



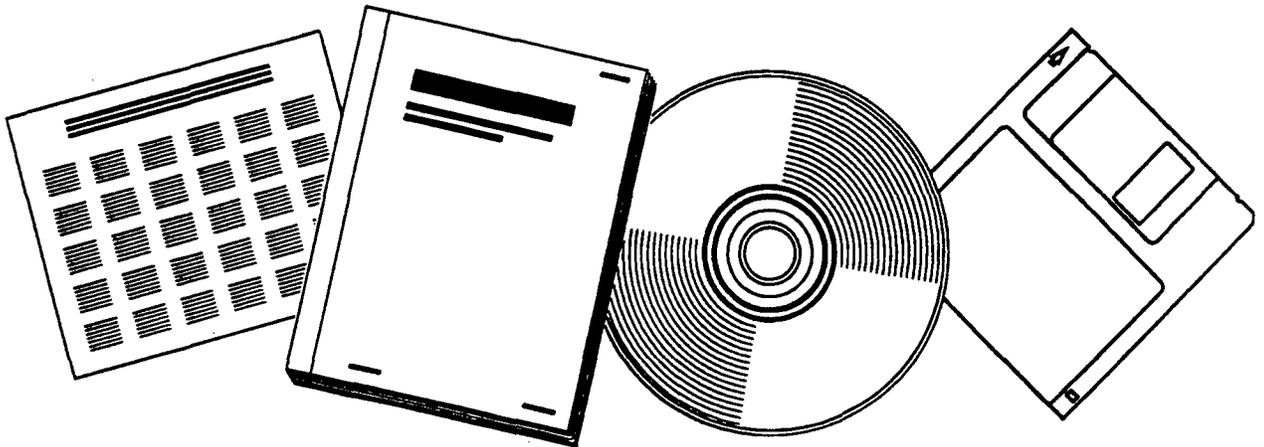
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FUTURE IS FARM SAFETY: A SAFE WORKPLACE MAKES A STRONG WORKFORCE

CALIFORNIA PUBLIC HEALTH FOUNDATION, BERKELEY

1995



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THE FUTURE IS FARM SAFETY

A Safe Workplace makes a Strong Workforce



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16. Abstract (Limit: 200 words) The NURSE program (Nurses Using Rural Sentinel Events) was intended to prevent work related injuries to agricultural workers and others exposed to hazards associated with the agricultural industry. A link was formed between the reporting of fatal and severe injuries in the agricultural work place to investigations identifying potential risk factors, making recommendations for injury prevention, and facilitating onsite prevention programs. Injuries were reported to the program by a surveillance system which included hospitals, emergency medical services, clinics, and medical examiners. Interviews were conducted with workers, coworkers and employers, and on site visits were made. Altogether, 35 different case reports were included. For each case, background information was provided, along with a description of the incident and preventive strategies, with summaries in Spanish. Cases included electrocutions, limb amputations, workers run over by tractors and farm equipment, tractor and farm equipment crush injuries, heavy equipment roll over, all terrain vehicle crash, lightning strikes, heat stroke, an exploding brake, spider bite, flying metal objects, explosion related burns, scalding, scalping, and falls.			14.	
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NURSE es un programa que trabaja con ranche-ros, trabajadores agrícolas y la comunidad, para prevenir lastimaduras y muertes asociadas con la agricultura.

El programa NURSE no esta enfocado en el enforzamiento de regulaciones.

Se dedica a la investigación y vigilancia. Toda la información que el programa obtenga se mantendrá en forma confidencial.

El Programa consiste de lo siguiente:

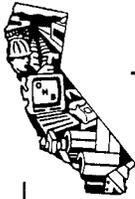
- 1.** Las lastimaduras son reportadas por medio de un sistema de vigilancia que incluye hospitales, servicios de emergencia, clinicas, médicos forenses e otros.
- 2.** En casos seleccionados se hacen entrevistas confidenciales al trabajador lastimado, compañeros de trabajo y a patrones. También se visitan ranchos seleccionados.
- 3.** Los beneficios de NURSE son recomendaciones gratis que son repartidas a ranche-ros, trabajadores agrícolas e otros interesados en la salud y seguridad en la agricultura.

NURSES Using Rural Sentinel Events (NURSE) is a program that works with farm workers, farmers, and the community to prevent injuries and deaths associated with agriculture.

*The NURSE program is a non-regulatory surveil-
lance and research program. All information
collected through the program is confidential.*

The components of **NURSE** are:

- 1.** Injuries are reported to NURSE by a surveillance system including hospitals, emergency medical services, clinics, medical examiners, and others.
- 2.** For selected cases confidential interviews are conducted with the injured worker, co-workers, and employers. Visits are also made on selected farms.
- 3.** The benefits of NURSE are free recommendations that are provided to farmers, farm workers, and others concerned with safety and health in agriculture.



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ABSTRACT

NURSES USING RURAL SENTINEL EVENTS (NURSE)

The Occupational Health Branch (OHB) has developed a model program for active surveillance linked with work-site specific and community-based prevention of occupational injuries occurring in the agricultural workers. The model links the reporting of fatal and severe injuries in the agricultural work place to investigations identifying potential risk factors, making recommendations for injury prevention, and facilitating on-site prevention programs, which integrate safety training, health promotion and education, and practical engineering solutions. Nurses are based in Fresno and Monterey counties which are major agricultural counties in California. Nurses facilitate reporting, coordinate investigations, and conduct work place specific and broad-based education and training programs. The ultimate goal of the project is to prevent work-related injuries to agricultural workers and others exposes to hazards associated with agriculture.

The basic approach used was to identify, select, and recruit the key emergency medical care providers, including emergency departments in hospitals and emergency medical services in each county to report injuries related to agriculture. Injured workers, co-workers, and employers are confidentially contacted and interviewed by nurses and other project staff. Nurses arrange work place visits, conduct work place investigations in conjunction with other safety and health professionals, and coordinate work place safety programs in collaboration with county agencies and health departments. Work place specific recommendations for preventive interventions are developed and disseminated. Demographic, health and risk factor exposure data are maintained in an automated database which is used for case management, descriptive epidemiology, statistical analyses, and report generation.

Nurses maintain ongoing contact with reporters in the surveillance system to give feedback on reporting and case follow-up. As part of an evaluation component, follow-up to employers is conducted to determine whether recommendations have been implemented, or to document barriers for implementation. Outreach is also conducted to medical, agribusiness, labor, governmental and community service organizations in each county and state-wide coalitions as well as other groups involved in agricultural safety.

Activities in year five will expand upon progress made in previous years and concentrate on disseminating information obtained through the surveillance system and investigations by submitting articles to peer reviewed journals, and conducting more community-based health promotion.



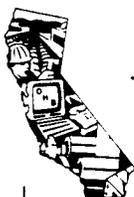
NURSE REPORTS

& Spanish Summary Sheets

- Fatal Electrocution in Poultry Processing Plant** (NURSE Report No.1)
Arm Amputated by Tractor Power-Take-Off (NURSE Report No.2)
Tractor Driver Crushed by Scraper-Roller (NURSE Report No.3)
Lightning Strikes Kill Two Field Workers (NURSE Report No.4)
Grape Picker Run Over by Bin Trailer, Breaks Leg (NURSE Report No.5)
Maintenance Worker's Arm Broken by Fruit-Tray Transporter (NURSE Report No.6)
Cantaloupe Picker Dies of Heat Stroke (NURSE Report No.7)
Heavy Equipment Operator Crushed in Roll Over (NURSE Report No.8)
Poisonous Spider Bites Vineyard Worker (NURSE Report No.9)
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Foot Amputated by Auger (NURSE Report No.11)
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Irrigator Worker in ATV Crash on Dairy Farm (NURSE Report No.14)
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Dairy Worker Crushed by Field Cultivator (NURSE Report No.19)
Teenage Irrigator's Finger Mangled by Pipe (NURSE Report No.20)
Foot Amputated by Fan in Fig Orchard (NURSE Report No.21)
Leg Partly Severed by Forklift Prong (NURSE Report No.22)
Raisin Picker Breaks Leg While Riding on Bin Trailer (NURSE Report No.23)
Farm Worker's Skull Fractured by Exploding Brake (NURSE Report No.24)
Tractor Driver's Head Crushed by Moving Tractor (NURSE Report No.25)
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Cotton Harvester Operator's Arm Mangled in Cotton Harvester Spindles (NURSE Report No.34)
Vineyard Worker Crushed by Metal Stakes (NURSE Report No.35)

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NURSE REPORT #1

FATAL ELECTROCUTION IN POULTRY PROCESSING PLANT

CDHS(COHP)-FI-92-005-01

Summary

A self-employed electrician was hired by a turkey plant to install an icemaker. The electrician began the job a day before anyone at the factory expected him. The maintenance workers at the factory had not been told to turn the power off that morning, and the electrician did not report to anyone at the factory before beginning work.

The electrician took off the cover of an electrical junction box, where factory equipment can be connected to a 440 volt power supply. Without testing to see if the power to the box was shut off, and without putting on his insulated gloves and face shield, the electrician touched a live connection and set off an electrical flash so strong that he thought the box had exploded. He was burned on the face, neck, chest, arms, his hair was burned off, and his fingerprints were found burned to the panel box. He died five days later from the burns.

How could this death have been prevented?

- If the electrician and the factory had followed a schedule so that maintenance and safety workers at the factory would know when he was working;
- If the electrician had followed the factory's safety program, which includes rules for disconnecting power and making sure it cannot be reconnected;
- If the electrician had checked that the power was off at the junction box;
- If the electrician had his own written safety program and standard operating procedures.

CASE 191-006-01

May 22, 1992

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.



BACKGROUND

A county coroner's office reported an electrical-related fatality at a poultry processing plant in California to NURSE staff in August, 1991. A Senior Safety Engineer from the NURSE project conducted an on-site investigation on January 23, 1992 and discussed the incident with the safety director of the poultry processing plant. Although officials of the plant had notified the California Occupational Safety and Health Administration (Cal/OSHA) of the incident, Cal/OSHA did not conduct an investigation because the injured worker was an independent self-employed contractor with no employees.

The incident occurred in a large poultry processing plant with a full-time safety supervisor. The plant's safety program had been reviewed by Cal/OSHA on September 12, 1991 and 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The injured worker was an independent contractor who did not have a written injury prevention program, and as a sole proprietor was not required to have one. The employer did not ask to review the independent contractor's program prior to the contractor beginning work, nor was the plant's program discussed with the contractor. The plant program does contain a written electrical lock out procedure for plant maintenance personnel.

INCIDENT

On August 30, 1991 at approximately 7:45 a.m. a local county ambulance service responded to a 911 call from a poultry packing plant. Upon arrival five minutes after the call, a 54 year old Caucasian male was found to have sustained electrical burns over approximately 20% of his body. First and second degree burns were present on his face, neck, chest, and both arms. There were third degree burns on the index and middle fingers of his right hand. His facial and scalp hair was burned. The injured worker was an electrical contractor hired to install an ice maker. He was first seen that morning by plant employees who found him burned. He was in the process of picking up his tools and he denied that he had been electrocuted. During transport to the Level One Trauma Center (which had burn unit facilities) the injured worker stated that a transformer had blown up in his face. Moist sterile dressings were applied to the burns during transport to the hospital. The worker arrived at the hospital within 23 minutes of the ambulance's arrival on the scene. After hospitalization he developed sepsis, renal failure, respiratory failure, and finally cardiac failure. He died five days after receiving the electrical burns. The cause of death reported by the coroner was complications of thermal burns with early



acute bronchopneumonia.

The incident occurred at approximately 7:30 a.m. This was one day prior to the agreed upon start-up day for his scheduled work. Since the work was not scheduled to begin that day the maintenance crew of the processing plant had not been notified to turn electricity off to the panel. The contractor removed the front of an electrical panel without disconnecting and locking out the power to the panel. The 440 volt panel box was fully energized at this time. Apparently the contractor touched the electrically live buss bar causing an electrical flash or arc to occur. The contractor was then thrown clear of the electrical contact by the explosion.

It is evident that the contractor was not wearing any protective equipment at the time of this incident, because his fingerprints were burned on to the panel box, his facial hair was burned off, and he suffered second degree burns on his face.

PREVENTION STRATEGIES

1. Electrical Lock out procedures should be complied with when an outside contractor is brought in¹. In this incident, the poultry processing plant had an electrical lock out procedure; if this procedure had been enforced by the employer, the contractor would not have come into contact with an energized box and his death would have been prevented.
2. The contractor should have had a written injury prevention program regardless of whether he was self-employed and had no employees. The program currently is not required of self-proprietary contractors by California law. However, if the contractor had had a written program which included lock out procedures prior to working on potentially energized systems, and if he had followed it, his death could have been prevented.
3. The employer should establish a standard operating procedure which ensures communication between all contractors and employees. The hiring company is responsible for coordinating contractor work with employee work. In this incident the employer's maintenance crew did not know the contractor was going to be working on the panel box, and therefore they did not turn off the electricity.
4. The injured worker was an electrical contractor with 33 years of experience, and should have been familiar with standard operating procedures for working around high voltage. His safety procedures should have included testing the electrical system to verify that it was de-energized, and wearing electrically insulated gloves and a face shield before touching a potentially energized panel box. If he had followed these procedures, his death could have been prevented.

1. Title 8 California Code of Regulations 2320 (Paragraph a) requires that power sources be disconnected.





REPORTE NURSE #1

UNA ELECTROCUCIÓN FATAL EN PLANTA PROCESADORA DE AVES

CDHS(COHP)-FI-92-005-01

Resumen

Una planta procesadora de pavos contrató a un electricista para instalar una máquina para hacer hielo. El electricista empezó a trabajar un día antes que el personal de la planta lo esperaba. A los trabajadores de mantenimiento no se les había dicho esa mañana que apagarán la corriente de electricidad y el electricista no se reportó con nadie en la planta antes de empezar el trabajo.

El electricista le quitó la tapa a una caja de conexiones eléctricas de la planta donde el equipo se puede conectar a 440 voltios de corriente. El electricista, sin antes probar la corriente para ver si estaba conectada, y sin ponerse los guantes de hule y máscara de protección, tocó una conexión. Esto hizo una explosión eléctrica tan fuerte que él creyó que la caja había explotado. El electricista tuvo quemaduras en el cara, pecho, nuca y brazos. El pelo se le quemó por completo y la yemas de los dedos quedaron en la caja de conexiones. A los cinco días el electricista murió a causa de las quemaduras.

¿Cómo se hubiera podido prevenir esta muerte?

- La planta y el electricista deberían haber seguido un horario. Los trabajadores de mantenimiento y de seguridad deberían haber sabido a qué hora se iba a encontrar trabajando.
- El electricista debería haber seguido el programa de seguridad de la planta, el cual incluye reglas para desconectar y volver a conectar la electricidad.
- El electricista hubiera revisado para asegurarse de que la electricidad no estaba conectada.
- El electricista hubiera tenido su propio programa de seguridad y normas de funcionamiento.

CASO 191-006-01

22 de mayo 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #2

ARM AMPUTATED BY TRACTOR POWER-TAKE-OFF

CDHS(COHP)-FI-92-005-02

Summary

A farm laborer was feeding the cows on a dairy farm. He drove a tractor which pulled a feed wagon. Inside the wagon a large metal screw (or auger) turned, mixing the feed and pushing it out. This screw in the wagon was connected by a driveshaft to the *power-take-off* unit at the back of the tractor. The driveshaft spun rapidly between the tractor and the wagon, and was not covered or guarded.

The worker got off his tractor to check the driveshaft, leaving the tractor idling and the shaft still turning. When he reached across the shaft to pull a lever on the tractor, his shirt sleeve was caught by a joint in the shaft. The worker was wrapped around the shaft, his arm was ripped almost completely off, and his neck was fractured. The worker survived, but lost his arm.

How could this injury have been prevented?

- All power take off units and shafts must have guards, shields, and sleeves.
- Check equipment before using it.
- Turn the power off and wait for the machine to stop moving before fixing it.
- Give workers safety training.
- Do not wear loose fitting clothing around machinery.

CASE 191-012-01

May 22, 1992

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.





BACKGROUND

In December, 1991 a California Occupational Safety and Health Administration (Cal/OSHA) district compliance office reported to the NURSE project that a dairy farm employee's left arm had been amputated in a work-related injury. The incident occurred while the dairy farm laborer was driving a tractor pulling a cattle feed wagon. Four days after the incident the dairy owner notified Cal/OSHA, who conducted an investigation within a few days. A nurse from the NURSE project interviewed the injured worker in the hospital on January 22, 1992, and a Senior Safety Engineer, epidemiologist, and nurse from the NURSE project conducted an on-site investigation on February 13, 1992. The NURSE staff discussed the incident with the owner of the dairy and took photographs of the feed wagon and other equipment with the employer's consent.

The incident occurred on a dairy that has approximately 500 cows and 20-25 calves. The staff consists of two members of the family that owns the dairy, five full-time employees, and two summertime employees. This is a relatively small dairy in which the farm laborers performed a variety of tasks, including tractor driving. At the time of the incident the dairy had no written injury prevention program, no safety training, and no designated person responsible for safety. Therefore, the owner was not 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

INCIDENT

On December 22, 1991 at approximately 8:00 a.m. a 30 year old male Portuguese farm laborer was driving a farm tractor which was pulling a dairy feed wagon. The power take off unit at the rear of the tractor was driving the feed dispensing auger system inside the feed wagon. (A power take off unit (P.T.O.) is an extension of the tractor transmission shaft used to power implements with the tractor engine.) This is a common method of feeding the dairy cows by using the auger to mix the feed and push the cattle feed out. The P.T.O. was apparently not functioning correctly, and the employee left the tractor engine idling and climbed off the tractor to check the attachment. The employee was standing next to the P.T.O. when he turned to reach up and pull the hydraulic lever on the rear of the tractor which engages or disengages the P.T.O. At this time his left shirt sleeve was caught on the rotating shaft of the P.T.O. The employee was wound around the P.T.O shaft as it rotated. The rotation of the shaft wedged him into the metal frame around the P.T.O. shaft and sheared his arm almost completely off. He also hit his head on the metal frame, receiving a 2 centimeter laceration on his scalp near the back of his head, and a cervical fracture. The tractor engine stalled at this time because it was idling at low speed and jammed by the body of the farm laborer. He lost consciousness for an



unknown length of time; when he regained consciousness he called for help and was found by co-workers. Employees at the dairy called the local ambulance service and then disconnected the P.T.O shaft in order to extricate the injured worker's arm. At this time his left arm almost completely detached about half way between his shoulder and elbow, remaining connected only by skin and muscle.

The ambulance crew immobilized his spine, splinted his arm, gave oxygen, started an I.V. and transported him to the emergency department of the local hospital. He was stabilized and transferred four hours later by helicopter to a microsurgery medical center 200 miles from the incident to have his arm reattached. Because of the extensive damage and loss of tissue to his arm, reattachment was not attempted and the arm was surgically amputated approximately six inches below his shoulder. Currently, the employee is in rehabilitation and is planning to return to work at the dairy.

PREVENTION STRATEGIES

1. The shaft and universal joints of the P.T.O. should be guarded by commercially available shields which cover moving parts. This P.T.O. was not shielded at the time of the incident, which is a violation of California law¹ and recognized safety practice, in this case leading directly to the amputation of the worker's arm. At the time of our investigation, the dairy owner had purchased and installed guards on the P.T.O. of the involved tractor. If the P.T.O. shaft had been guarded at the time of the incident, the worker's sleeve would have not been caught and he would not have lost his arm.
2. All equipment should be checked prior to beginning daily work activities. This allows the worker to make sure that all equipment is working correctly, before any work is initiated. A regular check of the tractor and feed wagon prior to its use would have identified the problem of the malfunctioning P.T.O. The worker could then have had this fixed before trying to use it.
3. The design of the tractor permitted the driver to reach behind while still in the seat to pull the lever for the P.T.O. Therefore, he should not have tried to reach the lever from the ground. Because he was standing near to the rotating shaft while he was attempting to adjust the P.T.O. he came into contact with the rotating shaft. If he had remained in the seat this would not have occurred.
4. Workers should disconnect the power source and wait for all machine movement to stop before servicing equipment.² If the employee needed to leave the tractor, he should have turned the tractor engine off prior to leaving the tractor seat. He would not have come into contact with the rotating P.T.O. shaft if he had complied with this regulation.
5. This worker had only been working at this dairy for 3 months although he had worked



at different dairies for approximately 10 years. Since he had begun working at this dairy, he had received no safety training related to equipment or job tasks or hazard identification.³ If he was trained on how to recognize and avoid hazards he might not have lost his arm.

6. This incident occurred because loose clothing worn by the worker was caught in the rotating P.T.O. shaft. If the worker had better fitting clothing this incident would not have occurred.⁴ The owner of the dairy was wearing a loose shirt at the time of this investigation, which indicates that he still did not recognize this as a hazard. This is an inexpensive and relatively simple way of preventing machinery entanglement.

-
1. California Code of Regulations T8 3440 (subparagraph c) requires that all P.T.O. units and drivelines be guarded.
 2. California Code of Regulations T8 3441 Paragraph a (subsection c) requires that power sources be disconnected and machine movement stopped before servicing equipment.
 3. California Code of Regulations T8 3383 (subparagraph b) requires workers to receive safe operating and servicing instructions at the time of their initial assignment.
 4. California Code of Regulations T8 3383 (subparagraph b) requires that loose clothing that could be entangled in machinery should not be worn.



REPORTE NURSE #2

UN BRAZO ES AMPUTADO POR UN EJE

CDHS(COHP)-FI-92-005-02

Resumen

Un trabajador estaba dándole de comer a las vacas en una lechería. El manejaba un tractor que jalaba una carreta con alimento para los animales. Por dentro, la carreta contiene una barrena muy grande que revuelve el alimento y lo empuja hacia afuera. La barrena está conectada por una unidad llamada el EJE. El eje se encuentra en el trasero del tractor. El eje voltéaba rápidamente en medio del tractor y la carreta, y no estaba cubierto o tapado.

El trabajador se bajó del tractor para examinar el eje, dejó el tractor prendido, el eje continuó volteando rápidamente. Cuando se estiró a través del eje para jalar una palanca que se encontraba en el tractor, la manga de su camisa fue atrapada en una coyuntura del eje. El trabajador fue envuelto alrededor del eje, su brazo fue casi completamente arrancado de su cuerpo y su cuello fracturado. El trabajador sobrevivió pero perdió su brazo.

¿Cómo se hubiera prevenido esta lastimadura?

- Todas las barrenas y ejes tienen que estar cubiertas con un resguardo.
- Todo trabajador debe de examinar su equipo antes de usarlo.
- Apague toda maquinaria y espere a que no tenga movimiento antes de que trate de componerla.
- Dele a todo trabajador entrenamiento de seguridad.
- Nunca use ropa suelta alrededor de maquinaria.

CASO 191-012-01

22 de mayo 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en la agricultura.





NURSE REPORT #3

TRACTOR DRIVER CRUSHED BY SCRAPER-ROLLER

CDHS(COHP)-FI-92-005-03

Summary

A tractor driver was towing a scraper and a roller through a walnut orchard. The ground in walnut orchards is graded and packed in this way before the nuts are harvested. The driver was probably looking over his shoulder to guide the equipment he was towing when he drove under a low tree branch. The branch knocked him off the back of the tractor. The tractor continued moving forward and dragged the scraper and then the roller over the driver. His chest was crushed and he bled to death on the scene.

How could this death have been prevented?

- By trimming the branches along the rows where the tractor is driven.
- By checking the rows for low branches before driving the tractor down them.
- By equipping the tractor with a roll-over protection device, cage, or shield to deflect low-lying branches.
- By requiring the tractor driver to wear a seat belt.
- By having an automatic shut-off so that a tractor without a driver cannot move forward.

CASE 191-010-01

May 22, 1992

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BACKGROUND

A California Occupational Safety and Health Administration (Cal/OSHA) district compliance office reported a tractor-related fatality at an orchard in California to NURSE staff in December, 1991. A Senior Safety Engineer from the NURSE project conducted an on-site investigation on December 18, 1991 and discussed the incident with the manager of the farm. The Cal/OSHA report and photographs of the incident scene were obtained from the local Cal/OSHA office with the farm owner's consent.

