

Heavy Equipment Operator Crushed in Roll Over¹

California NURSE Project²

SUMMARY : CASE 291-002-01

A vineyard hired a heavy equipment operator to dig irrigation ditches and mix fertilizer. The operator used a back-hoe and front-loader (a broad shovel) mounted on a large tractor. His tractor had a *roll over protection structure*, a U-shaped bar over the driver's seat. The tractor's seat belt was broken and could not be fastened.

The operator finished his job mixing fertilizer, and drove his tractor down a dirt road that ran along a drainage ditch. He was traveling slowly. For unknown reasons the tractor slid into the drainage ditch and tipped over. Without a seat belt the operator fell out of his seat and into the ditch. The tractor was still turning over. The roll bar rolled over the operator, crushed his chest, and killed him.

How could this death have been prevented?

- Make sure all safety equipment is working before starting the work. The seat belt of this tractor was missing its metal insert and could not be fastened.
- Do not operate heavy equipment or motor vehicles without wearing a seat belt.
- Identify hazards in the work area. Apparently the operator was not aware of the drainage ditch.

BACKGROUND

On November 12, 1991 a local county coroner's office notified NURSE staff by telephone that a 67 year-old male Caucasian heavy equipment operator had been found dead by co-workers, his chest crushed under the Roll Over Protection Structure (ROPS) of a tractor. The

operator was employed by a heavy equipment contractor and was working in a vineyard, mixing fertilizer. He had been operating an industrial tractor with a front-loader bucket and a back-hoe attached to the rear. The ROPS is a U-shaped protective bar installed over the tractor seat to prevent the operator sitting in the seat from being crushed if the tractor tips over. The driver was not wearing a seat belt and so he was ejected from the seat and crushed by the ROPS.

The California Occupational Safety and Health Administration (Cal\OSHA) was not notified by the employer but conducted an investigation after learning of the fatality through the newspaper. A Senior Safety Engineer from the NURSE project visited the employer's offices on December 17, 1991 but the employer was advised by his attorney not to discuss the incident or allow the Safety Engineer to review his safety program. NURSE staff reviewed the Cal/OSHA records and the coroner's records.

The operator's employer was a heavy equipment contractor hired by the vineyard to assist in digging irrigation ditches and mixing fertilizer. The contractor employs approximately 15 workers, depending on the work available. The injured operator had been employed by this contractor for 25 years. The contractor's written safety program was reviewed by Cal/OSHA on November 13, 1991 and was found to be in compliance with Title 8 California Code of Regulations 3203--Injury and Illness Prevention Program. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: designated safety person responsible for implementing the program; mode for ensuring employee compliance; hazard communication; hazard evaluation through periodic inspections; injury investigation procedures;

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2. NURSE Project, California Occupational Health Program, 2151 Berkeley Way, Annex 11, Berkeley, CA 94704.

intervention process for correcting hazards; and a health and safety program.)

INCIDENT

(The following events were taken from the Cal/OSHA records and the County Coroner's records.) On November 11, 1991 at approximately 9:30 a.m. a heavy equipment operator was left in a vineyard to mix fertilizer using an industrial tractor equipped with a front-loader and a back-hoe. At approximately 11:45 a.m. vineyard employees driving along a road spotted the tractor lying on its side in a drainage ditch. They found the operator pinned under the ROPS of the tractor with his chest crushed.

The workers drove to the vineyard office and informed the foreman. The foreman told the secretary to call 911 and went to investigate. The fire department, the sheriff's department, the California Highway Patrol and the coroner's office responded to the call but the operator was obviously deceased, and was pronounced dead at the scene.

The incident occurred approximately 50 yards from the initial work area. The operator had been mixing fertilizer with the front-loader, and then drove the tractor down a private dirt road on the vineyard. The tractor was in first or second gear, and the estimated top speed was five miles per hour. For an unknown reason the tractor traveled off the side of the road, slid into a drainage ditch about three feet deep, and tipped nearly perpendicular to the roadway. The driver was not wearing his seat belt. He fell off the seat as the tractor overturned and was then crushed under the ROPS.

When the tractor was found the ignition was still on. The metal insert portion of the seat belt was missing, preventing the belt from being fastened. The back-hoe locking pin was not in place, although the back-hoe was positioned against the rear of tractor. The front loader bucket was pushed into the dirt. No signs were found of skidding or loss of control.

The cause of death as reported by the coroner was traumatic chest injuries. The driver's chest was crushed with multiple lacerations and contusions of both lungs and the heart.

PREVENTIVE STRATEGIES

1. Employers should insure that all protective equipment is in good operating condition. In this incident the seat belt was not operable because the metal insert portion opposite the buckle was missing.

If the seat belt had been functional, and had been used, then the death may have been prevented*. * **Title 8 California Code of Regulations 1596 (g): "Seat belts shall be adequate for the intended service and in good repair."**

2. All employees should wear seat belts when operating any heavy equipment or a motor vehicle. In this incident if the driver had been wearing a seat belt he would not have been thrown from his seat and crushed by the ROPS**. ** **Title 8 California Code of Regulations 3653 (a): "Seat belt assemblies...shall be provided on all equipment where rollover protection is installed."**
3. Employers should insure that their injury and illness program components are implemented. Although an effective injury and illness program includes a daily maintenance check and safety feature check on all equipment to be used, this was apparently not done. Equipment should only be used if it is safe and in good repair. This would include proper installation and use of seat belts on equipment with ROPS. This incident may have been prevented if the contractor had noted that the seat belt was not functional, and had it repaired before the machine was operated.
4. Employees should be aware of their area of operations. A heavy equipment operator should make an inspection of hazards in the work area before beginning operations. This operator had 25 years of experience and should have been aware of the hazards involved in working around drainage ditches. In this incident the driver may not have skidded into the drainage ditch if he had identified and remained aware of this hazard.

FURTHER INFORMATION

For further information concerning this incident or other agriculture-related injuries, please contact:

NURSE Project
California Occupational Health Program

Berkeley office:
2151 Berkeley Way, Annex 11
Berkeley, California 94704
(510) 849-5150

Fresno office:
1111 Fulton Mall, Suite 212
Fresno, California 93721

(209) 233-1267

Salinas office:

1000 South Main St., Suite 306

Salinas, California 93901

(408) 757-2892

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the California Occupational Health Program of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health. The program's goal is to prevent occupational injuries associated with agriculture. Injuries are reported by hospitals, emergency medical services, clinics, medical examiners, and coroners. Selected cases are followed up by conducting interviews of injured workers, co-workers, employers, and others involved in the incident. An on-site safety investigation is also conducted. These investigations provide detailed information on the worker, the work environment, and the potential risk factors resulting in the injury. Each investigation concludes with specific recommendations designed to prevent injuries, for the use of employers, workers, and others concerned about health and safety in agriculture.