



Fatality Investigation Report

OR 2013-05-1

Vineyard worker killed in fall from trailer

SUMMARY

It was the end of the day, workers were returning to the equipment shop after applying pesticide in the vineyard. On the crew was a 41-year old worker who had worked for the employer for five years. Witnesses reported that he was standing on a make-shift wooden platform that had been attached to a trailer mounted 400 gallon chemical tank containing pesticide. The make-shift wooden platforms were created and installed by the employer. The trailer was in tow by a tractor. The worker's baseball cap blew off while he was riding on the platform on the moving trailer. He stepped off the platform to retrieve his cap. Once back on the platform, or as he was stepping onto the platform, the worker lost his balance and fell to the ground. He sustained a fatal head injury in the fall when his head struck a large rock.



Figure 1. Tractor and trailer mounted 400 gallon chemical tank.

RECOMMENDATIONS

- **Employers should consult the manufacturer or a professional engineer before modifying, installing or retrofitting components of equipment.**
- **Employees should be trained on hazard recognition and control. Once trained they should be encouraged and reinforced for reporting unsafe conditions or practices.**
- **Training on the use of personal protective equipment (PPE) should include not only proper use, but also limitations including how ergonomics and mobility may be affected during use.**

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 April 2013, a vineyard worker was killed when he fell from a trailer being pulled by a tractor. The worker sustained a fatal head injury when his head struck a rock after the fall. OR-FACE was notified by Oregon OSHA of the incident. The OR-OSHA investigation documents/recordings, police report, medical examiner report, news reports, and death certificate were obtained by OR-FACE to complete this report.

The employer was an incorporated vineyard and winery. At the time of the incident the vineyard employed approximately 25 workers.

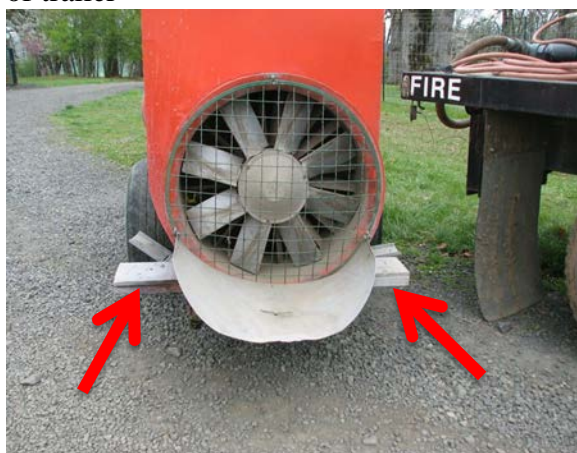
Three workers had been applying pesticide in the vineyard. The pesticide was contained in a trailer mounted chemical tank hitched to a tractor that pulled the tank through the vineyard (see Figure 1). Workers applied the pesticide by using hoses connected to the chemical tank and walked alongside the trailer while spraying the base of the grape vines. To allow the workers to ride the trailer to and from the field, the employer constructed a wooden platform toward the rear of the trailer (see Figures 2 and 3) and attached a nylon rope to the tank for use as a handhold by workers while on the platform. The crew finished their application and was returning to the equipment shop.

The worker was standing on the make-shift platform on the moving trailer when his baseball cap flew off. He stepped off the platform to retrieve his cap. Once retrieved, it is not known whether he stepped onto the platform and then lost his footing, or if he fell while attempting to step onto the platform. In the fall he struck his head on a large rock on the edge of the roadway and lost consciousness. The crew foreman called the vineyard manager who called



Figure 2. Close-up of wooden platform constructed by employer.

Figure 3. Wooden platforms from rear view of trailer



medical emergency service. The manager and workers performed CPR until emergency personnel arrived. The worker was pronounced dead at the scene.

INVESTIGATION

On the day of the incident three Hispanic vineyard employees were applying pesticide onto grape vines. The foreman operated a tractor that pulled a trailer mounted 400-gallon chemical tank that contained the pesticide. Two employees walked alongside the trailer (one on each side) applying the pesticide using hoses connected to the tank. Based on the volume applied and area covered, it was calculated that the tractor speed was set at approximately 3.4 miles/hour. It was mid-afternoon when they completed the application and were returning to the equipment shop.

