

**REPORT#:** 2023OR01

**REPORT DATE:** August 14, 2024

## INCIDENT HIGHLIGHTS



**DATE:**  
September 6, 2023



**TIME:**  
09:31am



**VICTIM:**  
63-year-old Native American/Hispanic male



**INDUSTRY/NAICS CODE:**  
Millwork/321918



**EMPLOYER:**  
Privately owned large size lumber mill



**SAFETY & TRAINING:**  
Inadequate training and enforcement of workplace policies



**SCENE:**  
Lumber mill warehouse near yard saw station



**LOCATION:**  
Oregon



**EVENT TYPE:**  
Struck by



## Lumber mill employee fatally struck by forklift—Oregon

### SUMMARY

On September 6, 2023, a 63-year-old male of Native American and Hispanic descent died from multiple traumatic injuries when he was struck by the load being carried by a forklift. The lumber mill employee was preparing to cut lumber for pallet assembly. He was standing in the lumber shed near his workstation when he was fatally struck by a forklift travelling southeast through the lumber shed. The employee was not visible to the forklift driver. [READ THE FULL REPORT>](#) (p.3)

### CONTRIBUTING FACTORS

**Key contributing factors identified in the investigation include:**

- Work station located close to forklift traffic
- Inadequate separation of pedestrian and forklift traffic
- Inadequate forklift controls to prevent collisions
- Limited visibility of workers in shaded work areas
- Unclear workplace policies

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### RECOMMENDATIONS

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

- Design workstations to eliminate exposure to forklift traffic
- Implement clear separation of forklift and pedestrian traffic
- Utilize forklift engineering controls for collision prevention
- Require high visibility personal protective equipment
- Provide clear workplace safety policies with training and enforcement [LEARN MORE>](#) (p.9)



# OREGON

## State **FACE** Program

### Fatality Assessment & Control Evaluation

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#### Oregon Fatality Assessment and Control Evaluation Program

*The Oregon Fatality Assessment and Control Evaluation (OR-FACE) Program is a project of the Oregon Institute of Occupational Health Sciences at Oregon Health & Science University (OHSU). OR-FACE is supported by a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH) (grant #U60OH012411) through the Occupational Public Health Program (OPHP) of the Public Health Division of the Oregon Health Authority. OR-FACE reports are for information, research, or occupational injury control only. Safety and health practices may have changed since the investigation was conducted and the report was completed. Persons needing regulatory compliance information should consult the appropriate regulatory agency.*

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OR-FACE supports the prioritization of safety interventions using a hierarchy of safety controls, where top priorities are hazard elimination or substitution, followed by engineering controls, administrative controls (including training and work practices), and personal protective equipment.



## INTRODUCTION

On September 6, 2023 a 63-year-old Native American/Hispanic male lumber mill employee was killed when he was struck by the load being carried by a forklift. At the time of the incident, the decedent was preparing to cut lumber for a pallet order. The workstation for this task included a yard saw and a pallet of lumber. The workstation was located inside a lumber shed between a forklift travel pathway and lumber storage area. The employee walked towards his workstation and stopped in the center of the lumber shed. While the employee was standing in this location, a forklift drove around the corner outside of the building to enter the same lumber shed. It was a sunny day, with the forklift driver facing southeast. The forklift driver did not see the employee standing in the forklift travel path just inside the lumber shed and the employee was fatally struck.

## EMPLOYER

The employer is a privately owned lumber mill located in Oregon. The company produces wood products including door and window frames, moldings, and custom products. The company also includes a department that builds custom and standard pallets, the decedent worked in the pallet department. The pallet department included a total of 9 employees.

The company employs over 1,000 workers in the state of Oregon. The largest company location was the facility where the incident occurred. This location includes approximately 800 employees and encompasses 16 production plants with a total of 23 buildings at the site, including storage and support departments.

## WRITTEN SAFETY PROGRAMS and TRAINING

The decedent received orientation training when he began working at the facility in 2019. Other training records for the employee included a training on ear bud use in 2020, and recent trainings on forklift safety, hearing conservation, and lockout/tagout (control of hazardous energy) in 2023.