This incident occurred in a large farm corporation with 40 full time employees and a full-time designated safety director. The farm's primary crop is walnuts. After the incident the Cal/OSHA inspector reviewed the corporation's written injury prevention program and noted that it complied 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

INCIDENT

On August 14, 1991 at approximately 5:00 p.m. a 35 year old male Hispanic farm tractor driver sustained a fatal injury after being knocked off the tractor he was driving and run over by a scraper and roller combination he was towing behind the tractor. The tractor driver was working alone, preparing the ground in a walnut grove prior to mechanical harvesting of the walnuts. The ground must be as level as possible for the walnuts to be swept up after they are mechanically shaken from the trees. The tractor driver wore safety glasses and a baseball style cotton hat. The estimated speed of the tractor was 1½ miles per hour. Apparently the driver looked back over his shoulder in order to check the scraper and roller and was struck on his head by a low limb, which knocked him off the tractor. He was then rolled over by the scraper and then the roller. A tree with a set of low lying branches which were extending into the work row between the trees was identified as the possible object that hit the driver; these branches were in the direct path of the driver and were low enough to knock him off the tractor. One limb was torn from the supporting branch and was discolored where he must have struck his head.

The driver was found dead at the scene at around 5:45 - 6:00 p.m. by co-workers who noticed his vehicle was still parked outside the farm shop. His body was found 30 feet down the row from the low lying branches. The tractor was further down past the location of the driver. The tractor was not running but the ignition was on and it was in first gear.

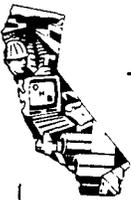




A deputy coroner pronounced the tractor driver dead on the scene. The autopsy revealed multiple rib fractures which had lacerated the driver's liver and caused him to bleed to death. (Exsanguination from multiple liver lacerations.) His neck was also dislocated.

PREVENTION STRATEGIES

1. The work environment (i.e., the orchard) should be free of hazards for anyone working there. Part of routine orchard maintenance includes trimming back the trees; these trees had their branches near the rows trimmed and tipped in early June or July (six weeks before the incident). However, because of the weight of the walnuts some branches were hanging down into the rows of trees. One of these low lying branches was low enough to knock this tractor driver off. After this death, the farm owner in this incident required that employees carry a small saw on the tractor and stop and cut back limbs which overhang the rows. If this procedure had been initiated and followed by this tractor driver, he might not have been knocked off of the tractor and subsequently killed. An alternative approach would be to require the driver (or another employee) to walk through the rows and cut off branches before the tractor entered that row.
2. Tractor drivers should be protected from being struck by low lying limbs and branches when driving through an orchard. The California Code of Regulations has a special section on Roll-over Protection Structures¹ which permits low-profile tractors (i.e., 18" or less from ground to transmission) used for work in an orchard, farm building, greenhouse, etc. to not have a rollover protection system (ROPS). A ROPS on this tractor could possibly have deflected the branch and prevented the driver's death. After the death discussed in this incident the farm owner designed and built a steel driver's cage with steel mesh screen onto one tractor. This tractor was tested by employees and subsequently modified to be more acceptable to the tractor drivers. This became the model for a second cage which was constructed for the tractor involved in this incident. Because this tractor was retrofitted with a rollover protection system the cage was clamped to a portion of the ROPS and welded to the tractor frame. A seat belt was installed at the time of the ROPS as required by state law².
3. Fiber glass shields are available commercially and may be installed on tractors to prevent drivers from being hit by branches. However, these are not popular with farm owners because they do not last more than one growing season. This demonstrates the importance of the acceptability of an intervention. It is becoming more common for growers to design and build cages for the driver because of the lack of acceptable commercially manufactured devices.
4. When a rollover protection system is not installed a seat belt is not mandated³. However, in this incident if the driver had been wearing a seat belt he would not have been knocked off of the tractor and run over by the scraper and roller even if he was



hit by the branch. Therefore, it is recommended that all employers install, and maintain in good working condition, seat belts and ROPS on all tractors. Employees should be required and educated to always use the seat belt while driving the tractor.

- 5. This death occurred because after the driver was knocked off the tractor he was run over by a scraper and roller being pulled behind the tractor. Once the driver was knocked off, the tractor moved ahead by itself. If the tractor had a mechanism where by the tractor would stop when a driver is not in the seat, the driver would not have been run over and been fatally injured.
- 6. The driver was struck by a branch while he was looking behind to check the operation of the roller and scraper as it moved through the rows of the orchard. This operation is typically done alone and requires frequent checking of the towed implement. In this incident if the driver had a rear view mirror which he could use to check the towed implement without turning his head he may have seen the low branch and not have been knocked off and subsequently run over.

=====

- 1. California Code of Regulations T8 CCR 3651 Agricultural and Industrial Tractors (a) Exceptions.
- 2. California Code of Regulations T8 3653 - Seat Belts.
- 3. California Code of Regulations T8 3653 - Seat Belts.



REPORTE NURSE #3

ESCREPA Y RODILLO PRENSAN A UN TRACTORISTA

CDHS(COHP)-FI-92-005-03

Resumen

Un tractorista jalaba una escrepa por una huerta de nueces. El suelo de la huerta se nivela con la escrepa y rodillo antes de empezar a pizcar las nueces. El tractorista pasó por donde había una rama baja la cual lo tumbó de su asiento hacia atrás y al suelo. El tractor siguió en marcha arrastrando la escrepa y el rodillo sobre el tractorista. Es muy probable que cuando el incidente sucedió el tractorista se encontraba mirando sobre su hombro para poder guiar el equipo que jalaba. El pecho del tractorista quedó destrozado, y murió desangrado en el lugar de incidente.

¿Cómo se hubiera podido prevenir esta muerte?

- Las ramas se deben de podar en los surcos por donde va a pasar el tractor.
- Revise que no queden ramas bajas cerca de los surcos antes de pasar el tractor.
- El tractor debe de tener equipo de protección, por ejemplo un arco de seguridad.
- Exiga que el tractorista use el cinturón de seguridad.
- El tractor debe de tener un cierre automático para prevenir la marcha sin tener chofer.

CASO 191-010-01

22 de mayo 1992

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NURSE REPORT #4

LIGHTNING STRIKES KILL TWO FIELD WORKERS

CDHS(COHP)-FI-92-005-04

Summary

Lightning strikes killed two farm workers who were picking and hoeing lettuce during a thunderstorm. They worked on crews about fifteen miles apart. One crew was leaving the field because of the lightning, when one of the last workers out was struck by a lightning bolt. He died immediately of a heart attack.

The second crew had taken shelter in a bus during the storm, but when the rain stopped they returned to the field. A worker was bent over hoeing lettuce when he was struck. The lightning strikes continued, and paramedics had trouble reaching the worker and getting him to the ambulance. The worker died in the hospital from burns.

How could these deaths have been prevented?

- The foremen should have stopped work during a lightning storm which spread over many miles. Both foremen attempted to work during some part of the storm.
- One person cannot judge dangerous weather conditions. Foremen should use portable weather radios or the cable weather channel.
- Both workers had immediate heart attacks when struck by lightning. Every field work crew should have one person certified in Cardiopulmonary Resuscitation (CPR).

CASES 291-003-01, 291-003-02,
291-009-01, 291-009-02, 291-009-03

May 22, 1992

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BACKGROUND

NURSE staff identified two lightning-related deaths on two different lettuce farms in California through newspaper and weather reports in September, 1991. The two deaths occurred in two separate cloud to ground lightning strikes in locations about 15 miles apart. The strikes happened about 35 minutes apart during a thunderstorm in which over 2,000 strikes to ground, during a 24 hour period, were recorded by the local gas and electric company in the eastern edge of a valley surrounded by low mountains (see attached maps). Lettuce field workers (pickers and hoers) working for two different employers (both farm labor contractors) were involved in these two incidents. A Senior Safety Engineer, a nurse, and an epidemiologist from the NURSE project discussed the incident with one of the farm labor contractors on February 7, 1992. The other farm labor contractor declined to discuss the incident due to pending litigation. The California Occupational Safety and Health Administration (Cal/OSHA) was notified of both deaths by the local emergency medical services who responded. Cal/OSHA conducted investigations of both fatalities.

Farm labor contractors are used by some farm owners and operators of large corporate farms in California to recruit, train and manage workers. Information on one farm labor contractor's safety program (Incident 1) was reviewed by Cal/OSHA on September 9, 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.) This farm labor contractor employs approximately 110 casual workers and 100 seasonal workers.

INCIDENT 1.

On September 6, 1991 at approximately 8:20 a.m., during a period of rain accompanied by occasional lightning, there was a lightning strike in a lettuce field. At this time most of the workers had already left the field at the request of the foreman due to the weather conditions (rain and lightning) and because the field was extremely muddy. However, three workers were still in the process of leaving the field when one worker was struck by lightning; co-workers noted he was unresponsive after being struck. The local emergency medical services responded to the 911 call from the field crew.

Upon arrival (approximately 20 minutes after the injury occurred) they found a 22 year old Hispanic male in cardiac arrest after being struck by a lightning bolt which hit the left side of his head, as indicated by singed hair, second degree burns extending from the top of his head to his ear, and a focal third degree burn which penetrated his top left ear,



passed through his body, and exited at the midline of his lower abdomen as indicated by a half inch diameter zone of third degree burns and charring of the skin. The fire department and county EMS paramedics initiated CPR, and transported him (approximately 26 minutes later due to a lengthy extrication) to the local emergency department where he was pronounced dead. Two female workers who were walking beside him were knocked down by the lightning. They were transported by EMS and treated at the local emergency department. They were not admitted, due to the minor nature of their injuries.

The cause of death reported by the coroner was cardiac arrest secondary to lightning strike.

INCIDENT 2.

On September 6, 1991 at approximately 7:20 a.m., during a period of rain accompanied by lightning, there was a lightning strike in a lettuce field where workers were hoeing fields to remove weeds from between the lettuce rows. The hoeing crews had initially been called out of the fields by the foreman until the rain stopped. At this time the crews put on rain gear and went back out and resumed hoeing. The fatally injured worker (who was working for the first time for this farm labor contractor) was bent over hoeing with the crest of his body about four feet above the ground. He was struck by lightning as indicated by extensive first and second degree burns over the right side of his face, neck, front and back chest, front and back legs covering approximately 50-60% of his total body surface. (Another worker was injured when he was struck by the hoe used by the victim which was involuntarily thrown from the victim's hands during the lightning strike. He was transported to the emergency department of a local hospital, treated, and released.) Upon arrival of the county EMS paramedics which responded to a 911 call (within 10 minutes of injury) from the field crew, they noted a 20 year old Hispanic male who was in cardiac arrest. Due to the continuing lightning strikes in the field, the extrication of the injured worker was lengthy. He was initially transported (undergoing CPR enroute) to a local hospital emergency department where he received fluid resuscitation, was stabilized and was subsequently transported via ambulance and admitted to the burn unit of the regional trauma center in the neighboring county. He then went into cardiac arrest but was successfully resuscitated. During an exploratory laparotomy he went into cardiac arrest again, and was successfully resuscitated again. He was then placed in the burn unit of the trauma center where he suffered a third cardiac arrest from which he was not resuscitated successfully.

The cause of death as reported by the coroner was burns over 50-60% of body surface due to lightning strikes accompanied by extensive hemorrhagic myocardial damage, focal intracranial hemorrhage, massive congestion and edema of his lungs and brain, and visceral organ congestion.



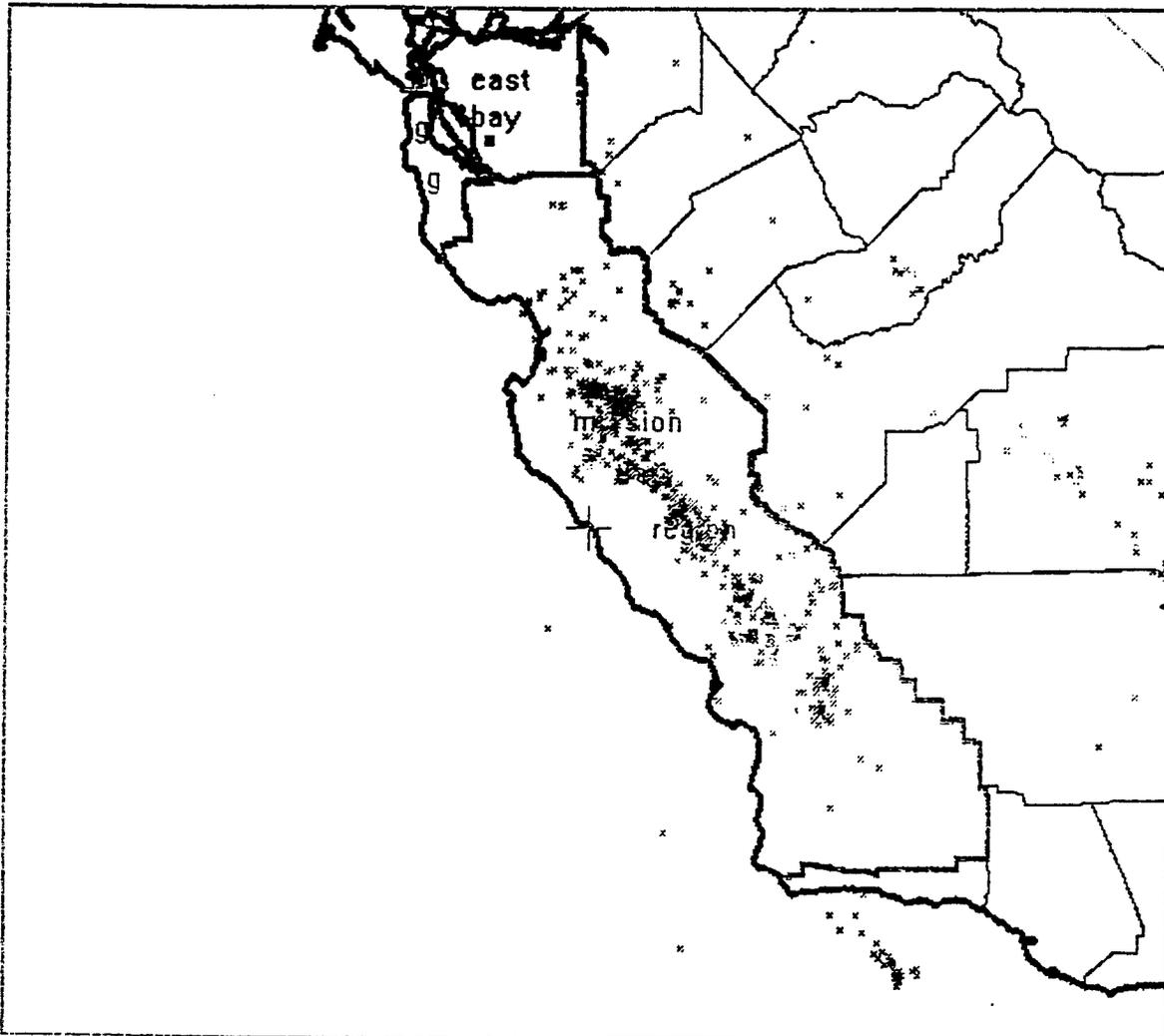
PREVENTION STRATEGIES

1. Employers should not permit workers to be exposed to a hazardous work environment. These incidents took place during an extensive thunderstorm with approximately 2,000 lightning strikes recorded. This is a highly unusual occurrence in this geographic location and should have alerted employers that workers were in a dangerous work environment. Both foremen were aware of the lightning -- in one incident the crew was leaving the field and in the other the crew had initially been removed from the field but was subsequently sent back to complete their work. Employers should ensure that there is no lightning in the vicinity of the fields before they allow workers to continue working or allow them back into the field. One farm labor contractor has subsequently initiated the policy that all workers must leave the field whenever it is raining regardless of whether there is lightning in the vicinity. If this policy had been present prior to this incident, the death of the worker would not have occurred.
2. Foremen are responsible for the safety of their work crews and for obtaining information to assess hazards. Because foremen may not have sufficient information based on their observation only, it may be necessary to have additional information from a weather monitoring station to provide information on hazardous weather conditions. At the time of these incidents a special weather statement had been issued which emphasized lightning hazards and to exercise caution. If the farm labor contractors or the foremen had checked the weather forecast by using a portable weather radio or listening to the cable weather channel they would have known there was imminent danger to the farm workers. Employers could also verify that conditions are safe by either calling the National Oceanic Atmospheric Administration or another lightning strike monitoring station (as maintained by the gas and electric company) to verify that the storm has passed.
3. There should always be a person certified in Cardiopulmonary Resuscitation (CPR) on a field work team. Farm workers may be working in remote work sites in which rapid access to emergency medical services may not be possible; therefore, it is important that initial emergency medical care be available on-site. In the first incident the paramedic crews had to use a four wheel drive vehicle to reach the victim due to muddy field conditions. In this first incident the worker died from cardiac arrest; if he had received CPR from other workers at the scene immediately after his heart stopped, the probability for successful resuscitation could have been increased.¹

1. California Code of Regulations T8 3440 (subparagraph b) requires that in a remote work location, 10-15 minutes from medical help, one member of the crew should have First Aid training equivalent to Red Cross certification.



LIGHTNING STRIKES: SEPTEMBER 6, 1991
12:00 a.m. to 7:59 a.m.



File Replay
Map 1
Sep 24 1991
06:52:11
POS NEG
6 707
TOTAL
713
FIRST FLASH
Sep 06 1991
02:14:16
LAST FLASH
Sep 06 1991
07:59:54
36:22:17N
121:11:36W
CURSOR
36:00:00N
121:30:20W
02:00 03:00
04:00 05:00
06:00 07:00

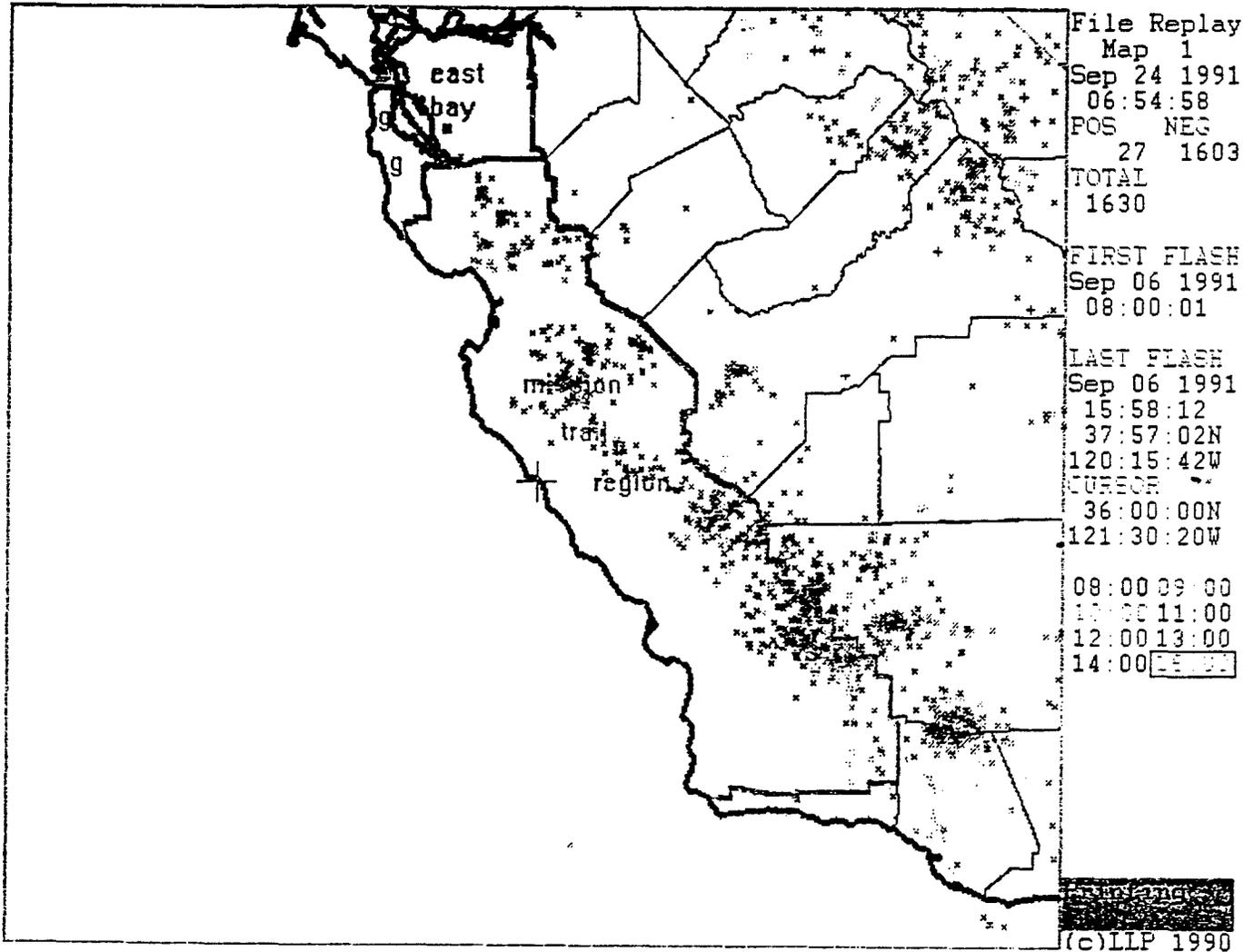
(c)LLP 1990

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Graphic courtesy of Pacific Gas and Electric, Salinas, California.



LIGHTNING STRIKES: SEPTEMBER 6, 1991
8:00 a.m. to 3:59 p.m.

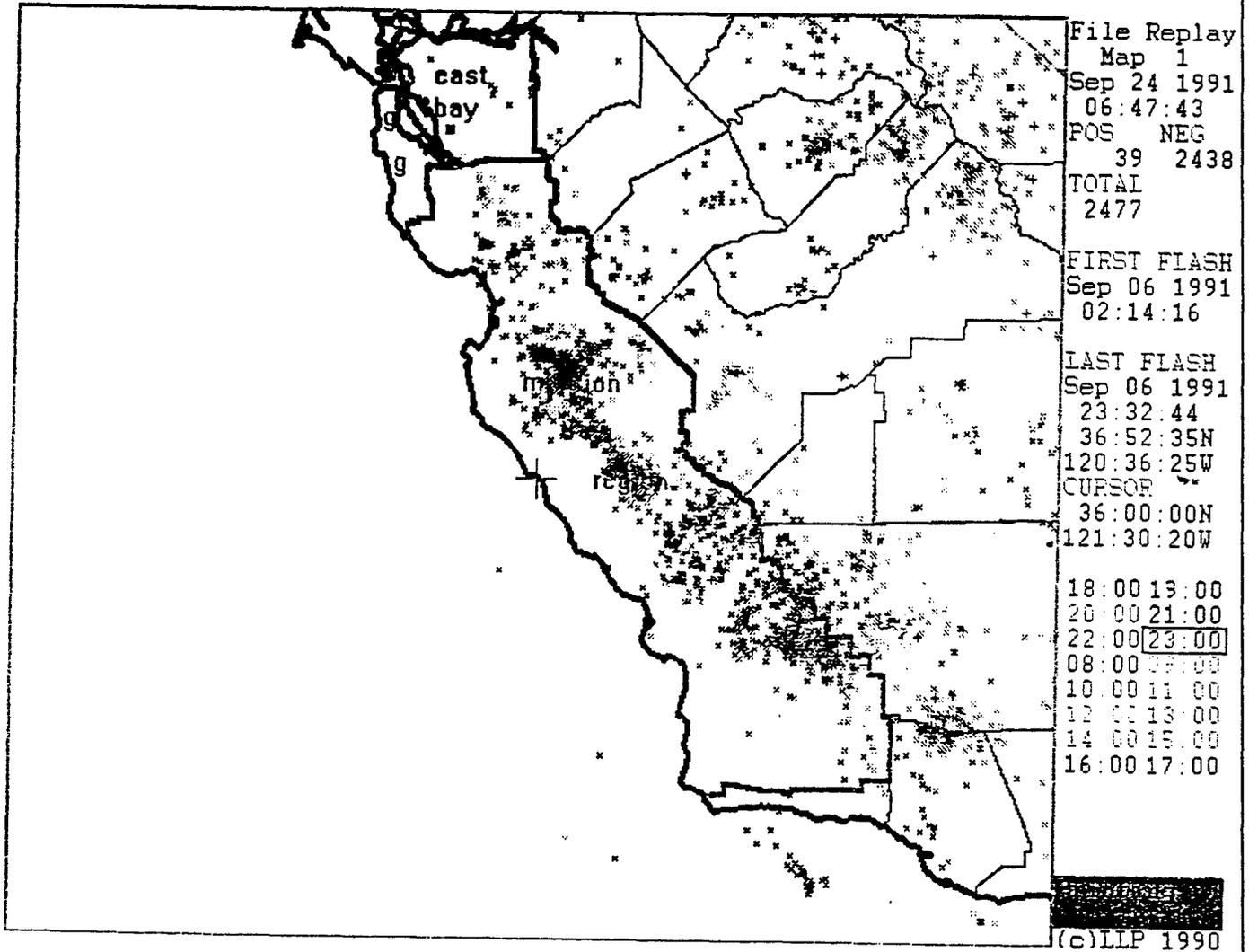


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Graphic courtesy of Pacific Gas and Electric, Salinas, California.



