

Kentucky Injury Prevention and Research Center  
Bona fide agent for Kentucky Department for Public Health  
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

## INCIDENT HIGHLIGHTS



**DATE:**  
April 8, 2024



**TIME:**  
7:54 a.m.



**VICTIM:**  
62-year-old non-Hispanic male



**INDUSTRY/NAICS CODE:**  
Other Concrete Product Manufacturing / 327390



**EMPLOYER:**  
Concrete Additive Manufacturer



**SAFETY & TRAINING:**  
Formal safety program



**SCENE:**  
Manufacturer parking lot



**LOCATION:**  
Kentucky



**EVENT TYPE:**  
Fall from height



**REPORT#:** 24KY022

**REPORT DATE:** July 31, 2024

## Manufacturing Laborer Falls from Elevated Pallet, Succumbs to Injuries

On April 8, 2024, a 62-year-old male manufacturing laborer was mixing concrete additive solution when he fell from a pallet elevated on a forklift. The victim succumbed to the injuries sustained in the incident.

[READ THE FULL REPORT>](#) (p.3)

## CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Working at heights without fall protection;
- Improper use of platform on a forklift;
- Lack of fall safe procedures; and
- Lack of proper personal protective equipment (PPE).

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## RECOMMENDATIONS

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

- Consider utilizing a drum handling device in lieu of working at heights;
- Consider modifying job procedures to prioritize the utilization of two employees when possible;
- Consider implementing an auditing process to ensure compliance with company procedures; and
- Consider requiring hard hats equipped with chin straps when working at heights.

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[Kentucky FACE Program](#)



# KENTUCKY

## State **FACE** Program

### Fatality Assessment & Control Evaluation

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#### Fatality Assessment and Control Evaluation Program

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of employer, employee, or any party involved.

This case report was developed by the Kentucky Fatality Assessment and Control Evaluation (FACE) Program. Kentucky FACE is a National Institute for Occupational Safety and Health-funded occupational fatality surveillance program with the goal of preventing fatal work injuries by studying the worker, the work environment, and the role of management, engineering, and behavioral changes in preventing future injuries. The FACE program is located in the Kentucky Injury Prevention and Research Center (KIPRC). KIPRC is a bona fide agent for the Kentucky Department for Public Health.

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## INTRODUCTION

On April 8, 2024, a 62-year-old male manufacturing laborer (victim) was adding a concrete additive solution into a commercial grade mixer, a task he completed on a routine basis. In the course of his duties, the victim fell from an elevated pallet on a forklift, striking the concrete surface below, which resulted in fatal injuries.

## EMPLOYERS

The employer specializes in the production of additives to enhance the performance and durability of concrete. The company, which was established in the late 1960s, employs approximately 20 people. The company has two manufacturing locations, both based in Kentucky.

## WRITTEN SAFETY PROGRAMS and TRAINING

The employer has an established safety program that begins with new hire safety training and orientation. The orientation training focuses on relevant Occupational Safety and Health Administration (OSHA) training specific to the functions performed by the employer. Examples given were forklift training, bloodborne pathogens, respiratory protection, and fall protection. Post-orientation, employees receive practical “on-the-job” training. On-the-job training is specific to job function and is conducted by a team member who has tenure with the company and has mastered the functions of the job. Toolbox safety discussions occur monthly to supplement the training program for all employees. Topics covered in the monthly discussions are often based on relevant issues at the time; heat stress training was provided as an example of a topic recently covered by the employer. After toolbox meetings are conducted, the employer utilizes flyers and postings as visual aids to help employees retain the information discussed.

## WORKER INFORMATION

The victim was a 62-year-old non-Hispanic male. The decedent was a high school graduate and had worked for the employer since 2017 as a plant worker. Prior to joining the company, the victim served with the United States military and retired after 21 years.

## INCIDENT SCENE

The incident occurred on a partially paved and level lot located at the rear of the additive manufacturer’s facility (photo 1). The facility itself, where the additives are produced, is an 18,000-square-foot metal building. The building sits on a 3-acre lot that is also utilized for parking and storage of polycarbonate tanks. The facility is in a largely industrial area outside the city limits of a major metropolitan area.