The company provided a schedule of monthly safety topics that covered various topics including lifting safety, hazard awareness, safety equipment and apparel, heat and wildfire smoke, forklift and pedestrian safety, ladder safety, and accident prevention.

At the time of the incident there was not a documented policy regarding high visibility personal protective equipment requirements. It was reported that high visibility vests were required in lumber sheds, but this was mainly a verbal policy. A formal written policy and training were implemented after the incident.

The forklift driver involved in the collision had completed the required forklift certification involving classroom and skills proficiency. He had been a forklift driver for approximately 4 years, and had worked for the company for 8 years.

The company also included an active safety committee at this site as required by Oregon OSHA. According to the meeting minutes, the group met monthly and reviewed recent injuries and facility hazard inspections. They also discussed specific safety topics. It appeared from the records that the committee had high employee representation from different departments in the company.

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### WORKER INFORMATION

The decedent was a 63-year-old male of Native American and Hispanic descent with a high school level education. He had worked for this employer for approximately 9 years. He worked in the pallet department for this company for the duration of his employment.

At the time of the incident, the decedent was wearing a dark blue shirt, blue jeans, and boots. The decedent was also wearing earbuds, small personal listening devices worn inside the ear.

### EQUIPMENT

The equipment involved in this incident was a Hyster Forklift Model H155FT. This particular model has a maximum load capacity of 14,350 pounds and without a load, the forklift itself weighs 21,900 pounds. The tread width of this forklift was 72.6 inches. At the time of the collision, the forklift was carrying a load of two 12-foot-long lumber units. The height of the forklift load was 51 inches, 5 inches shorter than the backrest of the forklift.

This was a leased forklift and was not typically driven by the forklift operator involved in the incident. The company utilizes a total of 105 forklifts. Some of these include leased equipment primarily for business reasons and the cost of maintenance. This particular forklift was utilized as a back-up forklift.



**Image 1. Side and front view of the forklift involved in incident (courtesy of OR-OSHA).**

### WEATHER

The weather on the day of the incident was approximately 60°F at 9:00am, and reached a high temperature of 83°F that afternoon. It was a clear sunny day with few clouds. The weather was a factor in the incident related to visibility inside the lumber shed for the forklift driver. As the forklift driver drove around the outside corner of the building to enter the lumber shed, the driver was facing southeast with the sun shining directly towards him (as shown by **Image 2**, taken at