LIGHTNING STRIKES: SEPTEMBER 6, 1991
1:00 a.m. to 11:59 p.m.



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Graphic courtesy of Pacific Gas and Electric, Salinas, California.



REPORTE NURSE #4

RELÁMPAGOS MATAN A DOS TRABAJADORES DEL CAMPO

CDHS(COHP)-FI-92-005-04

Resumen

Relámpagos mataron a dos trabajadores agrícolas que se encontraban cosechando y limpiando lechuga durante una tormenta. Los trabajadores se encontraban trabajando en diferentes cuadrillas como a quince millas de distancia. Una de las cuadrillas ya estaba saliendo del fil por causa de los relámpagos, cuando a uno de los últimos trabajadores le pegó un relámpago. Murió inmediatamente de un ataque al corazón.

La segunda cuadrilla se refugió en el camión durante la tormenta, pero cuando pasó la tormenta regresaron al fil. Un trabajador estaba agachado usando un azadón cuando le pegó un relámpago. Los relámpagos continuaron, y fue muy difícil para los paramédicos llegar hasta donde estaba el trabajador y ponerlo en la ambulancia. El trabajador murió en el hospital a causa de quemaduras causadas por el relámpago.

¿Cómo se hubiera podido prevenir esta muerte?

- El mayordomo debería de haber parado de trabajar a los trabajadores durante esta tormenta con relámpagos que cubrió muchas millas. Sin embargo ambos mayordomos intentaron trabajar durante parte de la tormenta.
- Una persona no puede determinar condiciones del clima que son peligrosas. Los mayordomos deben usar radios portátiles o el canal de cable informativo para recibir informes sobre el clima.
- Ambos trabajadores sufrieron ataques del corazón de inmediato cuando les pegó el relámpago. Cada cuadrilla de trabajadores del campo debe tener una persona con certificación en Resucitación Cardiopulmonar (CPR).

CASOS 291-003-01, 291-003-02,
291-009-01, 291-009-02, 291-009-03

22 de mayo 1992

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NURSE REPORT #5

GRAPE PICKER RUN OVER BY BIN TRAILER, BREAKS LEG

CDHS(COHP)-FI-92-005-05

Summary

Grape pickers were riding from the vineyard to the road on bin trailers. These trailers are pulled by tractors and carry big bins of grapes. The riders stood on the three or four inches between the bins and the edge of the trailer, hanging onto the bins. The morning was foggy and the trailer surface was wet and slippery. One worker fell off and the trailer wheel rolled over and broke his left leg.

The foreman and crew picked the worker up, carried him to a truck and drove him eight miles to a hospital. Moving someone with a badly broken leg can be as dangerous and painful to the victim as the injury itself. The worker was in the hospital for many days, and had at least two operations on his leg.

How could this injury and what followed have been prevented?

- Do not ride on equipment which is not designed to carry people.
- Employers should explain and enforce field safety rules every day.
- Every field work team should have a person certified in first aid.
- Work crews should have a cellular phone or radio available to use for contacting emergency medical services.

CASE 191-011-01

May 22, 1992

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BACKGROUND

On November 4, 1991 a small rural hospital emergency department reported an agriculture-related injury to NURSE project staff, using a FAX reporting form developed by the NURSE project. This injury occurred at a vineyard in California on October 31, 1991. A seasonal grape picker was riding on a bin trailer from the field back to the roadway when he fell off and was run over by the wagon wheel. A nurse from the NURSE project interviewed the injured worker while he was still hospitalized on November 8, 1991, and on December 5, 1991 a Senior Safety Engineer from the NURSE project conducted an on-site investigation and discussed the incident with the farm manager. The employer did not notify Cal/OSHA, subsequently no Cal/OSHA investigation was conducted.

The farm where the incident occurred is part of a family-owned corporation which has approximately 1,000 acres; half planted in grapes and the other half in tree fruit (e.g. peaches, nectarines, etc.). The farm is a full-time operation managed by family members with the usual seasonal fluctuations of personnel and activities. The company employs approximately 35 full-time employees (employed at least 38 weeks per year), 75 seasonal workers (employed 13-37 weeks per year), 37 casual workers (employed 1-12 weeks per year), and 3 family members. During harvest time there is high labor demand and the farm hires seasonal workers to harvest the fruit.

The Senior Safety Engineer reviewed the company safety and health program and found that it addressed the seven points included in the Title 8 California Code of Regulations 3202 Injury and Illness Prevention Program, but that the written program had not been in place at the time of the incident. (As of July 1, 1991 the State of California requires all employees to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

INCIDENT

On October 31, 1991 at approximately 9:20 a.m. a 23 year old male Hispanic grape picker received an open fracture of his left tibia when he slipped and fell from the grape bin trailer he was riding on and the trailer ran over his leg.

At this vineyard the wine grapes are picked and placed in large bins which are transported through the vineyard by a large trailer pulled behind a tractor. When the bins are full the trailer is pulled to the roadside and a forklift is used to load the bins on to a waiting trailer and truck combination. A bin trailer is a narrow (six feet wide) flat bed trailer designed to carry two or three of the four feet square bins down the center of a row in a vineyard.



The available space from the edge of the trailer to the bins is approximately three to four inches wide. Riding on the bin trailers to and from the fields is a common practice for employees.

The weather was foggy at this time in the morning which made the metal surfaces of the grape bin trailers wet. The injured worker was riding on the side edge of the bin trailer and holding onto the wall of the bin by hand when he slipped and fell off. The trailer then rolled over his left leg.

The field foreman had the injured worker picked up, carried to a pick-up truck and transported 8 miles to the nearest rural hospital emergency department (which subsequently reported the injury). No first aid was administered in the field and no ambulance was called.

The injured worker arrived at the emergency department at 9:45 a.m. and was treated for a comminuted, open fracture to his left tibia and abrasions to his abdomen. At this time his leg was splinted, an IV was started, and pain medication (morphine) was given. Approximately 3 hours later, after he was stabilized, he was transported to an orthopedic hospital approximately 40 miles away for evaluation and surgical reduction of the fracture. He was subsequently discharged but because of continuing pain he went to a small district hospital emergency department. He was later admitted to a level 2 trauma center for further evaluation and surgery. At the time of the interview by the nurse he had been hospitalized for a total of 9 days.

PREVENTION STRATEGIES

1. Workers should not ride on moving equipment which is not designed for transport. In this incident grape pickers rode on the bin trailers to get to the road, instead of walking back through the vineyard. The bin trailers are not designed for this purpose. If the grape picker had not been riding on the bin trailer he would not have fallen off and had his leg run over.
2. There was no written safety program at the time of the injury although by the time of the investigation the employer had developed a written program. The written program covers the seven points required by Title 8 California Code of Regulations 3203 Injury and Illness Prevention Program. If there had been an enforced written program the worker would not have been allowed to ride on the bin trailers and his injury would have been prevented.
3. The employer must provide adequate training of seasonal and casual employees. Although unsafe field activity such as riding as a passenger on the bin trailer or tractor was part of the verbal safety program at the time of the incident it was not



enforced. Employees need to be instructed daily about field safety rules such as not riding the trailers back to the road and the rules must be enforced.

4. There should always be a person certified in first aid on a field work team.¹ In this incident a worker was inappropriately moved and transported without any first aid. If the foreman or another person at the scene had been trained they would have been able to administer first aid and would have known that this was a severe enough injury to call for paramedic help. If first aid had been given the risk of complications from the injury might have been reduced.
5. Work crews should have a cellular phone or radio available in vehicles to contact the Emergency Medical Services. In this incident, the foreman should have called 911 before moving the injured worker. Because the worker did not receive appropriate first aid in the field, he was at greater risk of bleeding and further injury. There was also a possibility for the open wound to become contaminated without proper first aid. The grape picker was in considerable pain and hyper-ventilating when he arrived at the emergency room. If 911 had been called, his leg would have been splinted by trained EMS personnel at the scene of the injury, thereby stabilizing him before transport to the hospital.

1. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace.. a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439 (b): "There shall be at least 1 employee for every 20 employees at any remote locations with training for the administering of emergency first aid."



REPORTE NURSE #5

UN PIZCADOR DE UVAS ES ATROPELLADO POR UN REMOLQUE, SE LE QUEBRA UNA PIERNA

CDHS(COHP)-FI-92-005-05

Resumen

Pizcadores de uvas viajaban del viñedo a la carretera montados en los cajones del remolque. Estos remolques son jalados por tractores y llevan cajones grandes de uvas. Los pizcadores iban parados en las tres o cuatro pulgadas que hay entre los cajones y el remolque, agarrándose de los cajones. Esa mañana había neblina y la superficie del remolque estaba mojada y resbalosa. Un pizcador se cayó y la rueda del remolque le rodó por encima y le quebró la pierna izquierda.

El mayordomo y los otros pizcadores levantaron al pizcador y lo llevaron al troque. Lo transportaron a un hospital a ocho millas de distancia. El mover a una persona con una pierna mal herida puede ser tan peligroso y doloroso para la víctima como el incidente en sí. El pizcador se quedó en el hospital por varios días y le hicieron por lo menos dos operaciones en la pierna.

¿Cómo se hubiera podido prevenir esta lastimadura y lo que sucedió después?

- No viaje en equipo que no está diseñado para llevar gente.
- Los patrones deben explicar y hacer cumplir las reglas de seguridad en el fin todos los días.
- Cada grupo de trabajadores debe tener una persona certificada en primeros auxilios.
- Las cuadrillas deben tener disponible un teléfono celular o un radio para poderse poner en contacto con servicios médicos de emergencia (911).

CASO 191-011-01

22 de mayo 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #6

MAINTENANCE WORKER'S ARM BROKEN BY FRUIT-TRAY TRANSPORTER

CDHS(COPH)-FI-92-005-06

Summary

A maintenance worker in a fruit drying plant was cleaning and oiling a *tray transporter*. A tray transporter is a set of rollers which move trays of fruit across the plant. The rollers are turned by a chain drive and a rotating shaft. The safe method to clean and oil this tray transporter is to shut the power off, lock the power switch, unbolt a guard that shields the rollers, and work on that side, opposite the chain drive and shaft.

To save time the worker left the transporter running and did not unbolt the guard. Instead he climbed under the transporter and worked on the same side as the rotating shaft. When he leaned over the rotating shaft to oil the rollers the shaft caught his jacket sleeve. The shaft pulled his arm in and broke both bones in his forearm. His partner got to the switch in a few seconds and turned off the machine.

How could this injury have been prevented?

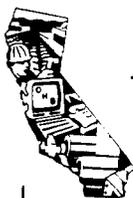
- Follow safety procedures. The plant had a procedure for shutting off the power and oiling the rollers from the safe side.
- Do not wear loose clothing when working around machinery.
- Make sure that company safety procedures are acceptable to workers. If workers skip safety steps the steps may need to be changed.
- Foremen should go over safety procedures with workers when they assign jobs.

CASE 192-012-01

May 22, 1992

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.





BACKGROUND

On February 4, 1992, NURSE staff learned of an agricultural-related injury while conducting a record review of the emergency department of a regional trauma center. In this injury a maintenance worker sustained a broken arm while cleaning and oiling machinery in a California fruit dehydrating and packaging plant. At the time of the incident the equipment was undergoing a pre-season maintenance check and was not being operated. The equipment transports trays of fruit from the storage bin on a set of chain driven rollers, dumps the fruit into a holding bin and then moves the trays back to the loading area.

A nurse from the NURSE project conducted an interview with the injured worker on February 14, 1992. At this time, the injured worker stated he had at least seven years of experience doing this type of work at the plant. The employee also said he had received safety training for cleaning and maintenance of machinery at the fruit processing plant. An on-site investigation was conducted on March 13, 1992 by the Senior Safety Engineer and the nurse. The incident was discussed with the vice president of the company who handles personnel and is also the company safety director. The local Cal/OSHA compliance office was notified by the employer. Because the employee was treated in the emergency department and not admitted to the hospital for treatment, the Cal/OSHA compliance office did not visit the job-site or investigate the incident.

The incident occurred in a fruit processing plant in a rural area, with approximately 163 employees in peak season. Ten workers are full-time and three are family members who work at the plant. The employer has an on-going safety program. The company safety and health program was reviewed by the local OSHA compliance office the previous year following a complaint generated visit (the complaint was relative to hazard communication). The company's Injury Prevention Program was reviewed by the Senior Safety Engineer from the NURSE project and was found to address all seven points within California Code of Regulations Title 8 3202. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employees compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety training program.)

The employer has a safety training program which includes safety meetings every two weeks. New hires are given safety training along with their initial work training program. Maintenance employees work in pairs or a "buddy system" which provides a safety back-up if there is a problem.



INCIDENT

On January 21, 1992 at approximately 2:50 p.m. a local emergency medical service (EMS) was called via 911 and notified that a maintenance worker's right arm had been fractured. At this time the dehydrating plant's safety director was also notified. The worker was a 23 year old Hispanic male.

The injured maintenance worker, one of 10 full-time year around employees, was cleaning and lubricating the rollers leading to the tray transporter. The standard operating procedure was to stop the equipment (by shutting the power off and locking the power switch), remove a tray barrier guard (which prevents the trays from falling on the floor as they move down the line) and service the equipment on the side of the tray transporter away from its rotating drive shaft. The rolling device which moves the trays away from the unloading station was left on and moved at a slow rate. The employee climbed under the structure which supports the tray transporter and started to lubricate the rollers from the inside of the equipment stand. As he leaned over the rotating shaft to oil the rollers the right sleeve of his jacket was caught in the rotating shaft. He tried to remove his arm from his jacket but his arm had already become entangled in the rotating shaft. He immediately called for his work partner to turn off the machine. His partner was nearby and able to turn the machine off within a few seconds.

While awaiting the arrival of the EMS, the safety director arrived on the scene and had the rotating shaft cut loose from the machine, but did not attempt to free the worker's arm.

Paramedics from the EMS and the district fire department arrived 22 minutes after being contacted. The EMS personnel removed the arm from the part of the shaft which had been cut loose. They splinted and applied an ice pack to the arm. Oxygen was administered and a Lactated Ringers solution IV was started. The injured worker was then transported to the local emergency department of the regional trauma center; he arrived there one hour after the initial 911 telephone contact. The injured worker underwent a closed reduction of a fracture of the right radius and ulna. He was kept in the emergency department for observation and was then discharged later that evening.

PREVENTION STRATEGIES

1. Normal operating procedure called for lock-out of all equipment prior to servicing. ("Lock-out" involves shutting off the power to the equipment and padlocking the power switch.) If the machinery was not powered then the shaft would not have been rotating and even if the worker's sleeve came into contact with the shaft it would not have been caught. If the employee had followed this company policy while servicing the equipment this injury would not have occurred.¹



2. In this incident the worker's clothing got caught on the rotating shaft. If the worker had worn tight-fitting clothing which could not become caught by machinery this injury might have been prevented. This is an inexpensive and relatively simple way of preventing machinery entanglement.²
3. The standard operating procedure for oiling the roller system is to remove the tray barrier so that the rollers could be more easily accessed from the side away from the rotating shaft. To remove the barrier the worker would have had to unbolt four bolts which would take approximately five minutes; however, he chose to by-pass this procedure. Therefore, the worker leaned over the rotating shaft in order to reach the rollers from the other side. If the worker had followed standard procedure he would have accessed the rollers from the correct side and would not have come into contact with the rotating shaft.
4. This incident points out the importance of ensuring that company procedure is acceptable to the workers. In this incident, the worker intentionally chose to by-pass an established company procedure to save time. This indicates that the procedure was not acceptable or easily followed. Workers should be allowed to review and comment on maintenance procedures for equipment that they service.
5. The foreman should re-enforce the importance of safety procedures at the work site with the maintenance workers prior to starting the work day. Emphasis should be on pointing out specific hazards related to their tasks. This should also include ensuring employees understand that safety procedures must be followed to prevent injuries. If this worker had been instructed earlier that day as to the hazards related to his specific job tasks for that day, he might not have violated the standard operating procedures.
6. The company safety policy and training instructed workers not to wear loose clothing when working around machinery. At the time of this investigation the safety director noted that the sleeve of the worker's coat was loose and had become entangled in the rotating shaft. If the foreman had noted the worker's loose clothing prior to his entanglement, this injury would have been prevented.
7. In this incident the worker did not lock-out equipment and was working in the vicinity of a rotating shaft; these hazards should be clearly made aware to the worker. One way of notifying workers about hazards is to use warning signs placed in the vicinity of the hazard. The employer could post warning signs in strategic locations near switch boxes and power sources reminding employees to



lock-out power prior to servicing equipment, and near any mechanical hazards such as the rotating shaft. Use of signs may help increase worker's awareness about hazards and how to avoid them. In this incident, if the worker had seen a sign specifically identifying a hazard (the rotating shaft) he might not have leaned over it and come into contact with it.



1. Title 8 California Code of Regulations 3314. "Machinery or equipment capable of movement shall be stopped and the power source de-energized or disengaged...during cleaning, servicing, or adjusting operations."
2. Title 8 California Code of Regulations 3383 (b). "Loose sleeves, tails, ties, lapels, cuffs, or other loose clothing which can be entangled in moving machinery shall not be worn."



REPORTE NURSE #6

UN TRABAJADOR DE MANTENIMIENTO SE QUEBRA UN BRAZO EN UNA TRANSPORTADORA DE FRUTA

CDHS(COHP)-FI-92-005-06

Resumen

En una planta donde se seca fruta, un trabajador de mantenimiento se encontraba limpiando y aceitando un transportador de charolas. Un transportador de charolas es un sistema de rodillos que mueve por medio de un sistema de cadena y un eje rodante. La manera segura de limpiar y engrasar este transportador de charolas es apagando la corriente y cerrando con llave el interruptor de la corriente. Una vez que se desatornille el resguardo de los rodillos se trabaja al lado opuesto del sistema de cadena y del eje.

Para no perder tiempo el trabajador dejó el transportador funcionando y no destornilló el resguardo de los rodillos. Se metió debajo del transportador y trabajó del mismo lado del eje rodante. Cuando se inclinó sobre el eje rodante para aceitar los rodillos, el eje le agarró la manga de la chamarra. El eje le atrapo su brazo y le quebró ambos huesos del antebrazo. Su compañero llegó al interruptor en pocos segundos y apagó la maquina.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Se deben de seguir prácticas de seguridad. La planta tenía un procedimiento para apagar la corriente y aceitar los rodillos del lado que es seguro.
- No use ropa suelta cuando se encuentra trabajando cerca a maquinaria.
- Asegurese de que los procedimientos de seguridad de la planta son aceptables para los trabajadores. Si los trabajadores omiten prácticas de seguridad, puede ser que las prácticas necesitan ser cambiadas.
- Los mayordomos deben repasar los procedimientos de seguridad con los trabajadores cuando se les asigna las tareas del día.

CASO 192-012-01

22 de mayo 1992

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NURSE REPORT #7

CANTALOUPE PICKER DIES OF HEAT STROKE

CDHS(COHP)-FI-92-005-07

Summary

A cantaloupe picker collapsed and died of heat stroke after four hours of work. The summer cantaloupe harvest is one of the hardest jobs in farming. Workers stoop to pick the cantaloupes and put them in bags they carry on their shoulders. When the bags are full and weigh about 50 pounds workers carry them to a truck. Crews are paid by the number of trucks they load in a day, and so workers do not stop for breaks.

The worker began picking at 6:00 a.m. At 9:00 a.m. he complained of a headache. He worked for another hour, and then his crew took a bus to another field. On the bus he began to pant, and felt anxious and sick to his stomach. The foreman stopped the bus and called an ambulance. The worker was taken to the hospital and treated, but died 36 hours later of heat stroke.

How could this death have been prevented?

- Have a person certified in first aid, including knowing the symptoms and treatment of heat stroke, on every field work team.
- Train workers to be aware of the dangers of working in the heat.
- Make crews take breaks and drink water, especially crews working at piece rate.

CASE 191-002-01

May 22, 1992

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.





BACKGROUND

On July 25, 1991 NURSE staff received a report from a local community program that a 25 year-old Hispanic male had collapsed after picking cantaloupes. The local coroner informed NURSE staff that the picker had died from complications of heat stroke, or hyperthermia. A brother of the deceased picker, who had been working with him that day, took the body home to Mexico to be buried. A nurse from the NURSE Project traced the brother when he returned from Mexico and interviewed him on March 9, 1992. On February 6, 1992 the Senior Safety Engineer conducted an on-site investigation and discussed the incident with the safety director of the farm company. NURSE staff also reviewed the emergency medical service run sheets, the hospital records, and the coroner's records. The employer notified the local California Occupational Safety and Health Administration (Cal/OSHA) compliance office, but Cal/OSHA did not conduct an investigation.

The cantaloupe field where the deceased picker was working was owned by a farming corporation which employs, through a separate harvesting company, approximately 320 employees during the peak harvest season. The corporation has a full-time safety director. Field foremen of the company are trained at the beginning of the season using the safety training outline in the company Injury and Illness Prevention Program. Employees are trained periodically.

The NURSE Senior Safety Engineer reviewed the company safety program and noted that it addressed all seven points as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a written health and safety program.)

INCIDENT

Cantaloupe harvesting is one of the most strenuous jobs in agriculture. The workers stoop over to pick the cantaloupes off vines at ground level, and place the melons in a bag. They carry the bag over their shoulder until it is full (weighing about fifty pounds) and then carry the bag to a truck that is moving through the field. Cantaloupe pickers are paid on a piece rate basis, calculated by how many trucks a crew loads in a day. After the crews begin working they generally continue until mid-day without scheduled breaks. When the trucks reach the end of a row there is a 1-2 minute interval while they turn around, and the workers use this opportunity to drink water while they wait for the truck to align with a new row. Drinking water is available on the cantaloupe trucks and is also carried on the buses used to transport workers to different fields.



The cantaloupe picker was employed as part of a 10 to 15 member crew, and had three years of experience. As part of a scheduled weekly training he had been trained the day before on proper lifting and carrying techniques to prevent back injury. However, no training on heat stroke prevention was given. The worker was moderately obese, at 5'5" and over 200 pounds. The ambient temperature during the initial part of the work day was 70 degrees F with a relative humidity of 70-80%, the noon time reading was 95 degrees F and the high for this day was 101 degrees F with a relative humidity of approximately 25% at 4 p.m. The high temperature for the previous day was 99 degrees F with a relative humidity of 22% at 4 p.m.

The worker began to pick and load cantaloupes in the field at 6:00 a.m. At approximately 9:00 a.m. he told the field foreman that he had a headache and was not feeling well. He was perspiring heavily and asked for an aspirin, but continued to work in the field for another hour before walking to the bus with the rest of the crew in order to be transported to a new field. While travelling on the bus the worker became extremely ill: anxious, nauseated, and short of breath. At 10:40 a.m. the bus was stopped near a county road maintenance crew, who were able to call the local emergency medical service (EMS). The EMS dispatcher gave instructions to place the worker in the shade of a tree. One of his brothers (a co-worker) stayed with him until the EMS arrived, approximately 20 minutes after they were called.