The employer had previously modified the trailer by adding wooden platforms, one on each side of the trailer (see Figures 2 and 3). The intended use of these platforms was for workers to stand on and ride the trailer to and from the field as it was towed by a tractor. These platforms were constructed with 2-inch by 4-inch lumber approximately 48 inches long, placed beneath the fan housing on the back of the trailer and on top of the frame holding the tank. Attached to the top of the 2X4's were pieces of 12-inch by 8 ½-inch plywood. The top of the improvised platforms were approximately 17 inches from the ground. The employer stated that a nylon line approximately ¼-inch was added around the top of the framework to the fan to be used by workers as a handle while they were standing on the platform. Employee interviews indicated that standing on these make-shift platforms had been done many times without incident.

The day of the incident was clear without precipitation. The surface condition of the wooden platform was not affected by weather conditions, however, it is possible that the boots worn by the employees may have been wet from the spray process, or the platform may have been slippery due to chemical overspray during the day.

The worker wore a baseball cap that fell off his head while he was standing on the platform. Just prior to the incident the trailer was in tow along a paved roadway (see Figure 4). According to the police report, the foreman stopped the tractor for the worker to retrieve his cap and did not start movement until the worker returned to the platform. Another interview indicated that the worker was attempting to step onto the platform while the trailer was moving when he lost his balance and fell. The worker on the opposing platform did not see the fall but claimed to have heard the worker's head hit the pavement and then saw his body roll into the ditch. He immediately alerted the foreman who stopped the tractor and called the vineyard manager. According to this coworker, the fall happened a few seconds after the trailer started moving.

Employees wore chemical-resistant coveralls, goggles, and gloves while applying pesticide. Although it could not be determined from evidence



Figure 4. Landscape culvert and sloped surface on edge of roadway traveled.

at the scene or interviews, the worker's protective coveralls may have unexpectedly restricted his movement and affected his balance or gait when attempting to step onto the platform.

The vineyard manager contacted emergency services (911). When the worker stopped breathing, the manager started CPR until the medics arrived. As reported, he was wearing white coveralls that were unfastened to initiate CPR. The medics pronounced the worker dead at the scene.

CAUSE OF DEATH: Traumatic blunt force head injury.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Employers should consult the manufacturer or a professional engineer before modifying, installing or retrofitting components of equipment.

- The employer added the platforms to provide worker transportation to and from the field. The modification may have created additional hazards or altered safe operating parameters. Although not known, the wooden surface of the platform may have been slippery and contributed to the incident. Other consideration when modifying machines or equipment is whether the design capacity would be exceeded and structural stability and strength compromised. As required by OAR 437-004-3460(1), "The manufacturer or a professional engineer must direct modifications and additions that affect capacity and safe operation of industrial vehicles...."
- Oregon Administrative Rule 437-004-3410(3)(a)(c) specifically states, "persons are never to ride on fenders, axles, hitches, tongues, buckets, forks, drawbars or any other area not intended to carry passengers." The platforms were created for passengers; however, the trailer was not designed to carry passengers.

Recommendation #2: Employees should be trained on hazard recognition and control. Once trained they should be encouraged and reinforced for reporting unsafe conditions or practices.

- Falls remain one of the leading causes of injuries in the work place. To mitigate falls, employees should be trained on identifying walking/working surfaces that may result in slips/trips/falls. The recognized hazard, riding on equipment not intended for passengers should be included in the training. Employees have a unique exposure to and understanding of potential hazards in their daily work environment, so supervisors should actively encourage and recognize employees for identifying, removing, or controlling hazards.
- Training a multilingual, multi-cultural workforce requires more than language. Loosemore and Lee state, "even with professional translators it is estimated that up to 40% of the intended meaning in a message can be lost." Furthermore, they concluded that learning the language is not enough, "giving people a better understanding of their own culture as well as those with which they interact," will improve inter-cultural communications. OR-OSHA and Customized Workforce Training documents are provided as references for addressing language and cultural barriers in a multilingual and multicultural workforce.

Recommendation #3: Training on the use of personal protective equipment (PPE) should include not only proper use, but also limitations including how ergonomics and mobility may be affected during use.

- Wearing personal protective equipment may adversely affect the performance of tasks being undertaken. For example, gloves can affect grip strength requiring a worker to increase grip force (Wimer, McDowell, Xu, et. al, 2010). Chemical-resistant coveralls similar to what was worn by the worker can restrict range of motion. Boots have been shown to affect gait characteristics of men and women fire fighters (Chiou, Turner, Zweiner et al., 2008). The worker wore boots, although unknown, he may have slipped off the platform or misjudged his step and fell.

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