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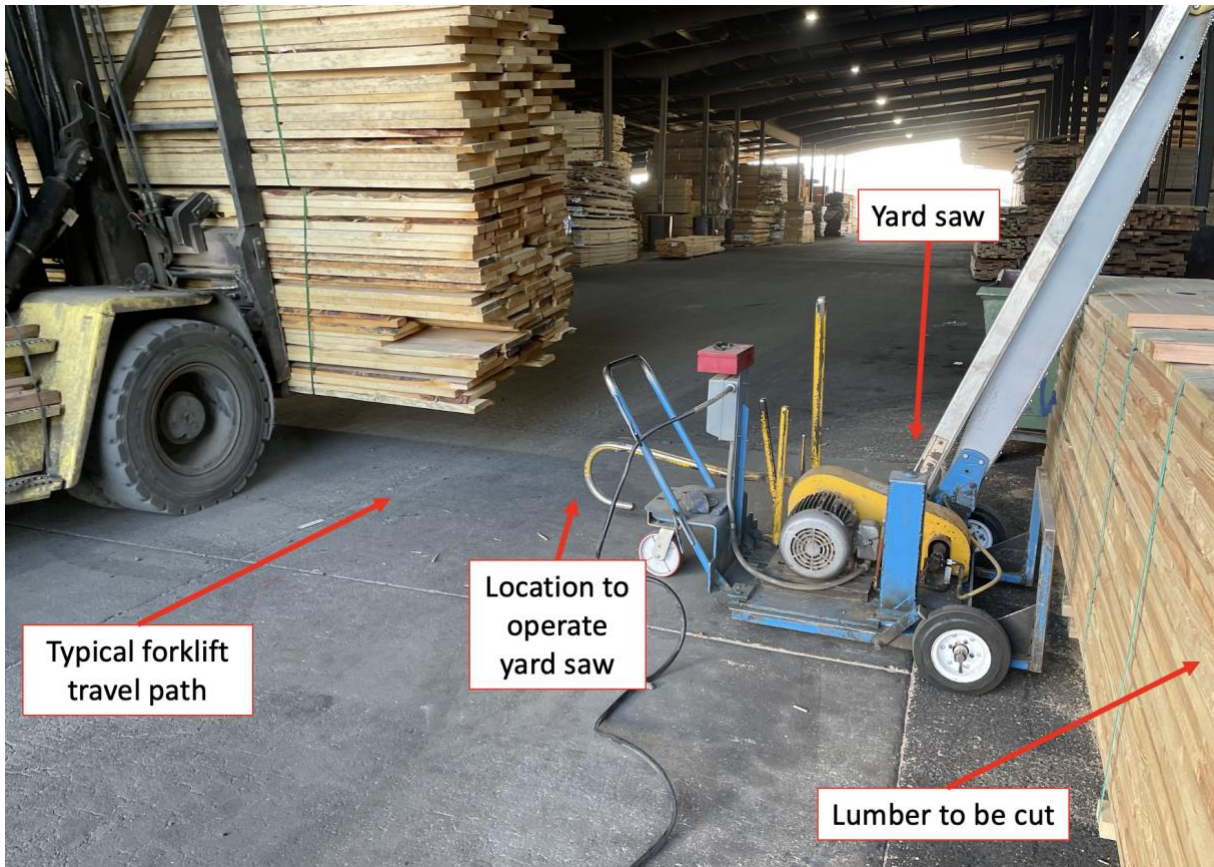
the same time of day during the Oregon OSHA investigation). The sun created a glare when facing this direction just prior to entering the shade of the lumber shed.



**Image 2. Glare of sun when entering lumber shed at approximately 9:30am on a sunny day (OR OSHA Investigation Report).**

### **INCIDENT SCENE**

The forklift collision occurred inside the lumber shed near the yard saw workstation. **Image 3** shows the yard saw workstation with lumber and the proximity to the typical forklift travel path. There was no visible outline on the floor of the lumber shed to show the forklift travel path, but multiple tire tracks can be seen. Although the decedent was not operating the yard saw at the time of the incident, he was preparing for this work and was standing close to the workstation in the forklift pathway.



**Image 3. Yard saw workstation for pallet department located inside lumber shed (photo: OR OSHA Investigation Report).**

### INVESTIGATION

The employee worked in the pallet department of the lumber company, which included a work area to build pallets and a yard saw station to cut the lumber. The yard saw is a device that includes a drive motor attached to a saw similar to a chainsaw, but longer. It is mounted on wheels for placement and portability. This was the usual work location for this employee where he typically made 50 to 70 cuts per day with the yard saw. On the morning of the incident, the employee had received a high priority (rush) order. He was preparing to cut lumber at the yard saw station, but first had to wait on another employee to lift the load of lumber for him. He exited the pallet department door and walked approximately 20 feet into the attached lumber shed where the yard saw station was located.

The pallet department was attached to the north side of the lumber shed with the yard saw workstation located just inside the lumber shed. The location of the yard saw was selected due to electrical availability in the facility. When the pallet department and yard saw station were originally located in this area, it was reported that there was much less forklift traffic in this particular location. Since this time, production improvements had been installed at the production plants. According to the company blog, the production plant located near the lumber shed had two optimizers installed

as production upgrades. The first one was installed in June 2021 and the second installed in July 2022. The optimizers included a scanner that fed two high-speed cut-off saws. These production upgrades increased the output of the production plant by 100,000 lineal feet per shift. The upgrades also had an impact on the pallet department by significantly increasing the amount of forklift traffic in this area. It was estimated that 10 forklifts typically travelled back and forth in this area throughout the work day. It was also reported that employees had become accustomed to working closely with the increased forklift traffic.

