribbing, and other hazardous energy controlling devices are deployed while working around or under machinery that can fall and potentially injure employees in accordance with a comprehensive LOTO program.

Recommendation #4: Employers should train employees in LOTO procedures on specific pieces of equipment.

Discussion: During the PESH investigation, it was determined that employees had some general LOTO training but were not trained in controlling hazardous energies for various maintenance tasks regarding their vehicles and other pieces of equipment at the highway department. The most recent LOTO training on record was five years earlier in 2015 and did not address the specific employer's LOTO program or the equipment that is part of the employer's LOTO program.

The Occupational Safety and Health Administration (OSHA) training parameters require employers to ensure that employees are trained in how to correctly perform LOTO activities in line with an employer's LOTO program. If maintenance activities performed by employees deviate from an employer's LOTO program, retraining would be required. Retraining would also be required if an employee does not demonstrate knowledge in how to effectively perform LOTO according to the employer's LOTO program. All training is required to establish or reestablish employee proficiency and if necessary, address new or updated LOTO procedures. Over time, training efficacy in employees diminishes, and at the same time, employees come and go, and old equipment may be swapped out for new equipment. Frequent trainings and re-trainings ensure affected employees are competent in LOTO requirements for all relevant pieces of equipment on an employer's site.

Recommendation #5: Employers should conduct Job Hazard Analyses (JHAs) for specific tasks related to maintaining equipment.

Discussion: JHAs help employers highlight the potential dangers of specific maintenance tasks on equipment. Where LOTO procedures instruct employees on where to isolate hazardous energies on pieces of equipment, JHAs help determine the potential hazards of job activities, like equipment maintenance, to ensure that employees are aware of all potential hazards while offering solutions to help mitigate the potential hazard. In this case, the decedent had only used one jack stand under the passenger side rear axle wheel hub on Truck 22, and the floor of the garage bay where the decedent was working had a gradient that allowed the truck to roll. The chipper bar had also remained attached to the truck. A JHA would have discussed how to access the air brake canisters and what truck components should be removed to safely and easily access the part requiring maintenance. The dump box was in the raised position during the incident, which may have affected the center of gravity on the truck contributing to the truck rolling unexpectedly. While a LOTO procedure might direct an employee to address the hazardous potential energy of the truck falling off the stands by adding cribbing or other support, a JHA goes over the potential risks of elevated equipment and the surrounding

environment where the work will take place. A JHA would address the floor gradient as a safety risk and discuss the potential severity of injury, the likelihood of injury, and suggest methods to help mitigate the risk.

JHAs are meant to be discussed between employers and employees prior to taking on potentially dangerous tasks. Using and discussing JHAs help remind employees of the potential consequences of performing maintenance tasks and can help augment safety trainings by ensuring employees are thinking about the ways to perform a task safely before the work begins.

Recommendation #6: Employers should routinely inspect LOTO procedures to ensure methods for controlling hazardous energies are accounted for and updated.

Discussion: During the PESH investigation, it was determined that although the employer had a LOTO program and some LOTO procedures for various pieces of equipment, many newer pieces of equipment did not have LOTO procedures, and equipment that did have LOTO procedures had not been inspected or updated as required. Employers should ensure that all equipment requiring maintenance has associated LOTO procedures for each maintenance task, that LOTO procedures are checked and updated routinely to ensure all equipment has an existing procedure for each maintenance task, and that all equipment is accounted for in a LOTO program.

Recommendation #7: First responders should ensure proper equipment is used for extrication.

Discussion: During the PESH investigation, it was determined that first responders at the scene used a 2.5-ton floor jack to lift the truck enough in order to extract the decedent. The 2.5-ton floor jack was not suited to lift the weight of the truck from the decedent but was probably the closest nearby floor jack to the emergency responders, which is why it was used. The 2.5-ton jack was capable of lifting the truck enough to extract the decedent, but if it had failed before the victim could be removed, emergency responders would have not only lost time getting the victim out, but may have caused more damage to the victim, or created an unsafe scenario where the truck moved further, potentially injuring first responders in addition to the decedent.

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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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