When the EMS paramedics arrived they found the individual disoriented, hyperventilating, and vomiting. They established an IV of Lactated Ringers solution with valium to provide him with fluid replacement. He was transported to a level 2 trauma center, a fifty minute journey, and arrived almost one and a half hours after the EMS was called. His body temperature was 105.6 degrees F when he arrived at the emergency department. He was admitted to the intensive care unit of the level 2 trauma center in poor condition with an admission diagnosis of heat stroke with metabolic encephalopathy and seizure disorder. He was placed on a ventilator but developed renal failure and pneumonia and died 36 hours after the EMS was first called.

The cause of death listed by the coroner was complications of hyperthermia with acute bronchopneumonia.

PREVENTION STRATEGIES

1. Employers should provide appropriate training for workers to recognize all hazards and avoid them. In this incident the worker was aware that he was becoming sick; however, apparently he did not attribute this to working in the temperature extremes. Work crews in high temperature conditions should be advised of the hazards of working in hot environments and should be trained in the symptoms of heat stroke.



This training should be given upon hiring of the employee and included in the weekly safety training. Training is especially important in the case of high risk workers; in this incident the worker weighed over 200 pounds and was only 5'5" tall. If the worker had been trained to recognize he was in an adverse work environment (high temperatures), he might have stopped working earlier and his death might have been prevented.

2. There should always be a person certified in first aid on a field work team.¹ First Aid training should include identification of heat-related symptoms and appropriate first aid. In this incident, the worker developed hyperthermia while working at a temperature that was within the normal range for that geographic location. The delay in recognizing that the worker had hyperthermia meant a delay in appropriate medical treatment. This delay may have contributed to his death.
3. Remote work crews should have a cellular phone or radio available in vehicles to contact the Emergency Medical Services if needed. In this incident the foreman could not notify EMS until they found a road crew with mobile communications, resulting in a possible delay of treatment for heat stroke.
4. The employer should provide a working environment which encourages that workers do not forfeit their health in order to make more money. In this incident the employer should have required a rest stop for all employees, even if the crew was working at piece rate for less than a full working day. A break should be required by the employer at least every two hours to allow employees to drink water. This would also provide an opportunity for the foreman to review the health of the crew at this time and identify anyone showing symptoms of heat stroke. Besides drinking water on their breaks, each worker should be given water canteens to carry with them to act as a constant thirst quencher. These canteens could be refilled on their breaks. In this incident, the work crew had a disincentive to take rest breaks and drink water. If breaks had been encouraged and workers provided with an incentive to take them, then this death may have been prevented.
5. Employees should be aware of their own responsibility for their health and safety. In this incident the worker was in poor physical condition for the difficult work tasks he was required to perform, however, he continued to work under these conditions. If he had tried to improve his immediate work situation by drinking a lot of water and not overexerting, or even stopping work when he was becoming sick, he might not have become hyperthermic and died.
6. Employers should attempt to make work tasks as un strenuous as possible. In this incident, if the pickers were not required to carry a bag of cantaloupes, and instead placed them immediately in a mechanized packing truck the work task would not be so strenuous. In this incident the worker was performing a very strenuous activity under high temperature environments. If he was not required to perform such strenuous activities his death might have been prevented.



Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439 (b): "There shall be at least 1 employee for every 20 employees at an remote locations with training for the administering of emergency first aid."



REPORTE NURSE #7

PIZCADOR DE MELON MUERE DE INSOLACION

CDHS(COHP)-FI-92-005-07

Resumen

Un pizcador de melón sufrió un desmayo y murió de insolación después de haber trabajado 4 horas. La pizca de melón durante el verano es uno de los trabajos más difíciles en la agricultura. El pizcador se agacha para recoger los melones y los pone en una bolsa que lleva en el hombro. Una vez que la bolsa está llena pesa como 50 libras. Luego, el pizcador la lleva a un troque a vaciar. Cada cuadrilla de pizcadores se les paga por el número de troques que cargan al día, por lo consiguiente los pizcadores no paran a descansar.

El pizcador empezó a trabajar a las 6:00 de la mañana. A las 9:00 de la mañana se quejó de dolor de cabeza. Trabajó por otra hora y entonces su cuadrilla tomó un camión para ir a otro fil. En el camión el pizcador empezó a respirar con dificultad y se sintió ansioso y mareado. El mayordomo paró el camión y se le llamó a una ambulancia. El pizcador fue llevado al hospital donde le dieron tratamiento, pero murió 36 horas después debido a insolación.

¿Cómo se hubiera podido prevenir esta muerte?

- En cada cuadrilla se debe de tener una persona con certificación en primeros auxilios, que incluya el saber cómo reconocer los síntomas de insolación.
- Entrene a los trabajadores para que sepan los peligros de trabajar en el calor.
- Haga que las cuadrillas tomen descansos y que tomen agua, especialmente las cuadrillas que se les paga por contrato.

CASO 191-002-01

22 de mayo 1992

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NURSE REPORT #8

HEAVY EQUIPMENT OPERATOR CRUSHED IN ROLL OVER

CDHS(COHP)-FI-92-005-08

Summary

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.

CASE 291-002-01

May 22, 1992

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.



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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. 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.

PREVENTION 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.¹
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.²
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.

1. Title 8 California Code of Regulations 1596 (g): "Seat belts shall be adequate for the intended service and in good repair."

2. Title 8 California Code of Regulations 3653 (a): "Seat belt assemblies...shall be provided on all equipment where rollover protection is installed."



REPORTE NURSE #8

MUERE OPERADOR DE EQUIPO PESADO

CDHS(COHP)-FI-92-005-08

Resumen

Un dueño de un viñedo contrató a un operador de equipo pesado para que hiciera canales de riego y mezclara fertilizantes. El operador utilizó un equipo que tenía una pala ancha al frente y un trascabo. También tenía una barra en forma de U sobre la silla del chofer. El cinturón de seguridad del equipo no funcionaba.

El operador terminó su trabajo de mezclar fertilizantes y se fue manejando su equipo despacio por un camino de tierra al lado de un canal. Sin saberse la razón, el equipo se resbaló dentro del canal y se volcó. Sin el cinturón de seguridad el operador se cayó dentro del canal. El equipo siguió volcando. La barra paso sobre el operado apachurandole el pecho y matandolo.

¿Cómo se hubiera podido prevenir esta muerte?

- Asegurese de que todo equipo de seguridad funciona antes de empezar a trabajar. Al cinturón de seguridad del equipo le hacía falta una pieza y no podía abrocharse.
- No opere equipo pesado o vehículos sin utilizar el cinturón de seguridad.
- Identifique peligros en el área de trabajo. Aparentemente este operador no sabía del canal.

CASO 291-002-01

22 de mayo 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #9

POISONOUS SPIDER BITES VINEYARD WORKER

CDHS(COHP)-FI-92-005-09

Summary

A farm laborer was working in a vineyard, cleaning weeds away from the base of the grape vines with a shovel. He bent under the vines to check his work and was bitten on the left side of the neck by a spider. The spider may have been a Brown Recluse or some other poisonous spider. Fifteen minutes after the bite the worker began to feel dizzy and sick to his stomach. The employer drove the worker to a hospital emergency department, where the worker was treated and released.

How could this injury have been prevented?

- Check before working under vines and other hidden areas for spiders, yellow jackets, rattlesnakes, and other poisonous insects or animals.
- One person at the work site should be trained in first aid. The worker could have had a bad reaction to the spider bite.
- Call 911 (emergency services) for poisonous insect bites and stings.

CASE 192-028-001

June 2, 1992

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.



BACKGROUND

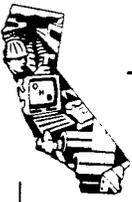
On March 23, 1992 while reviewing the emergency department log at a local Level 2 Trauma Center a staff nurse from the NURSE Project noted a report of treatment for a spider bite. A farm laborer was bitten on the left side of the neck while working in a vineyard on March 14, 1992. The farm laborer was cleaning weeds and trash from the base of the vines prior to irrigation. The description of the spider was not complete (brown with two red dots on its abdomen), yet it matches that of a Brown Recluse spider. While not generally fatal to adults, the Brown Recluse spider venom can cause serious illness for a week or more. A staff nurse from the NURSE project interviewed the employee on March 23, 1992. On March 27, 1992 the Senior Safety Engineer of the NURSE Project contacted the farm owner/operator by telephone and discussed the incident. NURSE staff reviewed the emergency department medical records in detail. Cal/OSHA was not notified by the employer and did not investigate the incident.

The incident occurred on a small, family owned and operated vineyard which hires seasonal workers to work on the harvest. At the time of the incident the injured worker was the only person employed at the vineyard. The employee had been working as a seasonal employee (13 to 37 weeks per year) for this farmer the past three years and was on his second day of the new season.

At the time of their telephone discussion, the farm owner/operator told the NURSE Safety Engineer that the farm did not have a formal written safety program, as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

INCIDENT

At approximately 8:15 a.m. on March 14, 1992 a 23 year old Hispanic male working in a vineyard was bitten on the left side of his neck by a brown spider. The seasonal farm worker was cleaning up weeds and trash from around the base of the grape vines with a shovel. This operation requires considerable bending and stooping under the vines. The work was being done in a 20 acre vineyard of Thompson grapes. This was the initial clean-up prior to the delivery of water from the local community irrigation district system. The farm laborer bent under the vines to check his work and was bitten on the left side of the neck by a brown spider. He was wearing his regular work clothing, work trousers and a long sleeved shirt. The farm worker stated he felt a sharp sting on his neck and reacted by swatting his neck at which time he killed the spider. He then discovered that he had been bitten by a brown spider. He retained the dead spider which he later took with him to the hospital.



The bite occurred at about 8:15 a.m. A few minutes after the spider bite the site of the bite was warm to the touch and swollen. About fifteen minutes later the worker began to feel dizzy with some nausea. His employer, the owner of the vineyard, immediately drove the farm worker in the employer's pick-up truck ten miles to a local Level 2 Trauma Center emergency department. The injured worker arrived at the hospital at approximately 8:55 a.m., but was not treated until 9:50 a.m. He was treated with antihistamines for local and systemic reactions to the spider bite, and released. He was seen a second time on March 16, 1992 at the request of the emergency department physician. At this time he was noted to be on antibiotics, and given a brief wound check.

No medical transport unit was notified by the employer, although the local emergency medical service was available to the employer by calling 911. The owner/operator did not administer any first aid treatment prior to transporting the employee to the hospital. The farm owner had no formal first aid training.

PREVENTION STRATEGIES

1. The employer has the responsibility to have emergency medical services available for employees at remote work sites, including a person at the field site trained in first aid.¹ First aid training may have made the employer aware of dangers associated with insect bites. Spider bites can cause severe reactions such as anaphylactic shock (shock brought on by hypersensitivity to an allergin). Although in this incident the farm laborer did not go into shock, in other incidents workers may be more susceptible to insect bites and may experience more severe reactions.
2. Poisonous insect bites are a common seasonal hazard in the agricultural work place. A nurse from the NURSE Project noted four spider bites and two snake bites during a two week review of records at this same hospital. The employer should instruct employees to be aware of the problem of insects and animals in the vines, and warn employees to check for them before working under the vines. Both yellow jackets and rattlesnakes can be found in the vines. If the employee had checked for insects and animals under the vines, he may not have been bitten by the spider.
3. Employers should request the aid of emergency medical services when there is the potential for a life-threatening situation to develop. The employer should have called 911 and let paramedics decide whether or not the employee should have been transported in an ambulance or a private vehicle. In this incident the employer would have been unable to provide treatment if the worker had gone into anaphylactic shock on the way to the hospital.

1. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."





REPORTE NURSE #9

UNA ARAÑA VENENOSA PICA A UN TRABAJADOR DE VIÑEDO

CDHS(COHP)-FI-92-005-09

Resumen

Un trabajador agrícola se encontraba trabajando en un viñedo, quitando la maleza del tronco de las viñas con una pala. Se agachó debajo de las viñas para revisar su trabajo cuando le picó una araña en el lado izquierdo de la nuca. La araña pudo haber sido una araña café o cualquier otra araña venenosa. Quince minutos después de la picadura el trabajador se empezó a sentir mareado y con ganas de vomitar. El patrón lo llevó a la sala de urgencias de un hospital, donde lo atendieron y le dieron de alta.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Antes de trabajar debajo de las viñas o otros lugares escondidos, revise que no haya arañas, avispas, culebras de cascabel o cualquier otro animal venenoso.
- En el lugar de trabajo debe haber una persona entrenada en primeros auxilios. El trabajador pudo haber tenido una mala reacción a la picadura de la araña.
- Llame al número telefónico 911 (servicios de emergencias) para cualquier picadura venenosa.

CASO 192-028-01

2 de junio 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #10

TRACTOR RUNS OVER ASPARAGUS SLEDDER

CDHS(COHP)-FI-92-005-10

Summary

An *asparagus sledder* was loading bunches of asparagus into large bins. The bins ride on platforms built onto a tractor. As the tractor moves slowly through the field, the sledder steps off the platform, scoops up a bundle of asparagus, jumps back on the platform and puts the asparagus into the bin.

The field was soft and bumpy, and the platforms and bins were bouncing around. The sledder jumped onto the platform with a load of asparagus in his hands. He tried to lean against a bin to steady himself, but the bin had bounced out of position. He lost his balance and fell against the rear wheel of the tractor. The tire tread caught his loose jacket and pulled him off the platform and down to the ground. The wheel then ran over his chest. Fortunately, the ground was soft and the tire pressed the worker into the dirt without crushing his chest.

How could this injury have been prevented?

- Wear tight-fitting clothing when working around moving machinery.
- Think safety when redesigning equipment. The tractor should have had a guard rail to protect the worker from the rear wheel, and the bins should have been anchored to the platforms.
- Work as a team. The tractor driver might have been able to stop the tractor when the sledder fell if he was watching his partner.
- Keep hands free when working.

CASE 292-008-01

May 18, 1992

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.





BACKGROUND

On March 20, 1992, a local acute care general hospital reported that an asparagus sledder had been admitted for treatment of a crushing injury to his chest and possible rib fractures. The worker had lost his balance and was pulled underneath the wheel of a tractor. At the time of the injury the worker had been loading asparagus into transport bins, of "sleds", which are mounted on platforms next to the rear wheels of the tractor.

The incident took place in an asparagus field of approximately 500 acres. A nurse from the NURSE Project discussed the incident with the injured worker on March 25, 1992. NURSE staff reviewed the emergency medical services run sheets and the hospital medical records. A Senior Safety Engineer and a nurse from the NURSE Project discussed the incident and conducted an on-site investigation with the worker's employer, a farm labor contractor, on April 6, 1992. Farm labor contractors are used by some farm owners and operators of large corporate farms in California to recruit, train and manage workers. This contractor has a crew of approximately 120 workers specializing in asparagus picking. The crew work approximately six months on the asparagus harvest.

The incident was not reported to or investigated by the California Occupational Safety and Health Administration (Cal/OSHA). The farm labor contractor's safety program was reviewed by the NURSE Project Safety Engineer and was found to address all seven points required by Title 8 California Code of Regulations 3202--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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

INCIDENT

On March 13, 1992 at approximately 11:50 a.m. a field worker was loading asparagus into a bin on a platform attached to a tractor. The worker lost his balance, was pulled off the platform, down to the ground, and run over by one of the large rear wheels of the tractor.

The asparagus loading operation uses tractors with the seat removed, and with platforms for holding asparagus bins attached around the sides and rear. The driver stands on a platform at the rear of the tractor, where he observes his co-worker and controls the vehicle. His co-worker, the "sledder", also rides the platform and steps off to retrieve the bunches of asparagus which have been cut and stacked on top of the field rows by the pickers/cutters. The sledder keeps an 18 inch rubber loop wrapped around both hands and



uses it as a sling to pick up the bundles of asparagus. The sledder places the asparagus in the large bins which ride on the platforms on the outside of the tractor wheels, one bin on each side of the tractor. The bins rest on tracks on the platform, secured at one end. As the asparagus is laid in the bins a burlap cloth covering is laid over the stacked asparagus at one foot intervals to keep the asparagus from moving. When the bins are filled to the top (approximately 3 feet high) they are covered with a final burlap cloth which is fastened down. The full bins are then removed to a waiting truck, and an empty bin is placed on the sled. The driver and the sledder work as a team and switch positions throughout the work day.

The sledder was wearing a loose fitting jacket when the incident occurred. He ran up to the platform with both hands holding a load of asparagus in the rubber sling. The rows had been newly cultivated to remove weeds and make easier access for the tractor. The platform was soft and unsteady due to the bumpy field the tractor was moving over. The worker jumped up onto the platform and attempted to lean against the bin to gain his balance, but the bin had bounced off its track on the platform, and he was unable to steady himself.

As he lost his balance he leaned forward on the work platform and come into contact with the rear wheel of the tractor. The tire tread caught his loose jacket and he was unable to free it. He yelled to the driver that he was caught. His shirt then became caught and he was pulled off the platform by the wheel and down to the ground, where the wheel rode over his chest. The tractor had run over the sledder by the time the driver became aware of the incident and stopped the tractor.

The local emergency medical service (EMS) responded to a call from the field foreman at 12:00 p.m. and arrived about 13 minutes later. Upon arrival the EMS paramedics found an alert 18 year old Hispanic male with normal vital signs, pressed deeply into the soft dirt of the field and complaining of chest pain, low back pain and difficulty breathing. He had an abrasion but no deformity of his lower leg. The paramedics splinted the injured worker's left leg and immobilized him by strapping him to a spine board. Paramedics gave the worker oxygen and started an IV of normal saline, and put him on a cardiac monitor for observation. After a difficult extrication the ambulance was enroute to the hospital about 20 minutes later, and arrived at the hospital emergency room after another 20 minutes (at approximately 1:00 p.m.)

The hospital admitting diagnosis was crush injury to the chest with possible fractures on the left side. The injured worker was admitted for further evaluation, observation, and pain control, and was discharged two days later after internal injuries were ruled out. At the time of the worker interview, 12 days after the incident, the worker was at home and stated that he had no serious injuries and only had mild pain to the chest area.



PREVENTION STRATEGIES

1. The contractor independently investigated the incident and instituted a rule that prohibits employees from wearing loose clothing when driving or working around the tractor/sledding operation. If the worker had been wearing tight-fitting clothing which could not become caught by moving parts he would not have been pulled off the platform by the tractor wheel. This is an inexpensive and relatively simple way of preventing machinery entanglement.¹
2. Employers should consider safety guards when modifying tractor or farm equipment. A guard rail should have been installed between the bin platform and the large rear wheels of the tractor. In this incident the sledder could have grabbed the guard rail to keep from losing his balance, thus avoiding coming into contact with the wheel.
3. Employers should consider safety engineering when modifying tractor or farm equipment. The bins are anchored at the front of the tractor platform, but at the rear the bins are not anchored to the platform, allowing the bins to move around when the tractor hits a bump or rough terrain in the field. The asparagus bins should be anchored both at the front and the rear when installed on the tractor platform. In this incident if the bins had been stabilized the worker might not have lost his balance and would have avoided coming into contact with the wheel.
4. Workers who are working as a team need to be sure that there is constant communication and visual contact between themselves. In this incident if the sledder had been able to signal the driver that he was caught on the wheel, or if the driver had stopped the tractor as soon as the sledder was caught, the worker would not have been pulled off the platform and subsequently run over.
5. Standard operating procedure should ensure that employees have a full range of motion. This operation requires employees' hands to be bound while jumping on and off a moving platform. In this incident the employee was unable to steady himself with his hands, and his chest and clothing came into contact with the rear wheel. Procedures that would leave employees' hands free should be developed. These might include bundling asparagus in the field before it is picked up and placed in the bins.

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1. Title 8 California Code of Regulations 3383 (b): "Loose sleeves, tails, ties, lapels, cuffs, or other loose clothing which can be entangled in moving machinery shall not be worn."



REPORTE NURSE #10

PASA UN TRACTOR SOBRE UN CARGADOR DE ESPARRAGOS

CDHS(COHP)-FI-92-005-010

Resumen

Un cargador estaba llenando un cajón con espárragos. Los cajones van sobre plataformas aseguradas a los tractores. Mientras el tractor se mueve muy despacio por el fil, el cargador se baja de la plataforma, recoge un manojo de espárragos, vuelve y se monta en la plataforma y pone los espárragos en el cajón.

La tierra estaba blanda y dispereja y las plataformas y cajones rebotaban. El cargador saltó sobre la plataforma con las manos llenas de espárragos. Intentó recargarse sobre un cajón para balancearse, pero el cajón estaba rebotando fuera de su lugar. El cargador perdió su equilibrio y se cayó contra la llanta trasera del tractor. La llanta le agarró la chamarra y lo empujó hacia fuera de la plataforma y al suelo. Una vez en el suelo, la llanta presionó al cargador sin aplastarle el pecho.

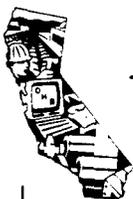
¿Cómo se hubiera podido prevenir esta lastimadura?

- Cuando re-diseñe maquinaria, siempre piense en la seguridad. El tractor había de haber tenido un resguardo sobre las ruedas traseras; y los cajones deberían de haber estado firmamente asegurados a la plataforma.
- Trabaje en grupo. Si el chofer del tractor se hubiera dado cuenta de lo que estaba haciendo su compañero, hubiera podido haber parado el tractor cuando el compañero se cayó.
- Mantenga las manos libres cuando se encuentre trabajando.

CASO 292-008-01

18 de mayo 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #11

FOOT AMPUTATED BY AUGER

CDHS(COHP)-FI-92-005-11

Summary

At a vegetable processing plant, a machine operator's foot was amputated while walking down a trimming line. On the trimming line the vegetables are cut to size, and the trimmings are dumped into a trough that runs along the floor. Inside the trough a metal auger turns like a screw, pushing the vegetable matter out of the trimming area. The trough is covered with heavy grates. Somehow, one of the grates covering the trough was not in place and the machine operator stepped or slipped into the turning auger, tearing off the left foot and ankle. The machine operator is not certain how the injury happened, and nobody was watching. Co-workers, and then the fire department, arrived quickly, stopping the machine and applying a tourniquet. The injured machine operator's foot was too badly mangled for the hospital to surgically reattach it.

How could this injury have been prevented?

- The guard over the moving auger should not be easy to remove.
- The auger can be made of a lighter, more flexible material than metal, such as rubber or plastic, which will give way when a person's hand or foot becomes trapped.
- Contact switches can be connected to the grate so that if the grate is raised the power to the auger will switch off.
- Running water, rather than an auger, can be used to carry vegetable matter down the trough.

CASE 292-009-01

July 16, 1992

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.



BACKGROUND

On March 22, 1992, a local newspaper reported that a machine operator had been injured the previous day in a vegetable processing plant. She suffered a traumatic amputation of the left foot above the ankle when her foot was caught in a turning auger.

A Nurse from the NURSE project identified the case when reviewing the newspaper and discussed the incident with the injured worker on April 15, 1992. On May 29, 1992, a NURSE team consisting of the Senior Safety Engineer, the Epidemiologist, and a Nurse visited the site and investigated the incident. The team also discussed the incident with the plant manager, who was the safety director at the time of the incident, and a representative of the employer's workers' compensation insurer. NURSE staff also reviewed the emergency medical service records and the Cal/OSHA report on the incident.

Cal/OSHA was notified the day of the injury by the local fire department who responded to a 911 call made by a co-worker. Cal/OSHA contacted the employer that day and investigated the incident, which included reviewing the employer's injury and illness prevention program. The safety program 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

Also, six months prior to this incident, the plant manager had begun an updated safety program with videotaped instruction for employees. The injured worker said she had participated in this program and had received safety training related to operating a trim machine.

INCIDENT

On March 21, 1992, at approximately 7:50 a.m., a machine operator in a vegetable processing plant had her left foot and ankle caught and torn off by a turning auger. The worker was a 49 year old Hispanic female, a seasonal employee of the company for five years. She was employed as a trim machine operator, trimming vegetables to a uniform size before processing and shipment. She was on her second day of work in the current season.