Prior to the employee exiting the pallet department to work at the yard saw station, the employee asked a coworker to assist him with his earbuds. Although the company had a written policy against wearing ear buds while working, there was limited evidence that this policy was consistently enforced. The employee's earbuds were found at the scene of the accident.

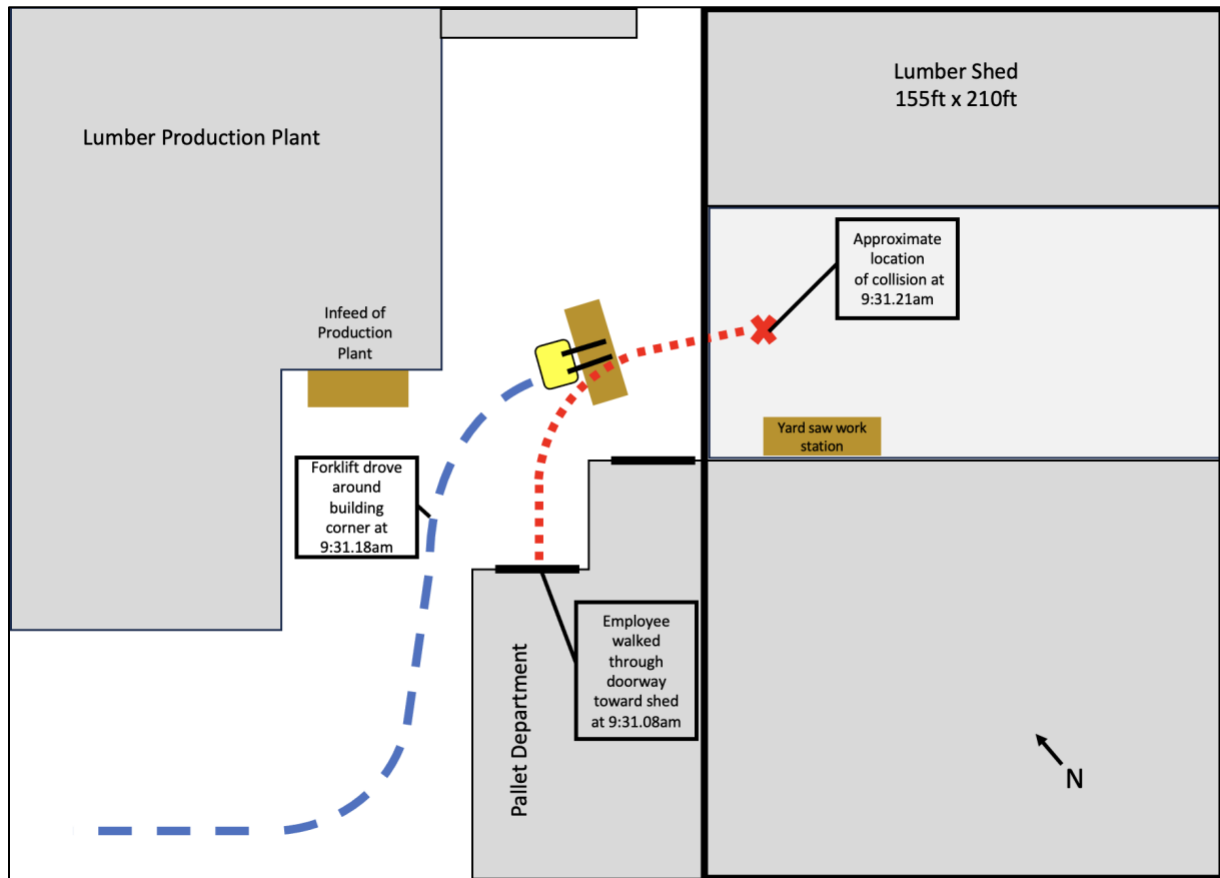
Video footage of the production plant infeed captured the moments prior to the collision. The employee left the pallet department at 9:31.08am and walked into the lumber shed. He stopped a few feet inside the shed in the typical forklift pathway. He was wearing a dark blue shirt and blue jeans and was within the shaded area of the lumber shed. He was not wearing any high visibility personal protective equipment. From the position of his feet in the video footage, it appeared that the decedent's back was turned toward the entrance to the lumber shed.