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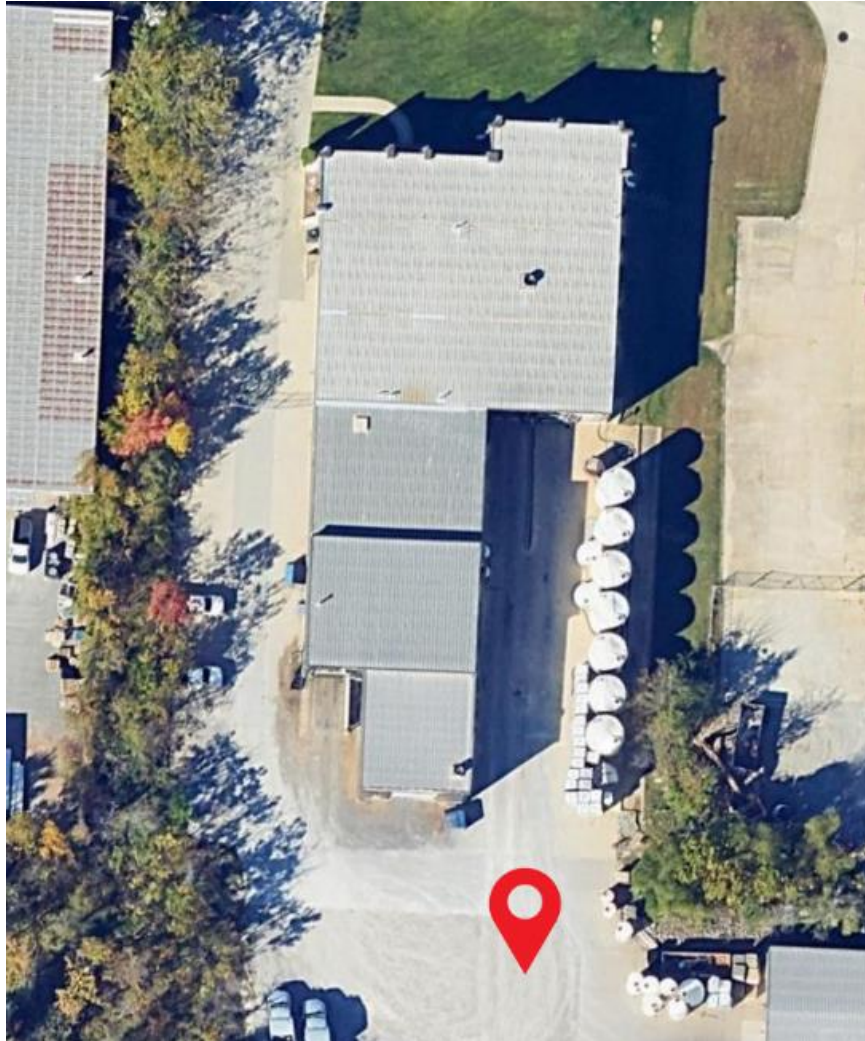


Photo 1. Overhead Google Earth image of manufacturing facility where the incident occurred. Red location maker indicates approximate location of the fall.

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## **WEATHER**

The weather on the day of the incident was approximately 57 degrees Fahrenheit, 74% humidity, with a 6-mph wind speed out of the southeast. The weather is not believed to have been a factor in this incident.<sup>1</sup>

## **INVESTIGATION**

On Monday April 8, 2024, a 62-year-old male manufacturing laborer (victim) arrived at work at 6:00 a.m., which was his normal reporting time. His typical shift was from 6:00 a.m. to 3:00 p.m., Monday through Friday each week. After arriving at work each day, the victim prepared concrete additives for customers. The manufacturer makes a variety of concrete additives, all to serve the specific needs of a particular customer. The day the incident occurred, the victim was tasked with the production of a viscosity modifier additive, a task he performed several times monthly. Due to the additive solution being proprietary, the specific contents cannot be listed; however, it required the victim to empty the contents of a 132-pound drum into a commercial grade mixer.