The incident occurred next to one of the trim lines in the plant. The vegetables are trimmed to the proper size at the lines. The excess vegetable matter from the trimming is washed down into a U-shaped trough set in the plant floor. The trough is 10 inches wide, 12 inches deep, and runs 75 feet across the plant. Inside the trough a metal auger continuously turns and pushes the vegetable matter to a section of the plant where it is processed into cattle feed. Protective grates are recessed in the floor and cover the trough.





and auger. The grates are made of flat metal strips which rest on 4 inch-wide lips on either side of the trough.

The incident was unwitnessed. The processing plant was about to begin its day shift when the employee went walking down an unoperating aisle of a trimming line. She had worked on this line the previous day, but had been reassigned to a different line the day of the incident. The injured machine operator did not remember the incident clearly. Apparently, the protective grating over the trough had been dislodged or became dislodged, and her foot went into the trough and was caught in the rotating auger. The section of grating that was not in place at the time of the injury was one of the smaller sections, approximately 18 inches long and weighing about 34 pounds.

According to the plant manager, a maintenance man was nearby when the incident occurred. The maintenance man immediately called for help. Two co-workers arrived and helped the victim while the first worker ran to shut off the power to the screw conveyor system. The cut off switch was approximately 200 feet away. Co-workers trained in first aid applied a tourniquet to the left leg to control bleeding and called 911.

The local fire department responded to the 911 call and arrived on the scene four minutes after being called. An ambulance Emergency Medical Services (EMS) crew also responded, arriving at the scene nine minutes after 911 was called.

The EMS crew gave the injured worker oxygen, applied MAST pants (Military Anti-Shock Trousers to restrict blood-flow to and from the lower extremities), set up a cardiac monitor and attempted to establish an I.V. After ten minutes of EMS treatment at the scene of the injury, the injured worker was transported to an acute care general hospital within twelve minutes (at approximately 8:22 a.m.). The amputated foot was placed in a plastic bag, put on ice and transported to the hospital with the patient. Because of extensive tissue damage, the hospital did not attempt to surgically reattach the foot. The injured worker was admitted to the hospital for one week. At the time of the NURSE interview she was still at home, and unsure of whether she would be able to return to work.

PREVENTION STRATEGIES

1. Employers should insure that guards on moving machinery are not easily removed. Immediately after the incident, the company welded the smaller portion of the protective grate to the adjacent grate so that two people are needed to lift the grate free of the trough lips. In this incident, if heavy equipment had been required to move the grate it might not have become dislodged.
2. Employers should consider using safer materials when designing, installing and upgrading equipment. The auger could be made from lighter and more flexible materials such as hard rubber, high technical grade plastic, or flexible wire which would give way (e.g.: bend, stop) upon contact with a person's hand or foot.





or all of these materials are feasible in vegetable processing plants since the material being moved is vegetable matter, and does not need a heavy metal screw to push it down the trough. In this incident, if the auger had been made of a more flexible material it might have given way when the worker's foot contacted it, resulting in a less severe injury.

3. Employers should consider safety engineering when designing, installing and upgrading equipment in a processing plant. The auger should have a shut-off switch within immediate reach of employees in the work area. Cord-type or other emergency off switches can be easily installed at intervals adjacent to the conveyor system. (The company is currently researching the feasibility of installing more accessible shut-off switches in a new plant.) Although stopping the equipment earlier may not have prevented the loss of the worker's foot, it would have prevented co-workers coming to her aid from being exposed to the same hazard.
4. Employers should consider using automatic power shut-off switches when designing, installing and upgrading equipment in a processing plant. An electrical interlock system could be installed with micro-switches at the contact points of the grate so that the removal of the protective grate would turn the rotating auger off. In this incident, if an interlock system had been installed the auger would have stopped turning when the grate was removed or dislodged, resulting in a less severe injury.
5. Employers should consider using safer, innovative methods when designing, installing and upgrading equipment in a processing plant. A multi-jet re-circulating water wash system can be installed in the waste troughs in place of the auger. In this incident, re-design using water would have removed entirely the hazard of the moving auger.



REPORTE NURSE #11

PIE AMPUTADO POR UNA BARRENA

CDHS(COHP)-FI-92-005-011

Resumen

En un planta donde se procesan vegetales, el pie de una operadora de maquinaria fue amputado cuando pasaba sobre un canalito donde se recogen los desperdicios de los vegetales. En la mesa de recorte los vegetales se cortan de cierto tamaño y los desperdicios van a dar al canalito que corre a lo largo del suelo. Dentro del canalito hay una barrena de metal que da vueltas como un tornillo, empujando los desperdicios fuera del area de recorte. El canalito está cubierto con rejas pesadas. De alguna manera o de otra la reja no se encontraban bien colocada. Al pisar sobre ella, la operadora se resbaló, pizandando sobre la barrena que estaba en movimiento. Esto le arrancó el pie y tobillo izquierdo. La operadora no está segura de cómo fue que sucedió el incidente y no había otra persona quien haya visto. Los compañeros de trabajo y el departamento de bomberos llegaron rapido, pararon la máquina y le pusieron un torniquete. El pie de la operadora estaba tan destrozado que no se pudo salvar con cirugía.

¿Cómo se hubiera podido prevenir esta lastimadura?

- La barrena debe tener rejas que no sean fáciles de quitar.
- La barrena puede ser de un material más liviano o flexible que metal, como lo es el plástico o hule, que son flexibles en caso de que la mano o pie de una persona quede atrapado.
- Pueden instalarse interruptores de contacto a las rejas, de manera que la barrena se apague cuando se levanta la reja.
- Se puede usar agua para mover el desperdicio en el canalito en vez de una barrena.

CASO 292-009-01

16 de julio 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #12

TREE TRIMMER ELECTROCUTED IN ORCHARD

CDHS(COHP)-FI-92-005-12

Summary

A tree trimmer was pruning walnut trees in an orchard. He used a *lift bucket* (a "cherry picker") attached to a mobile platform, which he could raise, lower and move along the rows of trees while standing in the bucket. At the edge of the orchard, high voltage power lines crossed over the last row of trees just above the tree tops. The power company was usually called in to trim these trees.

However, on this day the worker began pruning the last row of trees. He raised his *lift bucket* to the top of one tree. His pruning shears touched the power line and he was electrocuted. Although co-workers pulled the lift bucket and platform away from the power lines with a truck, the worker died instantly. His body was badly burned.

How could this death have been prevented?

- Hold safety meetings before every shift, warning workers of dangers in their area.
- Ask the power company to shut off power to lines in the work area, instead of expecting workers to avoid the lines.
- Work as a team. Other tree trimmers in the orchard should be on the look-out for danger.
- Mark dangerous areas for employees to avoid, such as trees near power lines.
- Use tree trimmers who are specially trained to work near power lines.

CASE 192-036-01

August 11, 1992

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.





BACKGROUND

On April 1, 1992, at 3:15 p.m., the California Occupational Safety and Health Administration (Cal/OSHA) district compliance office was notified by an orchard owner of an electrocution in a walnut orchard. This fatal injury occurred at approximately 2:20 p.m. earlier that day, when a 38 year-old male Hispanic tree trimmer was electrocuted while pruning walnut trees.

Cal/OSHA notified NURSE Project staff of the incident on April 9, 1992. A Senior Safety Engineer from the NURSE project conducted an on-site investigation on June 2, 1992, and July 1, 1992 and discussed the incident with the farm owner and crew foreman. NURSE staff reviewed the medical examiner/coroner records and the Cal/OSHA investigation report.

This electrocution occurred on a family-owned farm of 1,000 acres, of which about half are planted in tree fruit and nuts and half in cotton. Approximately 300 casual (1 to 12 weeks per year) farm workers are employed by the farm during peak harvest season, and 15 workers are employed year-around. Cal/OSHA investigated the incident on April 6, 1992, and found the employer's safety program 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The tree trimmer had worked on this farm for several years as the foreman of a 30-worker crew, but then had returned to his home in Mexico. He returned to California and was hired in December, 1991 to prune trees in the orchards during the next spring season. He received two days of safety training at that time. Current farm safety policy includes tailgate safety meetings held every ten days. (Tailgate safety meetings are brief talks on safety practices by the foreman or supervisor at the work site before the day's work begins.) The employer noted that the tree trimmer had been warned of the presence of the power lines during the initial safety training in December, 1991. During the pruning season last spring, the power company had trimmed the trees near the power lines.

INCIDENT

On April 1, 1992, at approximately 2:20 p.m., a tree trimmer was pruning walnut trees using a mobile lift bucket. The lift bucket is mounted on a platform that has a tricycle-type configuration, with dual wheels on each of the three axle points. One set of wheels, in the rear, steers the platform. The wheels in the front are used to move the unit. A diesel engine in the base of the platform powers the drive wheels and the hydraulic system.



The control system for the hydraulic lift and the power system for the mobile platform are in the lift bucket, enabling the driver to stand in the bucket and operate the controls that raise and lower the bucket, and move the platform. Using mobile lift buckets for pruning eliminates the use of ladders and is more efficient. This lift bucket was not insulated because it was not intended for use around high voltage power lines. Therefore, the lift bucket was incapable of preventing electrical current from flowing through it to the ground.

At the time of this incident, the fatally injured tree trimmer and one other tree trimmer were working from two mobile buckets in the orchard. A 12,000 volt power line (30 feet and 3 inches above the ground) runs parallel and crosses the last row of trees (see diagram). At the time of the investigation, tree branches were observed to be touching the power line.

The tree trimmer was pruning the last row of trees adjacent to the roadway with the power lines over his head. The worker trimmed one side of the tree, then moved the platform into the roadway on the far side of the tree to prune the other side. He raised the bucket approximately 25 feet high (as high as the bucket could go) and lifted his pruning shears over his head. His shears then came into contact with the high voltage power line. Upon contact with the power line, a path-to-ground circuit was established and electricity flowed through the pruning shears, his body, and down to the ground through the platform.

Other employees on the farm used a truck to pull the mobile platform away from the power lines and lower the lift bucket. Farm employees also called 911, with the fire and ambulance service, the county sheriff and the coroner's office all responding. The coroner noted the tree trimmer was lying on the ground under the tree where he had been working, and pronounced him dead at 2:40 p.m.

The deceased tree trimmer had deep and extensive abdominal burns. These burns corresponded to clothing burns and burns on the plastic bumper of the inside edge of the lift bucket where he had been leaning. There were also burns on his thumbs and fingers, the front left side of his chest, his right thigh, right shin, and toes. The metal shaft and plastic handle of the pruning shears were blackened where he had been holding them. The boom (neck leading from the platform to the bucket) of the lift bucket showed electrical discharge markings such as blackened and peeling paint, and two of the six wheels had electrical burns down the side with the ground next to them burned.

The coroner reported the cause of death as cardiac arrest and arrhythmia due to electrocution with extensive thermoelectric burns.



PREVENTION STRATEGIES

1. Employers should keep the work environment free of hazards. The presence of high voltage power lines is a hazard for any workers performing their routine work tasks. If the tree trimmer was going to be working near these lines, the power company should have been notified and shut off power during the pruning activity. If the lines had been de-energized or covered with insulated sleeves, the tree trimmer would not have been electrocuted when his pruning shears contacted the lines.
 2. Workers who are working as a team or in the same area need to be sure that there is constant communication and visual contact among themselves. In this incident, two tree trimmers were working in the same orchard. If there had been communication between them, one of the tree trimmers may have warned the other that they were not supposed to work in the row near the power lines.
 3. Employers should have tailgate safety meetings prior to every work shift. The foreman should re-enforce the importance of safety procedures at the work site prior to starting the work day. Emphasis should be on pointing out specific hazards related to their tasks and ensuring that employees understand that safety procedures must be followed to prevent injuries. If this worker had been instructed earlier that day that he should not trim the trees next to the power line, he might not have attempted to do so.
 4. Employers should identify and mark all hazards in the work environment. In this incident, there were no warning signs placed on trees which were close to the power lines. If these trees in the last row (near the power lines) had been marked with highly visible paint, perhaps the tree trimmer would have been warned that he was in the vicinity of the high voltage lines. There was also no warning sign on the mobile work platform saying that equipment should not be operated within ten feet of the power line.¹ Originally the mobile platform had a manufacturer's warning sign, but it had been removed when a heater was added by the employer.
 5. Employers and foremen should never allow their employees to perform work that they have not been specifically trained for or for which they do not have protective equipment. Working in the vicinity of high voltage power lines requires specialized equipment and training. Qualified line clearance tree trimmers are specially trained (with eighteen months of experience and on-the-job training) for working in the vicinity of power lines. If the farm owner had hired a qualified line clearance tree trimmer to perform this task, the worker's death might have been prevented.
1. Title 8 California Code of Regulations 2947: The owner..shall post and maintain in plain view of the operator and driver on each crane, derrick...a durable warning sign legible at 12 feet reading: "Unlawful to Operate This Equipment Within 10 Feet Of High Voltage Lines of 50,000 Volts or Less."



REPORTE NURSE #12

PODADOR MUERE ELECTROCUTADO EN UNA HUERTA

CDHS(COHP)-FI-92-005-012

Resumen

Un trabajador se encontraba podando árboles de nueces en una huerta. Utilizaba una canasta en una plataforma móvil, la cual él podía elevar, bajar o moverla a lo largo de los árboles mientras se encontraba parado en ella. A la orilla de la huerta se encontraban cables de alta tensión, los cuales pasaban sobre el último surco de arboles. Usualmente se llamaba a la compañía de electricidad para que ellos podaran estos arboles. Sin embargo, ese día el trabajador empezó a podar el último surco de arboles.

El trabajador elevó la canasta hasta la punta de un árbol. Las tijeras de podar tocaron el cable de alta tensión y el trabajador se electrocutó. Los compañeros de trabajo usaron un troque para retirar la canasta de los cables pero el trabajador murió instantáneamente. Su cuerpo sufrió quemaduras intensas.

¿Cómo se hubiera podido prevenir esta muerte?

- Tenga juntas de seguridad ántes de cada turno de trabajo y advierta a los trabajadores de los peligros que se pueden encontrar en el área de trabajo.
- Pida que la compañía de electricidad apague la corriente en vez de esperar a que los trabajadores eviten los cables eléctricos.
- Trabaje en grupo. Los otros podadores deben estar atentos para ver si hay peligros en el área.
- Marque las areas peligrosas para que otros trabajadores las eviten, tales como árboles cercas a cables eléctricos o de alta tensión.

CASO 192-036-01

11 de agosto 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #13

TRACTOR DRIVER CRUSHED BETWEEN TWO TRACTORS

CDHS(COHP)-FI-92-005-13

Summary

At an onion harvest, a worker was driving a tractor which pulled trailers loaded with onions out of the fields. When he arrived at work, his tractor would not start. This was a 15-20 year-old tractor. The driver hooked his tractor to another tractor with a chain to jump start it. Another driver towed the old tractor.

When his tractor started running, the driver let in the clutch and walked between the two tractors to unhook the chain. The old tractor engine was running roughly and shaking. The shift lever was shaken loose and the clutch engaged. The old tractor powered forward on its own and pinned the driver against the back of the other tractor, crushing his spine and pelvis and eventually killing him.

How could this death have been prevented?

- Give workers equipment that works and is properly maintained. An old tractor that won't start is a hazard on the job.
- Employers should have a safety program that trains workers and tells them about dangers on the job.
- Workers should not put themselves into dangerous situations. The driver stood between two running tractors to unhook the chain.
- Work as a team. The other tractor driver might have been able to warn his partner if he had been watching out for him.

CASE 192-129-01

August 11, 1992

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.



BACKGROUND

On June 6, 1992, while reviewing the log at the county coroner's office, a nurse from the NURSE Project identified a report of an agriculture-related death. The report stated that a 36 year-old male Hispanic tractor driver, employed by a local produce trucking company, had been killed when he was crushed between two tractors in an onion field. This death occurred on May 27, 1992 at approximately 6:10 a.m.

On June 10, 1992, a nurse from the NURSE project discussed the incident with a bystander who had witnessed the death. On June 16, 1992, the nurse discussed the incident with the brother of the fatally injured tractor driver. The Senior Safety Engineer from the NURSE Project conducted an on-site investigation on June 23, 1992, and discussed the incident with the trucking company manager. NURSE staff also reviewed the sheriff's report, Emergency Medical Service ambulance report and the medical examiner/coroner's records.

The employer notified the California Occupational Safety and Health Administration (Cal/OSHA) on May 27, 1992. Cal/OSHA investigated the incident on July 13, 1992.

At the time of the incident, the trucking company had four employees: two workers, one of whom was killed, the manager and the controller. The NURSE Senior Safety Engineer found that the company had no written injury and illness prevention program at the time of the incident as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The manager stated that he had trained the fatally injured tractor driver prior to this incident. However, no information was available to verify the nature and extent of this training.

INCIDENT

On May 27, 1992, the injured tractor driver was scheduled to drive an old tractor which would pull a flatbed trailer through onion fields, so that onion pickers could put the onions on the trailer. The tractor driver had arrived at work before 6:00 a.m. and was told by the trucking company manager that one of the tractors would not start. He was told to jump start the tractor. This was a 15-20 year-old caterpillar tractor which has no wheels or tires but instead moves by two continuous metal tracks. The tractor driver attached a chain from this older tractor to a fifth wheel pulled by another tractor. A fifth wheel is used to attach a flatbed trailer to a tractor. It is a combination axle mounted with a large,



heavy duty disk called a "dolly" to which the trailer is attached. A co-worker then towed the old tractor to jump start it.

After the tractor driver succeeded in starting the tractor he dismounted and stepped between this tractor and the fifth wheel dolly attached to the lead tractor to remove the chain. The old tractor started running roughly and slipped into gear. This tractor has a foot clutch and hand clutch and a shift lever which engages and disengages the transmission system. With this type of transmission, the tractor can move forward if the shift lever is not put into neutral and the clutch disengaged. Although the tractor driver was observed to have disengaged the hand clutch before he dismounted, the vibrations could have caused the hand clutch lever to move and the clutch to engage. The tractor began moving forward, and the tractor driver, unaware of the moving tractor, was crushed between the front of the older tractor and the fifth wheel.

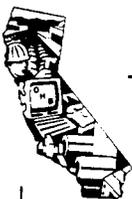
A bystander who witnessed this incident immediately came to the aid of the injured tractor driver, who was still pinned between the tractor and the fifth wheel. This person moved the older tractor back and the injured tractor driver fell to the ground. The bystander felt for a pulse and noted that the worker was not breathing. He was not trained in first aid but attempted to give the injured tractor driver artificial respiration. When the co-worker on the lead tractor yelled for help, another worker in an onion picking crew heard him, approximately one quarter of a mile away in the same field. The foreman of the onion picking crew called 911 with his truck radio. The sheriff's department noted that the incident had occurred at 6:10 a.m. Emergency Medical Service (EMS) paramedics were dispatched at 6:15 a.m. and arrived on the scene at 6:39 a.m. The sheriff's department and the California Highway Patrol arrived at the scene after the paramedics. The injured worker was pronounced dead by paramedics at 6:44 a.m.

The coroner listed the cause of death as fracture of the pelvis and lumbral-sacral spine due to crushing of the abdomen and pelvis. Another injury noted in the autopsy was complete transection of the abdominal aorta.

PREVENTION STRATEGIES

1. Employers should have written injury prevention programs¹, regardless of the number of employees. An important component of this program should be the training of workers to recognize and avoid hazards associated with their specific work tasks or equipment they operate. In this incident, it is unclear whether the tractor driver had received specific training on how to safely operate and work around this older tractor.
2. Another important component of a written injury prevention program¹ should be hazard evaluation and communication of hazards associated with specific work tasks or equipment. If the tractor driver had been aware that this tractor had an older style of transmission which would permit the tractor to roll forward under certain circumstances, he might have been more cautious and his death could have been prevented.





3. Employers should ensure that all equipment functions correctly and should not require workers to use older, unreliable equipment. In this incident, the tractor driver was told to jump start the older tractor; this indicates that the tractor was not operating correctly because it would not start. Because the tractor was not running well it vibrated back into gear and crushed the worker. Rather than request the tractor driver to temporarily bypass this problem, the employer should have had the older tractor either fixed or else should have provided the tractor driver with a tractor which was operating correctly. If the tractor driver had not been required to use this older tractor his death could have been prevented.
4. There should always be a person certified in Cardiopulmonary Resuscitation (CPR) on a field work team. In this incident (which occurred 55 miles away from the nearest hospital emergency department), a bystander (although not certified in CPR), not a co-worker, came to the aid of the injured tractor driver and attempted to ventilate him. Although this injured tractor driver had injuries which were not survivable, the likelihood of surviving such incidents with less severe injuries may depend on rapid access to emergency medical services. Therefore, it is important that initial emergency medical care be available on-site.²
5. Remote work crews should have a cellular phone or radio available to contact Emergency Medical Services (EMS) if needed. In this incident, a co-worker yelling for help was heard by another worker about one quarter mile away, which resulted in a delay in summoning appropriate medical help. Although a more rapid EMS response might not have prevented this particular death, in remote work sites such as in this incident, it may increase the chances for survival of less injured field workers in other remote work situations.
6. Standard operating procedures should ensure that employees are never required to intentionally place themselves in hazardous situations to complete a work task. In this incident, the tractor driver positioned himself between two running tractors to disconnect a chain. This action resulted in the worker being in a vulnerable position relative to the tractor locations. If required to jump start the old tractor, a method should have been selected which does not involve having a worker in this vulnerable position. If the worker had not been standing in between the two tractors, he would not have been fatally injured.
7. Workers who are working as a team need to be sure that there is constant communication and visual contact between themselves. In this incident, these workers were working as a team in what was a potentially dangerous situation. If the driver of the lead tractor pulling the older tractor had seen the older tractor begin to roll forward, he might have been able to warn the worker before he was crushed.

1. Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program.

2. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."





REPORTE NURSE #13

TRABAJADOR QUEDA PRENSADO ENTRE DOS TRACTORES

CDHS(COHP)-FI-92-005-013

Resumen

Durante la pizca de cebolla un trabajador se encontraba manejando un tractor que llevaba los remolques cargados con cebolla fuera del fil. Esa mañana cuando el trabajador llegó al trabajo, el tractor no prendía. El tractor tenía de 15-20 años. El trabajador enganchó con una cadena al tractor con otro tractor para prenderlo. Otro trabajador estaba manejando el tractor que jalaba al tractor viejo.

Cuando el tractor prendió, el trabajador lo puso en neutro y se bajó para quitar la cadena. Al estar parado entre los dos tractores, el tractor viejo funcionaba escabrosamente y brincaba. La palanca de cambios se movió haciendo que entrara en cambio. El tractor empezó a marchar por sí solo, atrapando al trabajador entre los dos tractores apachurandole la espina dorsal y la pelvis, lo cual al poquito tiempo le causó la muerte.

¿Cómo se hubiera podido prevenir esta muerte?

- Dele a los trabajadores equipo que funcione y a que se le ha dado mantenimiento apropiado. Un tractor viejo que no prende es un peligro en el trabajo.
- Los patrones deben tener un programa de seguridad el cual entrena a los trabajadores a reconocer los peligros en el lugar de trabajo.
- Los trabajadores no deben ponerse en situaciones peligrosas. El chofer del tractor se puso entre los tractores mientras estaban prendidos para quitar la cadena.
- Trabaje en grupo. Si el chofer del otro tractor hubiera estado atento, el pudo haberle advertido sobre el peligro a su compañero.

CASO 192-129-01

11 de agosto 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #14

IRRIGATOR WORKER IN ATV CRASH ON DAIRY FARM

CDHS(COHP)-FI-92-005-14

Summary

The irrigators on a dairy farm use *three-wheel ATVs* (All Terrain Vehicle) to move around the farm. An irrigator is someone who supplies land with water by artificial means. An ATV is a motorcycle with a three-wheel tricycle carriage and large tires for off-road use. An irrigator was driving an ATV down a dirt road on the dairy farm when an insect flew into his eye. He was blinded by the insect and did not see a "windrower," a large agricultural machine, which was parked in the middle of the road. The worker drove directly into the windrower. The driver was thrown off the ATV and hit a bar running along the front of the windrower, breaking his thigh, knee and ankle. The front of the ATV was completely destroyed.

The irrigator did not have anyone periodically checking on him. He laid on the ground with a broken leg for two hours until the workday ended and co-workers leaving work noticed he was missing. After they found him, he was taken by helicopter to an emergency department where his broken leg was operated on.