The company had a policy that employees should wear high visibility vests in certain areas of the facility, including working inside lumber sheds. However, the policy was not documented, and based on employee feedback it was inconsistently enforced. While the decedent had a high visibility vest, it was left hanging inside the lumber shed near the receiving office, located 37 feet inside the lumber shed.

At 9:31.18 a forklift drove around the corner of the building into the view of the camera. Prior to entering the lumber shed the forklift driver honked the forklift horn. The driver was facing the direction of travel. Although no speed was recorded, it appeared from the video footage that the driver was travelling at an appropriate speed. As the forklift driver traveled into the lumber shed, the load that was being transported on the forklift accidentally struck the decedent while he was standing near the entrance. The collision occurred out of view of the camera and took place approximately 11 seconds after the employee exited the pallet department door.

The diagram in **Image 4** shows the layout of the lumber shed, pallet department, lumber production plant, and the pallet department yard saw station. Based on the video footage, the diagram also shows the path of the employee and forklift.

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**Image 4. Diagram of incident based on OR-OSHA sketch, Google maps, and video footage (not to scale).**

The forklift driver was headed southeast as he was driving into the lumber shed. The forklift carried two 12-foot loads of lumber, but the loads did not obscure his vision. However, due to the direction he was driving and the weather, he was facing towards the morning sun as he drove into the shed. This limited his vision of the shaded area of the shed. The forklift driver reported that he did not see the employee standing in the forklift travel path. From the video footage, the collision appeared to have occurred at the moment that the driver transitioned from being in direct sunlight to the shade of the lumber shed. The transition from sunlight to low light conditions can further limit visibility, due to dark adaptation of the eyes. According to an article by Dr. Rafael Caruso, during bright light conditions low light photoreceptors (rods) in the eye are saturated and adjust slowly when transitioning from bright light to low light. Full visibility or dark adaptation of the eyes can take up to 20 to 30 minutes to reach the maximum adjustment (Caruso, 2007).

When the forklift driver felt the collision, he initially thought he had run over some lumber. He called for help immediately when he realized what had happened. Another forklift driver was travelling through the area a few seconds



after the collision and also assisted with the response, along with the site safety manager. Emergency services arrived onsite within 10 minutes, but the employee was already deceased.

### CAUSE OF DEATH

According to the medical examiner's report, the cause of death was multiple blunt force traumatic injuries sustained when he was accidentally struck by the forklift.

### CONTRIBUTING FACTORS

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

- *Work station located close to forklift traffic*
- *Inadequate separation of pedestrian and forklift traffic*
- *Inadequate forklift controls to prevent collisions*
- *Limited visibility of workers in shaded work areas*
- *Unclear workplace policies*

### RECOMMENDATIONS/DISCUSSION

#### ***Recommendation #1: Employers should design workstations to eliminate exposure to forklift traffic.***

Discussion: At the time of the incident, the yard saw workstation was in a location very close to forklift traffic, and potentially within forklift traffic depending on the length of the lumber the forklifts carried. During the yard saw workstation design, this location was selected based on the availability of appropriate electrical access. When first designated as a work station, there was little forklift traffic in the area. However, when facility upgrades were installed in 2021 and 2022, the production improvements resulted in an increase in forklift traffic through the lumber shed and an increase in hazard exposure. When updates or improvements are made at a workplace, it is important to evaluate the impact of these changes even to other parts of the facility.

In the hierarchy of controls, elimination is considered the most effective way to protect employees because it removes exposure to a hazard. This is typically the easiest to implement during the design phase of a project. Because the yard saw workstation is portable and included minimal requirements in the form of space and electrical, this station could have been relocated or redesigned to eliminate worker exposure to forklifts while operating the equipment.

#### ***Recommendation #2: When forklift and pedestrian traffic are both present in a location, employers should designate clear separation of pedestrian and forklift traffic pathways.***

Discussion: Forklifts and pedestrians' traffic were common throughout the facility site, but designated travel paths were not outlined in the lumber shed area. Oftentimes these traffic lanes are indicated by visual pathway outlines, such as painted lines, and are kept separated to prevent collisions. Traffic lane outlines also need continual maintenance, as traffic and environmental conditions can cause them to fade over time.