The commercial grade mixer sits approximately 5 feet from the concrete surface below. To access the mixer, the procedure in place at the time of the incident required employees to place the 132-pound drum onto a wooden pallet. Once on the pallet, the drum and pallet are lifted via forklift to the edge of the mixer. An 8-foot step ladder is then placed beside the elevated pallet, and employees climb the ladder to access the drum. From the ladder, the drum could be tilted forward to empty its contents into the mixer (photos 2 & 3). Although the process described above was the approved procedure the involved company had in place at the time the incident occurred, it required employees to improperly utilize [ladders](#).

However, it was discovered post-incident that employees were frequently standing on top of the pallet while emptying the drum, rather than utilizing the ladder. At approximately 7:54 a.m., while attempting to mix the contents of the drum into the mixer while standing on the pallet, the employee fell 4.5 feet from the pallet, striking the concrete surface below. Site security cameras did not catch the fall and the incident was not directly witnessed by other employees. However, an employee did catch the impact of the victim striking the surface below in his peripheral vision. The employee ran to the aid of the victim, who was initially responsive but going in and out of consciousness. A call to local emergency services was placed at 7:56 a.m.; an ambulance arrived 9 minutes later at 8:05 a.m. Emergency personnel transported the victim to a major Kentucky university medical center, where he succumbed to the injuries sustained in the incident the next day, on Tuesday, April 9, 2024, at 9:45 p.m.

## **CAUSE OF DEATH**

According to the death certificate, the cause of death was subdural hematoma with midline shift sustained in fall.



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Photo 2. Photo of commercial grade mixer, 132-pound product drum, ladder, forklift, and pallet, which were utilized when the incident occurred. Scene was reconstructed for investigation purposes. **Orange line** represents height of commercial grade mixer from the surface below. **Red line** represents height of the elevated platform the victim was standing on to the surface below. Photo property of Kentucky FACE.

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Photo 3. Photo showing additional angle. Photo property of Kentucky FACE.



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## 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. Kentucky investigators identified the following unrecognized hazards as key contributing factors in this incident:

- Working at heights without fall protection,
- Improper use of platform on a forklift,
- Lack of fall safety procedures, and
- Lack of proper PPE.

## RECOMMENDATIONS/DISCUSSION

**Recommendation #1: Consider utilizing a drum handling device in lieu of working at heights.**

Discussion: According to the National Safety Council, falls to a lower level were the third leading fatal workplace event in 2022, resulting in 700 deaths.<sup>2</sup> In the case of this incident, it was discovered post-incident that employees were frequently standing on top of an elevated wooden pallet, approximately 4.5 feet from the surface below, to empty the contents of the drum into the mixer. The most effective way to address risk is to eliminate them when possible. Employers performing similar tasks should consider purchasing and requiring employees to utilize a drum handling device (photo 4), which would allow the same task to be completed while eliminating the need to work from an elevated surface and thus the risk of a fall. A variety of drum handling devices are available; employers should assess the functionality of each and select the device that best fits their needs.



Photo 4. Photos showing various drum handling device options. Images obtained via Google search.



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***Recommendation #2: Consider modifying job procedures to prioritize the utilization of two employees when possible.***

Discussion: The involved company made alterations to its procedure shortly after the incident occurred to lower the risk associated with performing the mixing job task. The new procedure, demonstrated to FACE investigators during a site assessment, prioritizes utilizing two employees to complete the task, rather than one. As explained to investigators, standing on the pallet is prohibited. In lieu of utilizing a standard step ladder, the involved company purchased two platform ladders (photo 5) that are equipped with a guard rail system that offers fall protection to employees. The platform ladder on which employees stand measures 2.5 feet from the ground, and the guard rail extends 2.5 feet from the standing platform. Once the 132-pound drum is loaded onto the pallet, a forklift elevates the pallet to the mixer's edge. Once in place, the two platform ladders are placed on both the left and right side of the pallet (photo 5). Two employees, one on each ladder, work in unison to tilt the drum, emptying its contents into the mixer.

FACE investigators concluded that the new procedure significantly reduces the risk associated with the task for three primary reasons:

- The new ladder reduces the height at which the employees perform work from 4.5 feet to 2.5 feet,
- The new ladder offers fall protection via an integrated guardrail system, and
- The new procedure prioritizes the utilization of two employees, making the task less strenuous.