How could this injury have been prevented?

- If the irrigator had been wearing safety goggles the insect would not have temporarily blinded him.
- Do not leave equipment so it blocks a road.
- Use safe equipment. Three-wheel ATVs are known to be less safe than four wheel ATVs equipped with a seat belt and Roll-over Protection Structure (ROPS).

CASE 192-110-01

August 11, 1992

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.



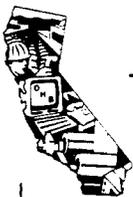
BACKGROUND

On May 19, 1992, while reviewing records at a Level 1 Regional Trauma Center, a nurse from the NURSE Project identified a report of an irrigator injured while working on a dairy farm. He sustained fractures of the left femur, knee, and right ankle after being thrown off a three-wheel All Terrain Vehicle (ATV) on May 12, 1992. A three-wheel ATV is a motorcycle with a three-wheel tricycle carriage and large tires, designed for off-road operation. It is capable of speeds in excess of 60 miles per hour. The worker was riding the ATV on a dirt road when he collided head-on with a windrower which had been left in the middle of the road. A windrower is a large piece of equipment used to cut alfalfa. It is a combination of a tractor and an auger, sickles, and knife. This equipment weighs approximately 8,000 pounds and is about 11 feet high and 20 feet wide.

A nurse from the NURSE Project interviewed the injured irrigator on June 2, 1992. The NURSE Senior Safety Engineer and the nurse discussed the incident with the farm manager on June 17, 1992, and conducted an on-site investigation on June 23, 1992. The local California Occupational Safety and Health Administration (Cal/OSHA) district compliance office was notified of the injury by the dairy farm manager that day, but did not investigate the incident.

The incident occurred at a dairy and alfalfa farm with approximately 3,000 dairy cattle and over 650 acres of alfalfa. The farm has 67 employees, of whom 65 are full-time employees and 2 are casual (1 to 12 weeks per year) workers. The injured irrigator was a full-time employee. ATVs are provided to the irrigators as a means of transport from field to field. The dairy farm had a written safety program. The program was reviewed by the Senior Safety Engineer from the NURSE project and was found to address all seven points included in the 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The dairy farm conducts safety training every two weeks and keeps written safety records. Routine monthly safety inspections are conducted by members from the farm's health and safety committee and other workers. All corrections of safety hazards are documented and reviewed at monthly safety committee meetings. At the time of this incident, five of the field management staff were trained in Community First Aid (which includes cardiopulmonary resuscitation), and the employer planned to have more employees trained. Workers who drove ATVs received information on safe operation, including rate of speed.



INCIDENT

On May 12, 1992, at approximately 3:25 p.m., a 37 year-old Hispanic male irrigator was riding a three-wheel ATV down a dirt road adjacent to an alfalfa field. The irrigator was returning from checking the irrigation water in an alfalfa field and was on his way to another field to pick up his lunch box. The injured irrigator told the nurse from the Nurse Project that an insect had flown into his eye and, as he was trying to get the insect out, he ran head-on into a windrower which had broken down and been left in the middle of the road. The ATV stopped on impact and the worker was thrown forward, striking his upper leg on a horizontal bar on the windrower and fracturing his femur. He then fell to the ground. The worker said he did not strike his head or lose consciousness. He was working alone and no one witnessed the incident.

The irrigator thought he was injured at approximately 3:25 p.m. and no one found him until about two hours later. Co-workers noticed that the irrigator did not arrive in the parking area at the end of his shift, so they began searching for him. When they found the injured irrigator, co-workers notified the field foreman, who contacted the farm manager by radio. The farm manager then called 911 from his car phone at 5:23 p.m. Co-workers did not move the injured irrigator or the equipment. The Emergency Medical Services (EMS) arrived four minutes after the 911 call. EMS paramedics evaluated the injured irrigator, started an IV, immobilized the worker's leg and gave him oxygen. At 5:35 p.m., they transported him to the junction of a state highway and requested air evacuation to the Level 1 Regional Trauma Center. The injured irrigator was transported by helicopter and arrived at the trauma center at 5:47 p.m.

The irrigator was hospitalized at the trauma center for ten days. He had orthopedic surgery including reconstruction of the broken left knee and femur. At the time of the interview with the nurse, he was still in a cast and convalescing at home.

PREVENTION STRATEGIES

1. This incident occurred because the irrigator driving the ATV had an insect fly into his eye, became temporarily blinded, and drove the ATV head-on into a windrower. If the irrigator had been wearing safety eye goggles he would not have gotten an insect in his eye. The dairy farm employer now requires all irrigators to wear wraparound safety goggles when riding an ATV. He also provides these at no cost to his employees.
2. Employers should require and provide helmets to employees who are required to operate off-road motor vehicles, including ATVs. In this incident, the dairy irrigator denied hitting his head, suffering a headache, or any loss of consciousness. Because this incident was unwitnessed, it is unknown whether any loss of consciousness occurred. If he had struck his head, he could have sustained brain injury in addition to the leg fractures.



3. Employers should have a method to track employees working in remote work sites. In this incident, the injured irrigator was not found for several hours, which delayed his receiving emergency medical treatment. If his injuries had been more severe or if he had had severe bleeding, this delay could have resulted in death. Foremen should have a method to monitor workers who are in remote work sites or who change work sites throughout a shift, either by radio or other means. If the foreman had been checking on the injured irrigator on a regular basis, he would have learned of the irrigator's injuries sooner and emergency medical treatment could have been initiated more quickly.
4. The work environment should be free of hazards, or, if present, hazards should be identified and corrected. In this incident, a large piece of non-operating equipment (the windrower) was left for two weeks in the middle of a heavily traveled dirt road. This equipment should not have been left in an area where it created a hazard. If it was necessary to keep the equipment in this location, it should have had an energy absorbing barrier around it. If the windrower had not been left in this location, the irrigator would not have driven his ATV into it and would have avoided injury.
5. Employers should provide the safest equipment available for employees. This irrigator was using a three-wheel ATV (manufactured in 1987) which had no Roll-over Protection Structure (ROPS) or seat belt (and was reported by the injured irrigator as having no brakes). Three-wheel ATVs are no longer sold in the United States because they are inherently less safe than four-wheel ATVs. If the irrigator had been riding a four-wheel ATV with a Roll-over Protection Structure (ROPS) and wearing a seat belt, his injuries might not have been so severe. After the collision, the dairy farm owner decided to repair the ATV (which was essentially destroyed) instead of purchasing a four-wheel drive ATV for the dairy workers to use.



REPORTE NURSE #14

REGADOR DE UNA LECHERÍA CHOCA EN UNA MOTOCICLETA

CDHS(COHP)-FI-92-005-014

Resumen

Los regadores que trabajan en una lechería usan una motocicleta (ATV) para movilizarse en el fil. El regador es la persona que provee el agua al terreno por metodos artificiales. Un ATV es una motocicleta de 3 ruedas con motor y llantas grandes hechas especiales para caminos de tierra. Un regador manejaba un ATV por un camino de tierra de la lechería, cuando le entró un insecto en un ojo. No pudo ver por donde iba y no vio una cosechadora de alfafa que se encontraba estacionada en medio del camino. Chocó con la cosechadora. El golpe tumbó al regador del ATV y fue a dar contra una barra que se encontraba a lo ancho y enfrente de la cosechadora de alfafa. El incidente causó que el regador se quebrara el femur (es el hueso que corre arriba de la rodilla hasta el cuadril), la rodilla, y el tobillo. La parte de enfrente de ATV se destruyó completamente con el golpe.

No había nadie que periodicamente fuera a ver como se encontraba el regador. El regador duró tirado en el suelo por más de 2 horas hasta que al fin del día los otros trabajadores lo echaron menos. Cuando encontraron al regador fue transportado por helicóptero a la sala de urgencias en donde le operaron su pierna quebrada.

¿Cómo se hubiera prevenido esta lastimadura?

- Si el regador hubiera usado lentes protectores, el insecto no le hubiera afectado su vista.
- Nunca se debe dejar equipo o maquinaria bolquiando el camino.
- Use equipo seguro. Se reconoce que las motocicletas (ATV) de tres ruedas son menos seguras. Algunas ATVs de 4 ruedas vienen equipadas con cinturón de seguridad así como con un arco seguridad, y esto les da más seguridad en caso de una volcadura.

CASO 192-110-01

11 de agosto 1992

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NURSE REPORT #15

TRACTOR DRIVER KILLED BY FLYING METAL OBJECT

CDHS(COHP)-FI-92-005-15

Summary

A tractor driver was pulling a mulcher (which cuts wood into smaller pieces) over cut branches in an orange grove. He owned an orange grove and knew how to use a mulcher. When rounding a row of orange trees, a small metal object was thrown by the blades, exiting through the back of the mulcher. This metal object bounced off the back of the mulcher and struck the tractor driver in the forehead.

A relative found him several hours later, slumped over in the seat on the tractor which had run up against an orange tree. He was unconscious. He was taken, by ambulance, to a hospital. He stayed in a coma and was pronounced brain dead two days later.

How could this death have been prevented?

- The mulcher should have had a guard over the back.
- Tractor drivers can wear helmets to prevent flying objects from hitting them in the head.
- Employers should have injury prevention programs. These programs can help workers and employers identify and fix hazards (such as an unguarded mulcher).

CASE 192-040-01

August 28, 1992

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.





BACKGROUND

On April 15, 1992, the nurse from the NURSE project was reviewing the county coroner's log. She noted a 52 year-old male Caucasian died on March 31, 1992. He had been struck in the head by a metal object while driving a tractor on March 29, 1992. The incident occurred on an orange grove where he was mulching cut branches lying between rows of orange trees. He was driving a tractor which was pulling a reel-type mulcher (which is similar to a lawn mower with blades rotating around a horizontal axis) over cut branches. A small unidentified metal object, propelled through the air by the blades of the mulcher, struck him in the forehead and penetrated through his skull into his brain. He remained in a coma until he was pronounced brain dead in the hospital two days later.

An on-site visit was made by the Senior safety engineer of the NURSE Project on July 7, 1992. The Senior safety engineer discussed the incident with the newly hired, full-time manager of the orange grove and photographed the mulcher. NURSE staff also reviewed the medical examiner/coroner records related to this fatality.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified, and did not investigate the fatality.

This incident occurred on a family owned and operated 90-acre orange farm. The fatally injured tractor driver was helping the part-time manager of the farm (the only employee of the farm owner) at the time of the incident. Most of the farm work, consisting of pruning orange trees, applying pesticides, and picking oranges, is done by contractors. Casual farm laborers (working 1-12 weeks per year) are hired to help with pruning and irrigation. At the time of the incident, the farm owner did not have a written injury prevention program. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

After this fatal incident the farm owner hired a new full-time manager for the farm. The new manager was developing a written injury and illness prevention program at the time of the on-site investigation by the Senior safety engineer.

INCIDENT

On March 29, 1992, at approximately 12:00 p.m., a 52 year-old Caucasian male tractor driver was struck in the forehead by a small piece of metal. This object had been propelled by the blades of a mulcher, which was being pulled behind and powered by the tractor he was driving. He was mulching branches cut from orange trees using a large reel-type brush mulcher. This reel-type mulcher is similar to a lawn mower, with blades



rotating around a horizontal axis. The cutting blades on the reel are driven by a power take-off unit (an extension of the tractor transmission shift used to power implements with the tractor engine). After being cut into smaller pieces (mulching) the branches are mixed into the soil. The fatally injured tractor driver had his own 20-acre orange grove and was familiar with mulching. As he was rounding a row of orange trees, a small piece of metal was picked up by the mulcher blades and propelled out the back through the air. It might have changed direction by bouncing off a rear support of the mulcher. The metal struck him in the mid-forehead, presumably as he was looking backwards over his shoulder. It penetrated the front of his skull and lodged in his brain.

There were guards at the front of the blades, but the rear of the mulcher was not covered. In the past, this mulcher was known by the farm employees to sometimes throw branches and other material out the rear of the machine at high speed. This mulcher had two 1-inch square stabilizing metal braces at the rear. When an object is thrown out the rear of the mulcher, it may hit these braces and bounce off in another direction. Although this incident was unwitnessed, the metal object may have struck the metal brace and been deflected up and toward the tractor driver.

A relative on the farm at the time of the incident found the injured worker several hours later slumped over in the seat on the tractor that had run up against an orange tree. He was unconscious. He was transported by ambulance to a small local hospital. Later he was transferred to an acute care hospital, arriving at 5:30 p.m. He remained comatose and was pronounced brain dead at 1:50 p.m. on March 31, 1992. There is no information available on the discovery of the injured tractor driver by the relative, or on the Emergency Medical Services or hospital treatment.

The cause of death reported by the coroner was severe cranio-cerebral trauma due to a penetrating projectile. Although no autopsy was performed, an x-ray revealed a small metal piece in the brain.

PREVENTION STRATEGIES

1. Employers and manufacturers of agricultural equipment should consider safety engineering when designing equipment. Although this mulcher had guards in the front of the blades, all blade areas should have been guarded.¹ Rotating blades generate enough force to cause pieces of metal to penetrate tree trunks, and in this incident, even the human skull. It is not uncommon for mulchers to create flying objects. A fatality in another separate incident, which also involved a penetrating head wound from a metal object propelled by a mulcher, was recently reviewed by NURSE staff. Similarities existed in the two incidents, however, this other mulcher was a rotary type, with blades rotating around a vertical axis. These two deaths demonstrate that mulchers should be guarded on all sides of the blades. If guards had been installed to prevent material from being propelled from the rear of the mulcher, this incident may not have occurred. After this incident, the new manager and the farm owner installed a



protective screen behind the tractor seat. This screen (made of heavy mesh) is attached to the Roll-over Protective Structure. This may help prevent the tractor driver from being struck by flying objects. However, a small metal object may be propelled by such high force that it may still pass through a mesh screen.

2. Employers should require workers to use personal protective equipment and provide this equipment, along with instruction on proper use, to employees. If the tractor driver had been wearing a helmet at the time of this incident, this might have prevented the metal object from penetrating into his brain. The farm manager now requires any employee driving a tractor to wear a helmet and safety goggles.
3. There was no written safety program² at the time of this incident although after the fatality occurred, the farm manager was developing a program. One component that should be included in such a program is the identification and correction of hazards. If there was an enforced written program, the hazard created by unguarded blades on the mulcher might have been noted and corrected.

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1. Title 8 California Code of Regulations 3440 (c) requires that all P.T.O. units and drivelines be guarded.
 2. Title 8 California Code of Regulations 3203 - Injury and Illness Prevention Program.



REPORTE NURSE #15

PEDAZAO DE METAL LANZADO MATA A UN TRACTORISTA

CDHS(COHP)-FI-92-005-015

Resumen

Un tractorista se encontraba en una huerta de naranjo jalando con un tractor una moledora de ramas, la cual remolia ramas en pequeños pedazos. El era dueño de una huerta y sabia usar la moledora. Al estarle dando la vuelta a un surco de naranjos, las cuchillas de la moledora lanzaron un pequeño objeto de metal que salió por la parte trasera de la moledora. El objeto rebotó, penetrandole la frente al tractorista.

Horas después un pariente del tractorista lo encontró doblgado en el asiento del tractor el cual habia ido a dar contra un árbol. El tractorista estaba inconsciente. Lo llevaron en una ambulancia al hospital, donde permaneció en estado de coma. Dos días después fue declarado muerto.

¿Cómo se hubiera podido prevenir esta muerte?

- La moledora habia de haber tenido un protector en la parte de atrás.
- Los choferes de tractores deben de usar cascos para prevenir que objetos lanzados les peguen en la cabeza.
- Los patrones deben tener un programa de prevención de lastimaduras. Estos programas pueden ayudar a los trabajadores y a patrones a identificar e eliminar los peligros que pueda haber tales como una moledora sin protector.

CASO 192-040-01

28 de agosto 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #16

LETTUCE PACKER COLLAPSES DUE TO HEAT

CDHS(COHP)-FI-92-005-16

Summary

Manual lettuce harvesting is often a two-person job. One person cuts the lettuce (the picker), while the other picks it up and packs it into a box (the packer). When full, these boxes weigh about 60 pounds. Wheel barrows are used to move these boxes.

On the day of this incident, it was unusually hot. The lettuce packer began packing lettuce early in the morning, and continued into the afternoon. However, he needed to take many breaks to drink water. During his lunch break, he only drank water and didn't eat anything. When back at work in the field, he collapsed. His supervisor called for an ambulance. The ambulance crew immediately started cooling him down by pouring fluids over him. He was taken to a hospital, where he was given treatment for heatstroke. He stayed in the hospital for close to a month. Although he recovered and went home, he has been advised not to return to this type of work in hot environments until he is examined again.

How could this injury have been prevented?

- Educate workers and field supervisors on early signs of heatstroke.
- Have workers immediately stop working if they show signs of heatstroke.
- Take immediate action to cool a worker if they become sick on a hot day.
- Make work tasks as easy as possible (especially on hot days).
- Provide shade for workers on hot sunny days.

CASE 292-127-01

September 4, 1992

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.





BACKGROUND

On May 21, 1992 NURSE staff received a telephone report from a county Emergency Medical Services (EMS). The EMS reported that a 35 year-old Hispanic male suffered seizures while packing lettuce in a lettuce field on April 28, 1992. The lettuce packer was transported to a local community hospital by ambulance and admitted with a diagnosis of hyperthermia (heatstroke). On June 23, 1992, a nurse from the NURSE project interviewed the worker (who was recovering at home). On July 14, 1992, the nurse discussed the incident with the son of the farm labor contractor who employed the lettuce packer. He was responsible for the safety program. NURSE staff also reviewed the EMS record, the medical chart, and the "Doctors First Report of Occupational Injury or Illness."

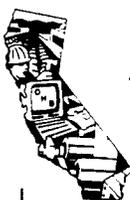
The California Occupational Safety and Health Administration (Cal/OSHA) was not notified, and did not investigate this incident.

A nurse from the NURSE project reviewed the company safety program. He noted that it addressed all seven points as required by Title 8 California Code of Regulations 3203 - Injury and Illness Prevention Program. (As of July 1, 1991 the State of California requires all employers have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a written health and safety program.)

The lettuce packer had worked for approximately two weeks in this geographic area for this farm labor contractor. This contractor employs approximately 200 workers (170 of whom are seasonal employees working 13-37 weeks per year and 30 are casual workers working 1-12 weeks per year). Some farm owners and operators use farm labor contractors to recruit, train, and manage workers. The safety director said that field foremen are trained in community first aid and cardiopulmonary resuscitation (CPR). He also said that all employees receive training for specific job tasks, including safety training. However, no specific training related to working in hot environments was given to workers. Both written materials and on-the-job training are used to provide job-specific training.

INCIDENT

The worker began packing lettuce in the field at approximately 7:00 a.m. on April 28, 1992. The lettuce harvesting technique used in this incident involves both workers who cut the lettuce with a hand held knife at ground level and workers who pick it up and pack it in a box. These boxes, weighing approximately 60 pounds when full, are moved through the field on a modified wheel barrel. Boxes are then loaded onto a truck. The lettuce harvesting starts early in the morning and ends late in the afternoon. Workers are

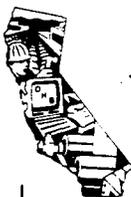


paid on a piece rate basis, calculated by the number of boxes of lettuce packed. Drinking water is available on the bus used to transport workers; the bus, which is parked next to the field, also provides the only shade from the sun.

During the morning of this incident, the supervisor noticed that the lettuce packer was taking breaks every 10-15 minutes to drink water. After a lunch break (during which he did not eat) he began to fall behind in his work because he was continuing to drink water so frequently. His supervisor asked him if he was feeling well enough to work. The worker told him he was fine and continued to work; however, he continued to fall behind further as he took many breaks to drink water. His supervisor decided to talk with the worker again because he was so far behind the rest of the crew. At approximately 2:30 p.m., the supervisor discovered that the lettuce packer was incoherent. He then lost consciousness, collapsed to the ground, and had a seizure. The seizure lasted approximately two minutes. When it stopped, the worker was still unconscious and was having difficulty breathing. The supervisor realized the worker needed emergency medical treatment. At 2:39 p.m., he then called 911 on a mobile telephone in his car. A paramedic unit from the Emergency Medical Services (EMS) responded. The supervisor pulled the worker under a truck to shade him from the sun. The high temperature recorded in the area for this day was 93 degrees F, an unusually high temperature reading for this geographic area.

Upon arriving at 2:42 p.m., the paramedics removed the lettuce packer's clothing and poured saline solution over him to cool him. At this time, the worker began seizing again and paramedics (upon orders from the base hospital) gave him Valium to control the seizures. Paramedics also gave him oxygen. The paramedics attempted to intubate the worker but were unsuccessful due to his seizures. With the air conditioning in the ambulance turned on full power, the worker was transported to an acute care hospital. During transport, the worker continued having seizures and remained unconscious. The ambulance arrived at the emergency department at 3:31 p.m. In the emergency department, the worker was given specific drugs to reverse the metabolic effects of the hyperthermia and control his seizures. He was also covered with cooling blankets (water filled mattresses which are temperature controlled). The emergency department noted his core body temperature was 108.7 degrees F (which is over 10 degrees higher than normal) upon arrival to the hospital. Also upon arrival, his heart was beating very rapidly (almost three times faster than normal).

The lettuce packer was admitted to the intensive care unit and placed on a respirator. He remained in a coma, with a high fever, for several days and then slowly began to regain consciousness. He was hospitalized for 28 days. During his hospital stay, he was treated for seizures, a high fever, and for both kidney and liver damage which occurred because of the hyperthermia. The hospital records showed that he had previously been exposed to the hepatitis virus, but was not currently infected. There were no signs of previous illness which could have contributed to his heatstroke or high fever. The lettuce packer was then released in fair condition. He was advised, upon his release, not to continue working as a lettuce packer and not to work in hot environments without further evaluation.



PREVENTION STRATEGIES

1. Employers should train workers and field supervisors to be aware of the signs and symptoms of heat-related health conditions. Agricultural workers often work in the sun all day in high temperatures. Some workers may not be affected on hot days. Others may be susceptible to high temperatures and may suffer from heat-related problems. The lettuce packer in this incident was constantly taking breaks to drink water every 10-15 minutes. The supervisor observed this behavior but did not take action until the worker collapsed. In this incident, the worker developed hyperthermia while working at a temperature that was high for the geographic location. The delay in recognizing that the worker needed medical attention meant a delay in appropriate medical treatment. Heatstroke is a medical emergency and may result in death if not treated quickly by cooling the affected person.
2. Employers should provide working conditions that encourage workers not to forfeit their health to make more money. This lettuce packer was working on a piece rate basis. Being paid by piece rate may provide a disincentive to stop working because of illness. Although the lettuce packer denied feeling poor the morning of the incident, he could have lost money if he did not keep working. If he had been encouraged by the supervisor to stop working, he might have prevented his heatstroke.
3. Employers should attempt to make work tasks as easy as possible. There are automated methods used by some agricultural companies and farm labor contractors to harvest and pack lettuce. These methods decrease the physical labor demands placed upon the field workers. In this incident, if the lettuce packer was not required to move heavy boxes, his work would not have been as strenuous. He was performing a very strenuous activity under temperatures higher than normal. If the lettuce packer was not required to work so hard on such a hot day, he might not have become overheated.
4. Employers should provide workers with personal protective clothing and ensure that it is used. High temperatures on hot, sunny days are an environmental exposure which may be hazardous to workers. In this incident, the only shade available to the lettuce pickers and packers was under the bus. If field workers, such as lettuce packers, were provided with umbrellas to shade them from the sun on hot days, or hats with large shades, this may decrease their exposure to the sun while they are working. This is an inexpensive way to help prevent heat-related problems.



REPORTE NURSE #16

DEBIDO AL CALOR UN TRABAJADOR SUFRE UN DESMAYO

CDHS(COHP)-FI-92-005-016

Resumen

Por lo general la cosecha de lechuga es trabajo de dos personas. Una persona corta la lechuga (el cortador) mientras que la otra persona la recoge y la empaca en una caja (el empacador). Las cajas llenas pueden llegar a pesar hasta 60 libras y se utiliza carretilla para moverlas.