After the fatality at this location, the company implemented designated forklift and pedestrian barriers including concrete barriers in some areas to provide separation and protection of pedestrian traffic. This type of physical separation of traffic pathways is more effective than just outlines, because it can physically prevent crossover of traffic.

***Recommendation #3: Employers should implement engineering controls on forklifts for collision prevention.***

Discussion: According to the Bureau of Labor Statistics, 614 employees were fatally injured by forklifts from 2011 to 2017 (U.S. Bureau of Labor Statistics, 2019). This continues to be an issue with 73 forklift-related deaths in 2022 (National Safety Council, 2024). In recent years, there have been many advancements in the controls that are available for forklifts to help prevent collisions with pedestrians. Some of these options include:

- Anti-collision sensing technology: This new technology includes sensors that can detect objects near the forklift such as equipment or pedestrians. These sensors typically use ultrasonics, infrared, and/or radar technology to provide data to the operator (Cramer, 2024). The sensors are able to provide warning alarms, or even automatically stop the equipment to prevent collisions.
- Cameras for enhanced visibility: Cameras can be utilized to provide increased visibility of the forklift's surroundings. These camera systems are often wireless and can give the operator a better view of any blind spots and can even provide more information for load positioning and handling (Heyn Handling Solutions, 2023).
- Pedestrian warning technology: Lights and spotlights can be used to provide advanced warning to pedestrians that a forklift is approaching. One example of this is a blue spotlight that is mounted on the front and rear of the forklift. These spotlights shine on the ground approximately 15 to 20 feet in front of the equipment. As the forklift approaches a blind spot or corner, the light on the ground is intended to get the attention of pedestrians or other forklift operators nearby (Forklift Training Systems, n.d.)

***Recommendation #4: When there are any limitations in visibility, employers should require employees to wear high visibility personal protective equipment.***

Discussion: Due to the variability in light conditions, and indoor/outdoor work environments, high visibility personal protective equipment should be worn by all employees in this type of work environment. The company required high visibility vests for certain locations in the company, but did not consistently enforce this policy. In the video footage of the incident, the decedent was not wearing any high visibility personal protective equipment, but the forklift driver was. The footage also showed several other employees helping with response after the collision—some wearing high visibility vests and some were not. In the Oregon OSHA investigation, it was determined that the decedent had a high visibility vest but it was left hanging further inside the lumber shed near the receiving office.

Personal protective equipment use relies on employees to make the choice to wear the proper equipment. In order to ensure that the PPE is worn correctly, there must be clear requirements for use, regular training and communication, and enforcement. Enforcement must be consistent and can include incentives for using PPE properly, and also disciplinary action for not wearing PPE.

***Recommendation #5: Employers should provide clear workplace safety policies with training and enforcement of policies.***

Discussion: Workplace policies are often used as a form of administrative controls to protect employees. An example of this would be the workplace policies and rules regarding the use of personal listening devices, such as earbuds, in specific areas of the work environment. There are currently no OSHA regulations regarding this topic, but over the past few years there has been a growing safety concern (Nickols & Biehl, 2020). Using earbuds or other personal listening devices in certain work environments can reduce awareness to conditions and limit the ability to hear warning signals, and nearby equipment (Smith, 2023).

In order for workplace policies and rules to be effective they also need to be clearly and consistently communicated with employees. Like personal protective equipment, administrative controls like workplace policies should include training and also enforcement to ensure that they are being followed.

#### **ADDITIONAL RESOURCES**

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## INVESTIGATOR INFORMATION

This investigation was conducted by Rachel Madjlesi, MPH, CIH, OR-FACE Fatality Investigator at the Oregon Institute of Occupational Health Sciences at Oregon Health & Science University (OHSU). The report was reviewed by Dr. David Hurtado, Director of the OR-FACE Program, Jackie Boyd, MPH, OR-FACE Project Coordinator, and the OR-FACE Publications Review Panel.

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