While the process reduces the risk associated with the task, it should be noted that if disregarded by employees, the elevated pallet is still accessible for employees to stand on.



Photo 5. Photo showing new ladders and process implemented by involved company. Photo property of Kentucky FACE.

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**Recommendation #3: Consider implementing an auditing protocol to ensure compliance with company procedures.**

Discussion: According to a company representative, the victim was standing on the elevated wooden pallet, which was intended for the drum only, not to support the employee. The original procedure that was in place when the incident occurred required that the employee stands on the step ladder, rather than on the elevated pallet. The victim was standing on the pallet on the day the incident occurred.

Implementing an auditing procedure can be a helpful activity to observe adherence to workplace policies, detect non-compliance, create coaching opportunities, and increase accountability. Audits should take place frequently and at regular intervals. Audits can be planned, random, or both. Both types of audits have pros and cons:

| <b>Planned Audits</b>   |   |
|---|---|
| Pros  | Cons  |
| Can be scheduled to ensure that all individuals demonstrate regular competency with policy and procedure.                 | Unable to determine behavior during the routine course of duties. |
| Scenarios can provide feedback on an individual’s ability to apply policy/procedure appropriately based on the situation. |   |

| <b>Random Audits</b>                            |   |
|---|---|
| Pros  | Cons  |
| Ability to assess adherence during normal work. | Requires larger number of audits to cover all shifts. |

Retraining and auditing should also take place whenever there is a change in policy, employee expectation, or equipment.<sup>3</sup>

To help prevent future occurrences, employers should consider implementing an auditing procedure to ensure compliance with the company’s implemented safety procedures.

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***Recommendation #4: Consider requiring hard hats equipped with chin straps when working at heights.***

Discussion: According to the death certificate, the cause of death was subdural hematoma with midline shift sustained in fall. A subdural hematoma occurs when a blood vessel near the surface of the brain bursts. Blood builds up between the brain and the brain's tough outer lining. In a subdural hematoma, blood collects immediately beneath the dura mater. The dura mater is the outermost layer of the meninges. The meninges are the three-layer protective covering of the brain. A subdural hematoma is life-threatening because it can compress the brain. Most subdural hemorrhages result from trauma to the head.<sup>4</sup>

Utilizing hard hats, specifically hard hats equipped with chin straps (photo 6), could be an effective way to reduce the likelihood of a head injury when working at heights. OSHA states that proper head protection is crucial in work environments with falling objects, the potential for struck-by injuries, overhead electrical hazards, and risks from slips, trips, and falls. Scientific understanding of head injuries and head protection technology continues to advance. Modern head protection, whether it's a safety helmet or a hard hat, varies in styles and levels of protection, allowing employers and workers to choose head protection appropriate for the job. OSHA's head protection standards state that there can be compliance through the 2009, 2003, and 1997 editions of the American National Standard for Industrial Head Protection (ANSI Z89.1), published by the International Safety Equipment Association (ISEA). The range of products available today allows employers and employees to select the right type of head protection for the job.<sup>5</sup> For tasks or jobs that involve working from heights, OSHA suggests considering head protection with chin straps to prevent the head protection from falling off.<sup>4</sup>

To reduce risks associated with working at heights, Kentucky FACE investigators suggest that employers consider requiring hard hats equipped with chin straps.



Photo 6. Hard hat options with chin straps. Photos obtained from Google image search.





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## REFERENCES

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## INVESTIGATOR INFORMATION

This investigation was conducted by Beau Mosley, Fatality Investigator, Fatality Assessment and Control Evaluation, Kentucky Injury Prevention and Research Center, University of Kentucky, College of Public Health.

## ACKNOWLEDGMENT

The Kentucky FACE Program would like to thank the involved company for its assistance with the completion of this report.

## PROGRAM FUNDING

The Kentucky Fatality Assessment & Control Evaluation Program (FACE) is supported by the National Institute of Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS), as part of cooperative agreement 5 U60OH008483 totaling \$1,601,266 with 0% financed with nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement by, NIOSH, CDC, HHS, or the U.S. government.