El día del incidente estaba haciendo mucho calor. El empacador de lechuga empezó a empacar temprano en la mañana y siguió trabajando hasta un poco después del mediodía. Durante el día se tomó descansos para tomar agua. A la hora del almuerzo solo tomó agua sin comer nada. Una vez que regresó a trabajar sufrió un desmayo. El mayordomo le llamó a una ambulancia y el personal de la ambulancia inmediatamente empezó a refrescarlo echándole agua. Lo llevaron a un hospital en donde le dieron tratamiento para insolación y en donde se quedó por casi un mes. Aunque el empacador se recuperó y regresó a su casa, se le advirtió que no volviera a hacer esta clase de trabajo en ambientes calientes hasta que recibiera un examen médico.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Enseñe a los trabajadores y mayordomos los síntomas de insolación.
- Haga que los trabajadores paren de trabajar una vez que muestren síntomas de insolación.
- Tome acción de inmediato para refrescar a un trabajador si se llega a enfermar durante un día muy caluroso.
- Durante un día muy caluroso haga las tareas de trabajo lo más fácil que pueda.
- Provea sombra para los trabajadores en días muy calurosos.

CASO 292-127-01

4 de setiembre 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #17

IRRIGATOR STRUCK IN FACE BY PIPE VALVE

CDHS(COHP)-FI-92-005-17

Summary

Farm irrigators set up and take apart pipes that carry water to fields. An irrigator was taking apart a sprinkler system in a cotton field. His line of sprinkler pipes was connected at one end to the main water line. This connection was made by a valve screwed down on the water line, and a ring clamped over the valve and line.

Just before taking apart the sprinkler system, water was flowing in the main water line into the irrigator's line of sprinkler pipe. To shut off the water to his sprinkler line, the irrigator bent over the connecting valve and began turning its faucet handle. The valve cap on top of the connecting valve came loose. Water pressure from the main water line fired the valve cap into the worker's face. This broke the worker's jaw, knocked out his front teeth, and gave him a concussion. Headaches, dizziness and blurred vision bothered him for weeks after the injury.

How could this injury have been prevented?

- Turn the water off at the main water line, not at the hookup between the main line and the sprinkler pipe.
- Check equipment before using it, including the screw threads and clamps of connecting valves.
- Train workers in safe work methods. This farm did not have a written outline for safety training.

CASE 192-114-01

October 8, 1992

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.



BACKGROUND

On May 29, 1992, NURSE staff received a written report of an agricultural injury from a local medical clinic. The clinic had treated a 27 year-old Hispanic male irrigator for head and facial injuries. The incident occurred on May 27, 1992 in a cotton field watered by a pipeline sprinkler system. The irrigator's job was to move the sprinkler system pipes into the field, assemble them and connect the pipes to the main water line. While the worker was turning off a valve in the sprinkler system, water pressure blew the cap of the valve into his face.

A nurse from the NURSE Project discussed the incident with the injured irrigator on June 12, 1992. The Senior Safety Engineer from the NURSE Project discussed the incident with the farm owner and the two irrigation foremen at their farm office on July 10, 1992. The pipeline sprinkler system had been dismantled and moved soon after the incident, so the NURSE engineer was unable to inspect it. NURSE staff also reviewed the employer's investigation report and the worker's medical records.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

The incident occurred at a family owned and operated cotton farm. The farm has 12 full-time employees and 25 casual (1-12 weeks per year) employees. The injured irrigator was hired as a casual employee and had been on the job for five days. He had worked as an irrigator on other farms. The Senior Safety Engineer reviewed the farm's written safety program and noted it did not address all components required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

One component that the safety program did not cover in sufficient detail was safety training. On this farm, it is the field foremen's responsibility to give safety talks to workers. At the time of the NURSE investigation, the field foremen did not have a written outline to use when reviewing safety procedures with workers. The farm's written safety materials were in English, and the field foremen verbally translated the safety information into Spanish for the employees.

Also, on this farm, on-the-job training consists of the irrigation foremen observing the irrigators for the first few days on the job. An annual safety training program is conducted for the farm by its workers compensation insurance company. The insurance company also reviews the farm's safety program each year and discusses job safety issues with the foremen and the 12 full-time field workers.



INCIDENT

At approximately 8:00 a.m., on May 27, 1992, a 27 year-old Hispanic male irrigator was taking apart a sprinkler irrigation system in a cotton field. This sprinkler system consisted of long sections of pipe, 20-30 feet in length, connected by clamps. These pipes are then connected by a valve assembly (see diagram) to an 8-inch water line. Water flows from the water line into the sprinkler pipe at pressures of 55-60 pounds per square inch. The water is turned off by a lever on the cap of the valve which is screwed onto the sprinkler pipe, and then clamped on the pipe with a "snap ring," a ring which tightens and clamps the pipe to another pipe when it is snapped closed.

Before he took the pipeline apart and moved the sections to another place in the field, the irrigator turned the lever on the valve cap to shut off the water to the sprinkler pipeline. While the irrigator was bending over the valve assembly, with his face 1-2 feet away, water pressure forced the valve cap off and blew it into his face.

It is not clear why the valve cap came loose. The valve cap may not have been securely screwed onto the sprinkler pipe, or the snap ring may not have been securely clamped. When the irrigator attempted to screw the valve closed, the turning action may have loosened the valve cap, and then water pressure forced it off. It is also possible that some part of the valve assembly failed. If the screw threads holding the valve cap on the pipe were damaged, or the snap ring clamping the valve cap to the pipe was broken, the water pressure could have forced off the valve cap.

Another irrigator closing valves on a different section of pipe in the field heard the injured irrigator cry out and came to his assistance. This co-worker ran to the road and flagged down the irrigation foreman. The foreman had the injured irrigator lie down in the cab of his pickup truck, and drove him to the local medical clinic about 10 miles from the farm.

The injured irrigator was treated at the medical clinic at approximately 8:45 a.m. He had bruises on his face, a concussion, a deep cut on his right cheek, a broken upper jaw, and his top front row of teeth were broken off at the base. Doctors at the clinic gave him pain medication, a tetanus shot, and stitched the cut on his cheek. They then immediately sent him to an oral surgeon for treatment of his broken jaw and teeth.

At the time of the NURSE interview on June 12, 1992, the irrigator was still receiving follow-up care from an oral surgeon. He was still complaining of dizziness, blurred vision and headaches. He is expected to remain on medical disability until the end of the summer.

PREVENTION STRATEGIES

1. The employer should establish a standard operating procedure for the safe performance of each task. The procedure should require irrigators to turn off the



water flow to the main water line before closing the valves on the sprinkler lines and moving the pipes. (The irrigator noted that this had been the procedure at the farms where he had worked before.) If the standard operating procedure on this farm had been to turn off the water flow at its source, the irrigator would not have been working on a sprinkler system under high water pressure. Even if the valve cap had not been securely fastened, water pressure could not have forced it off, and the irrigator would not have been injured.

2. The employer should have a comprehensive written injury prevention program.¹ Workers should be trained to recognize and avoid hazards associated with specific tasks. Foremen should be given a detailed written outline of topics to cover in a safety training session, and the training materials should be written both in English and the language used by the foremen and workers. In this incident, the nature and extent of the safety training the worker received are not clear. If the irrigator had been trained in safe methods to take apart the sprinkler lines, he would not have worked on a system under high water pressure and would not have been injured.
3. The irrigation foreman or a designated safety person should check all equipment before use. Every time a sprinkler system is assembled it should be checked before turning on the water line. All snap rings for valves should be checked to see if they are missing, rusty, or damaged. If they are, they should be replaced. Valves should be checked before use, and faulty valves repaired or replaced. The entire valve assembly should be checked for any dirt or debris that might block the connection. If the irrigation foreman or other designated person had checked the sprinkler system before use, a faulty valve or snap ring might have been found and replaced. If the valve had functioned correctly, then the irrigator would not have been injured.
4. Field crews should have an adequate emergency medical response procedure. The crew should have a cellular phone or radio available to contact the Emergency Medical Services (EMS). Crews should be trained to call 911 before moving an injured worker. One or more members of the crew should be certified in first aid and cardiopulmonary resuscitation (CPR).² In this incident, if the foreman had been trained in proper response to an injury, he would have called 911 and then administered first aid until trained EMS personnel evaluated and provided further treatment for the injured worker's condition. This might have reduced the risk of complications from the injury.

1. Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program.

2. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."



REPORTE NURSE #17

REGADOR ES GOLPEADO EN LA CARA POR UNA VÁLVULA

CDHS(COHP)-FI-92-005-017

Resumen

Las personas que riegan el fil ponen y quitan las pipas que llevan agua a las cosechas. Un regador estaba quitando un sistema de riego en un fil de algodón. La línea de pipas con que estaba trabajando estaba conectada con la fuente principal de agua. La conexión consistía de una válvula enroscada en las pipas y un anillo ajustado sobre la válvula y las pipas.

Poco antes de quitar las pipas, el agua estaba corriendo en las pipas principales a los rociadores con los que estaba trabajando el regador. El regador se agachó y empezó a voltear la llave para cerrar el agua que llegaba a los rociadores. La tapa de la válvula que se encontraba encima de la conexión se soltó y la presión del agua de la pipas principales lanzó la válvula hacia la cara del regador. El golpe le rompió la mandíbula, le tumbó los dientes de enfrente, y le dió una concusión. Aún semanas después del incidente el regador padecía de dolores de cabeza, mareos y vista borrosa.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Cierre la llave antes de mover pipas de riego en la fuente principal, no en las conexiones.
- Revise el equipo antes de usarlo, incluyendo las roscas de los tornillos y las grapas de las valvulas que hacen la conexión.
- Entrene a los trabajadores en prácticas seguras en el trabajo. Este rancho no tenía por escrito un plan de entrenamiento de seguridad.

CASO 192-114-01

8 de octubre 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #18

PLUM PICKER BREAKS ANKLE IN LADDER FALL

CDHS(COHP)-FI-92-005-18

Summary

A farm labor contractor was hired to pick a plum orchard as quickly as possible. The field supervisor was in such a hurry that he skipped the usual morning safety meeting and sent the crew straight to work. The supervisor then left the field, without watching to see if the workers were picking safely.

Plums are often picked from ten foot ladders which weigh about 25 pounds. Each worker moves his ladder from place to place under a tree to easily reach plums. For one worker, this was his first day on the job. Standing on one of the top steps of a ladder, he reached for some plums that were beyond his reach. He lost his balance and fell off the ladder, hitting the ground eight feet below. The ladder fell on top of him and broke his ankle.

The only person trained in first aid was the field supervisor, who had left the orchard. The foreman put the injured worker in the back of his pickup truck and drove him to the hospital. At the hospital, the worker's ankle was put in a splint. He was still wearing the splint and out of work at the time of this investigation.

How could this injury have been prevented?

- Train all employees in work methods, whether full-time or seasonal. Do not allow workers to begin work without any safety training.
- All workers, including supervisors and foremen, should be trained in how to handle emergency situations; for example, calling 911 instead of moving the injured person.

CASE 192-163-01

October 8, 1992

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.





BACKGROUND

On June 26, 1992, NURSE staff identified an injury in a plum orchard while reviewing records at a Level 1 Regional Trauma Center. A 65 year-old Hispanic male plum picker broke his ankle on June 16, 1992 when he fell approximately eight feet from his ladder to the ground. The plum farm employs approximately 170 employees, of whom 100 are seasonal (working 13-37 weeks per year). This worker had been hired by a farm labor contractor to pick plums during the harvest season. Instead of hiring farm laborers directly, some farm operators use farm labor contractors to recruit, train, and manage their seasonal workers. The injured worker had picked fruit in California before, but had been living in Mexico for the past ten years. He had only recently returned to California, and had been working (along with his son) for the farm labor contractor for less than two hours before he was injured.

A nurse from the NURSE project interviewed the injured plum picker on July 9, 1992. The NURSE Senior Safety Engineer discussed the incident with the farm labor contractor -- the worker's employer -- at the scene of the injury on July 21, 1992.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

The farm labor contractor involved in this incident used a safety program that was prepared by an occupational safety consulting company. The Senior Safety Engineer reviewed the written program, and noted that, although brief, it addressed all seven points included in the 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

According to the farm labor contractor, the farm owner had requested that the plums be harvested quickly because of the current price of fruit. Because the crew had to work fast, the field supervisor (a brother of the farm labor contractor) did not hold the usual tailgate safety meeting with the crew before beginning work on the day of the incident. Tailgate safety meetings are brief talks on safety practices given by the foreman or supervisor at the worksite before the start of the workday. Instead of watching the employees' work methods at the start of the workday as he usually did, the field supervisor left the field. The Senior Safety Engineer noted that there were records of safety meetings for the picking crews on days before and after this incident, indicating that tailgate safety meetings were usually conducted.



INCIDENT

On June 16, 1992, at approximately 7:00 a.m., a crew was picking plums in a plum orchard. Plums are picked from ladders designed for picking fruit, consisting of a set of ladder steps and a single support pole. The trees are picked by two workers moving down adjoining rows, picking the fruit from opposite sides of the same tree. Each worker moves his ladder from place to place under the tree to easily reach all the plums. Even though the workers were being paid by the hour and not by the amount of fruit picked, they were working rapidly because the farmer had requested that the plums be picked quickly.

The plum picker was standing on a ladder picking plums. His ladder was ten feet high and weighed approximately 25 pounds. The picker was standing on the step near the top of the ladder when he reached his arm out to pick a plum that was not within easy reach. He lost his balance and fell off the ladder onto the plowed dirt between the plum trees. He landed on his right side. The metal ladder fell on top of him, landing on his left ankle. He felt a severe pain in his ankle and could not stand up.

The injured plum picker was diabetic and had a history of high blood pressure. His fall may have been partly due to dizziness or other factors resulting from his medical condition.

The field supervisor was trained in first aid and cardiopulmonary resuscitation (CPR), but still had not returned to the field at the time of the incident. The foreman, who was not trained in first aid and CPR, picked the worker up, placed him in the back of his pickup truck and drove him to the Level 1 Trauma Center (a county hospital), a journey of about 40 minutes. The worker arrived at the Trauma Center emergency department at 7:57 a.m. and was seen by a physician at 9:20 a.m.

At the Trauma Center he was treated for a fracture in three places of the tibia and fibula (the lower leg bones) at the ankle. His left leg was splinted and the worker was discharged home at 11:45 a.m. At the time of the NURSE interview on July 9, 1992, the worker was still in a splint, resting at home, and being treated as an outpatient at the orthopedic clinic.

PREVENTION STRATEGIES

1. Employers should provide adequate training of seasonal employees. This worker had been hired only a few hours before his injury. In an effort to save time that morning, the farm labor contractor had not conducted the usual tailgate safety meeting. Therefore, the plum picker had no safety training in handling the ladder or picking plums. If he had been trained, he might have moved his ladder within easy reach of the plums, instead of trying to reach them from his current ladder position.



2. Every field work crew should have a person certified in first aid and CPR, and who is always present at the worksite.¹ In this incident, the field supervisor was certified but not present on the farm. If he had been present, the risk of complications from the injury could have been reduced. A person trained in first aid might also have realized the potential seriousness of injury to a 65 year-old man (who had diabetes and a history of high blood pressure), and made sure that the Emergency Medical Services (EMS) were called.
3. Work crews should have a cellular phone or radio available in vehicles to contact the Emergency Medical Services (EMS). In this incident, the foreman should have called 911 before moving the injured worker. Because the worker did not receive appropriate first aid in the field, he was at greater risk of increased pain and complications. If 911 had been called, his leg would have been splinted by trained EMS personnel at the scene of the injury, thereby stabilizing him before transport to the hospital. EMS would also have evaluated other threatening medical conditions which might have been related to his fall.
4. Whether or not an injury has occurred, no worker should be transported in the back of a pickup truck. This places the worker at risk of serious injury or death in the event of a collision or rollover of the pickup truck. If the foreman had called 911 and allowed EMS to transport the plum picker, he would not have exposed the worker to the risk of further serious injury.
5. Employers should require field supervisors to closely monitor all workers as they begin each new workday. Supervisors should identify workers who need further training, or who will not be able to complete the work tasks safely. If the crew supervisor had observed that the plum picker was not moving his ladder often enough to easily reach the plums, he could have instructed the worker in safe work methods. This could have prevented the plum picker from overextending and trying to reach plums which were too far away, resulting in him losing his balance and falling off the ladder.

1. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."



REPORTE NURSE #18

PIZCADOR DE CIRUELAS SE QUEBRA EL TOBILLO AL CAERSE DE UNA ESCALERA

CDHS(COHP)-FI-92-005-018

A un contratista se le dió el trabajo de que pizcara la cosecha de ciruelas de toda un huerta lo más pronto possible. El supervisor se encontraba con tanta prisa que esa mañana nó hizo las reuniones de seguridad usuales y mandó a la cuadrilla directamente a trabajar. El se fue enseguida, sin darse cuenta si los trabajadores trabajaban de una forma segura.

Usualmente se pizca la ciruela con escaleras de 10 pies de largo, las cuales pesan hasta 25 libras. Cada trabajador mueve la escalera de lado a lado debajo del árbol para alcanzar las ciruelas con facilidad. Para uno de los trabajadores este fue el primer día en el trabajo. Mientras se encontraba parado en uno de los últimos escalones de la escalera, quiso alcanzar unas ciruelas que se encontraban fuera de su alcance y perdió el balance cayendose de una altura de ocho pies. La escalera le cayó encima y le quebró el tobillo.

La única persona con entrenamiento en primeros auxilios era el supervisor, quien no se encontraba en la huerta. El mayordomo puso al trabajador en la parte de atrás de un troque y lo llevó al hospital. En el hospital le entablillaron el tobillo. Cuando se hizo esta investigación, el trabajador todavía estaba usando la tablilla y no había podido regresar a trabajar.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Entrene a todos los trabajadores, temporales o permanentes en las prácticas seguras de trabajo.
- No permita que una persona empiece a trabajar sin entrenamiento de seguridad.
- Todos los trabajadores, incluyendo supervisores y mayordomos, deben estar entrenados sobre que hacer en situaciones de emergencias. Por ejemplo, se debe llamar al numero telefónico 911 en vez de mover a una persona herida.

CASO 192-163-01

8 de octubre 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #19

DAIRY WORKER CRUSHED BY FIELD CULTIVATOR

CDHS(COHP)-FI-92-005-19

Summary

A worker on a dairy farm was waiting behind a field cultivator to attach it to the back of a tractor. A cultivator is a piece of farm machinery that has a row of metal teeth, set in a rectangular frame, with a wheel at each end. When pulled by a tractor the teeth break up the soil. This cultivator was set on its wheels and two support poles, which kept it from tipping backwards.

The worker stood close behind the cultivator. In front, a tractor driver was lining up his tractor to this cultivator. The driver's foot slipped on the clutch, and his tractor jumped backward and hit the cultivator. One of the support poles broke, and the cultivator fell over backwards and onto the worker. The cultivator frame landed on the worker's hips and stomach, separating his pelvic bones. He lay pinned by the cultivator and in great pain until enough workers arrived to lift the cultivator off him. He was taken to the hospital by helicopter, and could not return to work for over two months.

How could this injury have been prevented?

- Workers should not stand in the path of moving equipment. They should wait to one side until the equipment stops moving.
- Before hooking equipment to the tractor, turn off the tractor engine and set the parking brake.
- Make equipment safe. Outrigger wheels will keep cultivators from tilting over.

CASE 192-164-01

October 8, 1992

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.





BACKGROUND

On June 26, 1992, NURSE staff identified an injury on a dairy farm while reviewing records at a Level 1 Regional Trauma Center. On June 17, 1992, a dairy worker was attaching a field cultivator to the back of a tractor when the tractor jumped backwards and knocked the cultivator off its support poles. The cultivator fell on the worker and its horizontal frame pinned the worker's hips to the ground.

A nurse from the NURSE project interviewed the injured dairy worker on July 17, 1992. The Senior Safety Engineer discussed the incident with the dairy's personnel manager, who is responsible for the dairy safety program, and investigated the scene of the injury on August 5, 1992.

The incident occurred on a farm with approximately 300 dairy cattle and 700 acres of corn. The farm has 23 full-time employees. The local chapter of a state dairy association uses a computer software package to produce written injury prevention programs for its members, and the dairy farm used one of these programs. The Senior Safety Engineer reviewed the program and noted it addressed all seven points included in 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The injury was not reported to the California Occupational Health and Safety Administration (Cal/OSHA), and was not investigated by Cal/OSHA.

The injured dairy worker had worked on this farm for 26 years. The personnel manager told NURSE staff that short safety meetings are held in the field every two weeks. However, the injured dairy worker said that because of his long experience he did not need, and had not received, safety training.

INCIDENT

On June 17, 1992, at approximately 4:30 p.m., a 53 year-old Portuguese male dairy worker was hooking a field cultivator to a tractor. The tractor was going to pull the cultivator across a new field of corn to dig shallow irrigation ditches. The cultivator was built on the dairy farm. It consists of a rectangular frame of horizontal bars about 20 feet wide. Vertical bars attach to the bottom of the frame to form teeth that break up the soil. Two metal wheels, mounted five feet in from either side, create the irrigation furrows.

When the cultivator sits on the two metal wheels it is unstable, and can tip forwards or backwards. Factory-manufactured cultivators are built with a support system, sometimes



with outrigger wheels at either end of the horizontal frame to keep the cultivator from tipping. This cultivator, built on the farm, had a metal pipe mounted on each side of the frame, projecting down and backwards. The cultivator was propped on these pipes, keeping the frame from hitting the ground.

The dairy worker stood behind the cultivator and waited to connect the cultivator to the pull bar of a tractor. A pull bar is a metal bar attached to two support arms mounted one on each side of the tractor axle. The height of the cultivator can be adjusted by raising and lowering these arms hydraulically. The worker stood behind the cultivator because he found it easier to reach over the cultivator and connect it to the tractor from the rear.

The tractor driver was lining up the tractor with the cultivator. With the tractor in reverse gear, the driver's foot slipped off the clutch pedal and the tractor jumped backwards, striking the cultivator. The impact broke the pin that connected one of the support pipes to the cultivator frame. With one support pipe gone the cultivator tilted backwards. As it tilted the rear edge of the frame knocked the worker down and pinned him to the ground at his lower abdomen.

The worker was pinned for 3-4 minutes, when the farm owner's son and his friends saw the pinned worker as they drove by the equipment yard. Five men, including the tractor driver, tilted the cultivator up and the injured dairy worker crawled out. The farm owner's son used his truck radio to contact the farm owner, who called 911.

The Emergency Medical Services (EMS) was called at 4:46 p.m. A paramedic team arrived at 4:52 p.m., and a California Highway Patrol helicopter arrived at 5:02 p.m. He was short of breath, and complained of severe pain to his lower back and abdomen. The paramedics gave him oxygen and started an IV. At 5:25 p.m., he was transported by helicopter to the emergency department of the Level 1 Trauma Center, arriving at 5:32 p.m.

The injured dairy worker had no fractures or internal organ damage, but the weight of the cultivator bar falling on his lower abdomen had separated his pelvic bones. A small amount of blood was found in his urine, although there was no apparent damage to his kidney or bladder. The injured dairy worker was admitted to the hospital for further observation and evaluation.

After three days in the hospital he was up and walking. The injured dairy worker was discharged and given an appointment for follow-up with an orthopedic physician in two weeks. He was advised to remain home, on medical disability, for at least one month and to avoid all lifting. At the time of the interview, he complained of pain and had not returned to work. At the end of August he was feeling better but had not returned to work.



PREVENTION STRATEGIES

1. Workers who are working as a team need to be sure there is constant communication and visual contact between themselves. In this incident, the dairy worker and the tractor driver were working together to connect the cultivator to the tractor. Tractors are loud equipment and may interfere with verbal communication between workers. The injured worker should have waited for a signal from the tractor driver before he approached the cultivator to put the connector pins in.
2. Standard operating procedures should ensure that workers never place themselves in hazardous situations to complete a work task. In this incident, the dairy worker stood too close to a heavy piece of unstable equipment, which itself was in the path of a moving tractor. The farm's work procedure should require workers to wait to the side and out of the path of moving equipment until it comes to a complete stop and has been turned off. If the worker had stood to the side of the tractor and cultivator until the tractor was turned off, he would not have been knocked down and injured when the tractor struck the cultivator.
3. Tractor engines should be shut off before connecting equipment to the tractor. The tractor driver should have turned the tractor off much sooner and set the parking brake on the tractor before signaling the dairy worker to begin hooking up the cultivator. If the tractor had been shut off then, it would not have lurched backwards, causing the cultivator frame to fall on the worker.
4. Employers should consider safety engineering when building or modifying equipment. Because this cultivator did not have side, stabilizing outrigger wheels, it was not as stable as a commercially manufactured cultivator. In addition, the pins connecting the stabilizing bars to the frame sheared at the tractor impact. If the cultivator had been built with stabilizing wheels, or with two-inch pins connecting the support pipes to the frame, the tractor would not have been able to knock the cultivator over and onto the worker.



REPORTE NURSE #19

TRABAJADOR DE LECHERÍA ES PRENSADO POR MAQUINARIA DE CULTIVO

CDHS(COHP)-FI-92-005-019

Resumen

Un trabajador de lechería estaba parado detrás de una máquina cultivadora. Esperaba unirla con la parte trasera de un tractor. La cultivadora es una maquina agrícola que tiene una fila de dientes en un marco rectangular con una rueda a cada extremo. Al ser jalada por un tractor los dientes mueven la tierra. La cultivadora estaba apoyada sobre sus ruedas y dos postes de apoyo que evitaba que se moviera.

El trabajador estaba parado atrás, y muy cerca del cultivador. Al frente, otro trabajador se encontraba tratando de alinear un tractor con el cultivador. El pie del tractorista se resbaló del cloche (embrague) y el tractor saltó en reversa pegandole a la cultivadora. Uno de los postes de apoyo se quebró y la cultivadora se cayó hacia atrás y sobre el trabajador, separándole los huesos pélvicos. El trabajador quedó en el suelo prensado sufriendo mucho dolor hasta que llegaron suficientes trabajadores para poder quitarle la cultivadora de encima. Lo llevaron en helicóptero al hospital y no pudo regresar a trabajar por más de dos meses.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Los trabajadores no deben pararse en el camino de maquinaria en movimiento. Deben quedarse a un lado de la maquinaria hasta que deje de moverse.
- Antes de enganchar maquinaria a un tractor, se debe apagar y poner el freno de mano.
- La maquinaria debe de ser segura. Ruedas especiales evitan que las cultivadores se caigan.

CASO 192-164-01

8 de octubre 1992

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NURSE REPORT #20

TEENAGE IRRIGATOR'S FINGER MANGLED BY PIPE

CDHS(COHP)-FI-92-005-20

Summary

A fifteen year-old *irrigator* was taking apart sprinkler lines in a garlic field with another worker. While his partner lifted one section of pipe, making a gap where two sections of pipe were joined, the irrigator grabbed the next section by the gap at its mouth. This time the two sections of pipe were stuck. His partner moved his section to break them free. The young irrigator's hand got caught where the pipes joined. His fingers were cut and broken, and the top of his little finger was almost cut completely off.

The farm did not have a procedure for taking care of injuries. The foreman told the worker's father, who was also working as an irrigator, to take him to a doctor. The father took him to the emergency department of a hospital, where the cuts were stitched. The next day the irrigator's hand was so swollen he could not work. Upon hearing this, the farm owner told the father to take him to a rural medical clinic. The clinic further treated the young irrigator's hand, and sent him to a hand surgeon. At the time of this investigation, it was possible that the young irrigator might still lose his finger.

How could this injury have been prevented?

- Employers should have a safety program that trains workers and tells them about dangers on the job.
- Be ready to respond to injuries, by giving first aid and calling the Emergency Medical Services.

CASE 192-344-01

October 27, 1992

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.





BACKGROUND

On August 28, 1992 a nurse from the NURSE Project received a written report of an agricultural injury from a rural medical clinic. On August 17, 1992, the clinic treated a 15 year-old Hispanic male for an open fracture of his fifth finger. The injury occurred while the worker was dismantling and moving irrigation pipes in a garlic field on a large farm growing garlic, melons, and cotton. The farm employed 18 full-time workers, 150 casual workers (working 1-12 weeks per year) and 25 seasonal workers (13-37 weeks per year).

A nurse from the NURSE Project interviewed the injured irrigator and his father on September 3, 1992. The Senior Safety Engineer of the NURSE Project discussed the incident with one of the farm owner/operators on September 11, 1992. (The farm is run as a partnership, with two owner/operators.) The pipeline sprinkler system had been dismantled and moved soon after the incident, so the NURSE engineer was unable to inspect the setup. NURSE staff also reviewed the *Doctor's First Report of Occupational Injury or Illness* from the rural medical clinic that reported the injury.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

The Senior Safety Engineer reviewed the farm's injury and illness prevention program and found that at the time of the incident it did not address all the points required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The Senior Safety Engineer noted that the employer's injury and illness prevention program was not organized in a usable fashion. Neither the hazard evaluation component nor the employee training was being carried out.

The injured worker was a part-time irrigator, on his summer vacation from high school. He had worked for a farm labor contractor on this farm for a short time three weeks earlier. The worker was on his first day of compensated work as an irrigator. In the past, he had helped his father, who worked as an irrigator for the same farm owner, but had not received wages. While workers who dismantle and move irrigation lines are usually paid by piece rate, on this farm the irrigators were paid by the hour. He had not received any training in how to handle and move irrigation pipes, or in the use of personal protective equipment (such as leather gloves) from the farm owner/operators. His only experience and training in moving irrigation pipes came from helping his father. One co-worker noted that workers received safety training only if they were seen doing their job incorrectly.



INCIDENT

On August 16, 1992, at approximately 8:00 a.m., a 15 year-old Hispanic male was helping dismantle and move a pipeline sprinkler system in a garlic field. This was his first day on the job. Sprinkler systems consist of long sections of pipe, 20-30 feet in length and 10 inches in diameter. One end of each section of pipe has a flare (see figure). The straight end of the next pipe section is inserted into the flared end, and water pressure and a rubber gasket create a seal. When workers dismantle the pipes, one worker lifts and tilts up a section of pipe to drain the water from it. The other worker lifts the flared end of the attached pipe. The injured worker lifted his end of the pipe by curling his fingers around the mouth of the pipe. While his hand was still hooked around the edge of the pipe, the first worker began pushing, pulling, and rotating his section of pipe to free it from the first section. This action trapped and crushed the worker's hand in the coupling between the pipes. The fifth finger on his right hand sustained a severe "open" fracture, in which the bone came through the skin, and the top part of his finger was almost torn off. The third and fourth fingers of his right hand were badly cut.

After being notified of the injury, the foreman told the injured worker to go to any physician he wanted for treatment. The injured worker's father took him by car to the nearest small local hospital. Upon their arrival, at approximately 9:00 a.m., the hospital staff sutured the young irrigator's lacerations and sent him home. (The father had used this hospital in the past because it accepted payment in cash, and he had been reluctant to apply for Medi-Cal at the public county hospital, which was the Level 1 Regional Trauma Center.)

The next morning the injured worker reported for work, but his hand was so swollen he was unable to work. One of the owner/operators advised the father to take the young irrigator to the rural medical clinic that functioned as the farm company's doctor (it was this clinic who reported this injury to the NURSE Project). At this clinic the worker's lacerations were dressed, his hand was splinted and x-rayed, and he was referred to a hand surgeon for immediate further evaluation. His father drove him to the hand surgeon, who surgically re-attached the portion of the fifth finger which had been partially amputated.

However, at the time of the interview (September 3, 1992), the possibility existed that, because of complications, surgical amputation of the fifth finger might be required. The worker had intended to continue working through the harvest season and use his high school's home study program. But, because of his injury and his inability to work, he returned to school. At the time of the interview, the hand surgeon had not yet authorized him to return to work (or play sports).



PREVENTION STRATEGIES

1. The farm owner should have a comprehensive written injury prevention program.¹ Workers should be trained to recognize and avoid hazards associated with specific tasks. In this incident, the 15 year-old irrigator was on his first compensated day of work and had received no safety training on how to handle and move irrigation pipes. If he had been trained before he started this job, his injury may have been prevented. Although he may have observed others, including his father, dismantling irrigation pipes, he should have still received safety training on how to correctly perform this task. The safety training for this task can be given in a short time.
2. Field crews should have an adequate emergency medical response procedure. The crew should have a cellular phone or radio available to contact the Emergency Medical Services (EMS). Crews should be trained to call 911 before moving an injured worker. One or more members of the crew should be certified in first aid and cardiopulmonary resuscitation (CPR).² In this incident, the father of the injured worker took the responsibility to transport his son to an emergency department. A foreman was present and should have ensured that the injured worker received appropriate emergency medical treatment. If appropriate emergency medical care had been given at the scene of the injury, it is possible that the risk of complications from this injury could have been decreased. In addition, the injured worker may have initially been taken to a facility that could have provided more definitive treatment sooner.
3. Employers should provide and require workers to use personal protective equipment, along with instruction on proper use. This irrigator was not told what appropriate personal protective equipment (such as leather gloves) to wear. If he had been wearing heavy leather gloves, the injury might have been less severe even if his hand had been crushed between the pipes.
4. Workers who are working as a team need to be sure that there is constant communication and visual contact between them. In this incident, the two workers were dismantling a sprinkler pipe together. However, the co-worker pushed his section of the pipe forward before the irrigator had removed his hand, resulting in injury. If they had paused momentarily at the completion of each step and checked with one another to make sure they were ready for the next step, this injury might have been prevented.

1. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program. See Background.

2. Title 8 California Code of Regulations 3400 (b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace... a person or persons shall be adequately trained to render first aid."



REPORTE NURSE #20

UNA PIPA DESTROZA EL DEDO DE UN REGADOR JOVEN

CDHS(COHP)-FI-92-005-020

Resumen

Dos regadores, uno de los cuales tenía solo quince años, estaban quitando las conexiones de riego en un fil de ajo. Mientras que uno alzaba las pipas por secciones, dejando un espacio en las uniones de la conexión, el otro agarraba la siguiente sección por la boca de la pipa. Las dos secciones se quedaron pegadas y el compañero torció la parte de la pipa que tenía agarrado para desprenderlas. La mano del joven regador quedó atrapada en la conexión de las pipas. Los dedos de la mano se le quebraron y sufrió cortaduras. La parte de arriba del dedo pequeño casi se le cortó por completo.

El rancho no tenía un plan para poder atender lastimaduras. El mayordomo le dijo al padre del regador, quien también se encontraba trabajando en el rancho como regador, que llevara al muchacho a un doctor. El padre lo llevó a una sala pequeña de urgencias en un hospital, donde le cosieron las cortaduras. Al día siguiente la mano del regador estaba tan hinchada que no pudo trabajar. Al enterarse de esto, el dueño del rancho le dijo al padre que lo llevara a una clínica rural para atención médica. La clínica le dio tratamiento al muchacho y lo envió a un cirujano especializado en las manos. Cuando se hizo esta investigación, todavía existía la posibilidad de que el muchacho perdiera el dedo.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Los patrones deben tener un programa de seguridad por medio del cual los trabajadores aprenden acerca de los peligros en el trabajo.
- Esté preparado para atender emergencias. Llame al 911, por medio telefónico a los Servicios Médicos de Emergencia y brinde primeros auxilios.

CASO 192-344-01

27 de octubre 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #21

FOOT AMPUTATED BY FAN IN FIG ORCHARD

CDHS(COHP)-FI-92-005-21

Summary

A farm worker was driving a mechanical harvester in a fig orchard. This harvester swept up the figs from the orchard ground. Then, a conveyor belt carried the figs past a big fan on the side of the machine which blew the dirt off them. A metal cover guarded the fan blades, but not the fan's exhaust outlet. Before his lunch break, the worker left the fan running and stood in front of the exhaust outlet, blowing the dirt and dust off his clothing. His foot entered the exhaust outlet to where it could touch the fan blades, about nine inches inside. The fan blades amputated his foot below the ankle.

A co-worker turned off the harvester, and the worker's foreman called 911 from a truck. Paramedics took the worker and his severed foot to the hospital. The foot was too mangled for doctors to sew back on. Later, doctors amputated his left leg below the knee so he could use an artificial leg.

How could this injury have been prevented?

- Employers should put guards wherever a person can touch moving equipment.
- Workers should use machinery only for the purposes for which it was designed, and for which safety training has been given.

CASE 192-207-01

December 2, 1992

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.





BACKGROUND

On July 16, 1992, NURSE staff identified an injury which occurred in a fig orchard while reviewing records at a Level 1 Regional Trauma Center. On July 6, 1992, a farm worker was operating a mechanical harvester. Before taking his lunch break, the worker stood in front of the harvester's exhaust blower fan to blow dust off his clothing. He removed his left shoe to blow dust off his socks. His left foot touched the unguarded part of the fan in the exhaust outlet and was amputated below the ankle.

A nurse from the NURSE Project interviewed the injured worker by telephone on August 5, 1992. The NURSE Project's Senior Safety Engineer evaluated a similar harvesting machine on August 12, 1992, and was able to inspect the mechanical harvester actually involved in the incident on October 2, 1992. At this time, he also discussed the incident with the farm owner/operator.

The farm owner/operator did not notify the California Occupational Safety and Health Administration (Cal/OSHA) of the incident. Cal/OSHA was later informed of the incident, however, they did not investigate the injury.

The incident took place in a fig orchard owned by a family corporation. The farm grows only figs, on approximately 120 acres, and owns two identical mechanical harvesters. The farm employs 5 full-time workers and 40 casual workers (working 1-12 weeks per year).

The Senior Safety Engineer reviewed the farm's written safety program and found that, although it addressed all seven points required by Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program, the program was not being carried out at the time of the incident. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The Senior Safety Engineer noted that the farm did not conduct periodic inspections for hazards on the job, and did not conduct safety inspections of equipment. New and returning employees were not given safety training, and there were no regular safety meetings documented in the farm's safety records.

The injured worker had many years of experience harvesting figs and had operated this mechanical harvester for approximately ten years. The farm had purchased the mechanical harvester new about twenty years ago. The worker stated that he had received training in the operation of the mechanical harvester from the foreman, but had not received safety training. The worker's training was not documented in the owner/operator's records.



INCIDENT

On July 6, 1992, at approximately 12:08 p.m., the Emergency Medical Services (EMS) responded to a 911 call for assistance. Upon arrival two minutes later EMS found a 29 year-old Hispanic male lying on the ground beneath a tree, 15 feet from a mechanical harvester. His foot had been amputated by the fan on this mechanical harvester.

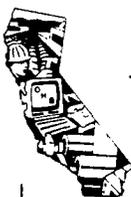
The injured worker had been re-hired for the season ten days before this incident. He operated a mechanical harvester in a fig orchard. The machine sweeps the figs from the orchard ground into an auger conveyor system that drops them onto a wire mesh conveyor belt. The conveyor belt carries the figs past a high volume blower fan, which blows the dust, leaves, and branches off the figs and out an exhaust outlet. After the figs are blown clean, the conveyor system drops them into large boxes, which are pulled on a trailer behind the harvesting machine. One operator steers the machine from the front, while a second employee rides the trailer at the rear, sorting and distributing the figs as they are deposited in the field boxes. The injured worker was steering the machine on the day of his injury.

At 11:48 a.m., just before his lunch break, the worker climbed down from the mechanical harvester. He stood in front of the exhaust outlet of the machine's blower fan to blow the dust off his clothing. The blower fan is mounted on the side of the harvesting machine. It is approximately four feet in diameter, with dull metal blades. The fan takes in air from the top of the machine, and blows dirt and debris out the exhaust at the bottom. The blower fan is mounted inside a fan housing (metal cover), which shields the fan blades except at the exhaust outlet at the bottom of the fan. The fan blades are located approximately nine inches inside the exhaust outlet.

The injured farm worker did not remember the incident clearly. He had taken off his left shoe to blow dust off his socks. His foot entered the exhaust opening far enough to touch the fan blades, and the blades amputated his foot at the ankle.

The farm worker called for help. When his co-worker arrived, the injured worker told him how to turn off the fig harvesting machine. The co-worker then ran to notify the foreman, who called 911 from his truck. The EMS arrived at 12:10 p.m., about twenty minutes after the incident and two minutes after being notified. EMS elevated the injured foot, controlled the bleeding, administered oxygen and established an IV of lactated ringers solution. After retrieving the worker's amputated foot, they left the orchard fourteen minutes after arrival on the scene. EMS transported the injured worker to the Level I Regional Trauma Center, arriving about twenty-seven minutes after leaving the orchard.

At the trauma center, the injured part of the worker's lower leg was cleaned and a tourniquet was applied. The worker was taken up to the operating room to control bleeding. The severed foot could not be surgically reattached because of extensive



tissue damage. Four days later he was transferred to local acute care hospital for insurance purposes.

On September 30, 1992, in a follow-up call, a nurse from the NURSE Project learned that the injured worker had undergone an operation to amputate his left leg below the knee, in order to provide an attachment point for a prosthetic device. The worker had received his prosthesis and was undergoing physical therapy.

PREVENTION STRATEGIES

1. Employers should instruct employees in how to use equipment safely, and to use it only for the purposes for which it was designed. This employee was not formally instructed in the safe operation of the mechanical harvester. He also used the machine's fan to dust off his clothing, a purpose for which it was not designed. Had the employee been instructed to use the machine only for operations in which he had been trained, this incident might not have occurred.
2. Equipment should be designed with safety engineering in mind. In this incident, the mechanical harvester was over twenty years old, and had not been manufactured with a guard over the exhaust fan outlet. Employers should reassess old equipment before the harvest season begins, and retrofit it with safety features. The inspection should include the proper placement of guards on rotating shafts, gear drives, chain and sprocket drives, shear points and other possible contact points with moving equipment. In this incident, if the exhaust fan outlet had been fitted with a guard, the worker may not have been injured.¹

1. Title 8 California Code of Regulations 4002 (a): All machines, parts of machines, or component parts of machine which create hazardous revolving, reciprocating, running, shearing, punching, pressing, squeezing, drawing, cutting, rolling, mixing or similar action...shall be guarded.



REPORTE NURSE #21

PIE AMPUTADO POR ABANICO EN UNA HIGUERA

CDHS(COHB)-FI-92-005-021

Resumen

Un trabajador agrícola manejaba una cosechadora mecánica en una higuera. La máquina barria hacia arriba los higos que se encontraban en el suelo. Luego, los higos pasaban sobre una banda transportadora al lado de un abanico grande que se encuentra colocada a un lado de la máquina. Este abanico sopla la tierra los higos. Un resguardo de fierro cubre las hojas del abanico, pero no cubre el escape del abanico. Antes de la hora de la comida, el trabajador dejó el abanico prendido y se paro en frente del escape para que el aire que soplabla la máquina, le soplara la tierra de sus ropas. Su pie entró por el escape donde se encontraban las hojas del abanico, casi nueve pulgadas hacia dentro. Las hojas del abanico le amputaron el pie al nivel del tobillo.

Un compañero de trabajo apagó la cosechadora, y el mayordomo llamó desde su troque al 911. Paramedicos llevaron al trabajado y su pie al hospital. El pie estaba tan destrozado que los medicos no pudieron pegarselo de nuevo.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Empleadores deben de poner resguardos en todo lugar donde una persona puede tener contacto con maquinaria que se encuentra en movimiento.
- Trabajadores deben usar maquinaria solamente para lo que fue designado, y solo cuando se haiga recibido entrenamiento de seguridad.

CASO 192-207-01

2 de diciembre de 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #22

LEG PARTLY SEVERED BY FORKLIFT PRONG

CDHS(COHP)-FI-92-005-22

Summary

In a lettuce cooling plant boxes of lettuce are stacked on forklift pallets. A forklift driver moves the stack of boxes to a tilt machine which removes the pallets. In the tilt machine the boxes are turned on their side and the forklift pallets slide free. Then the forklift driver puts his forklift prongs in grooves under the stack, scoops the boxes up and loads them into a truck.

When a tilt machine operator tilted a stack of boxes, two boxes came loose and fell into the grooves under the stack. The operator climbed down to put the boxes back in place. Meanwhile, a forklift driver was driving up to the stack of boxes, ready to scoop them up. The forklift driver drove straight into the tilt machine operator, striking him with a prong behind his left knee. The operator lost a great deal of blood, but alert co-workers gave first aid and quickly called the paramedics.

How could this injury have been prevented?

- Use a stop light or other warning device in the plant to alert forklift drivers when another worker is in the work area.
- Have constant communication between the forklift driver and the tilt machine operator.
- Train workers in safe work methods. This plant did not have a written safety program.

CASE 292-260-01

December 23, 1992

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.





BACKGROUND

On July 28, 1992, NURSE staff identified an injury at a produce cooling plant while reviewing a local newspaper. On July 27, 1992, a 62 year-old male Caucasian worker was bent over a stack of lettuce boxes when a forklift prong struck him behind his left knee and lacerated two major blood vessels. He had been employed as a forklift and tilt machine operator for 35 years at this produce cooling plant, nine years under the current owner.

A cooling plant uses a vacuum process to cool large quantities of lettuce or other fresh vegetables. Lettuce is packed in the field. The boxes are stacked on forklift pallets and transported to a cooling plant. In the plant, forklifts move the pallets of lettuce boxes into vacuum chambers. After the lettuce is cooled in these chambers, the pallets are moved by forklift to a tilt machine, which frees them of the forklift pallets, and then loaded into trucks for shipment.

A nurse from the NURSE project interviewed the injured worker on August 18, 1992. On September 18, 1992, the nurse discussed the incident with the plant manager and safety director and investigated the site where the incident occurred. NURSE Project staff also reviewed the California Occupational Safety and Health Administration (Cal/OSHA) "Accident" report, the emergency medical record, the cooling plant's internal investigation report, and the injured worker's medical chart.

Cal/OSHA was notified by the plant safety director the day following the incident, and then conducted an investigation on August 3, 1992.

At the time of the NURSE investigation, two months after the incident, the nurse noted that the cooling plant still did not have a complete written injury and illness prevention program, as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

Although there was no written program at the time of the injury, the plant had begun developing a program by the time of the NURSE investigation. Also, the safety director was conducting hazard evaluations of all plant jobs, as well as conducting safety training for all forklift drivers.

INCIDENT

On July 27, 1992, at approximately 2:17 p.m., a tilt machine operator was struck in the back of his leg by the prong of a forklift. A tilt machine is a large hydraulic machine.



Pre-cooled boxes of lettuce, stacked on pallets, are loaded onto the machine. The machine then tilts the stack of lettuce boxes onto its side so that the pallets slide free. The stack of boxes rests on a metal grate with grooves for the forklift prongs to enter underneath the boxes. The forklift then lifts the boxes, without the pallets, and loads them into a waiting truck for transport.

The tilt machine operator had just tilted a load of lettuce boxes. After tilting the lettuce boxes, he noticed that two lettuce boxes had dropped into the grooves where the forklift prongs enter, one in the right-hand groove and one in the left. The tilt machine operator stepped down from his tilt machine to lift the two lettuce boxes out of the grooves. This was standard operating procedure at the cooling plant.

The forklift driver was driving a four-pronged forklift (manufactured in 1976) and had just completed loading a truck with boxed lettuce. The forklift driver was sitting in the stationary forklift, signing paperwork for the waiting truck driver. Without noticing that the tilt machine operator had stepped down to realign the fallen lettuce boxes, the forklift driver maneuvered the prongs off the floor and drove toward the tilt machine to pick up the stack of boxes. (When the prongs are raised on the forklift, they obscure the driver's vision when looking straight ahead.) The tilt machine operator was in the direct path of the forklift, and one prong struck him behind the left knee.

When the tilt machine operator screamed, the forklift driver shut his forklift off and jumped down. He found the tilt machine operator lying on the ground, bleeding and in severe pain. The forklift driver called for help and several other employees came to assist. 911 was immediately called by a co-worker from a phone in an office, just a few feet from the area. Minutes after the incident, a co-worker applied a belt as a tourniquet to the injured worker's upper leg. (This co-worker told the nurse that he was certified in community first aid.) The emergency medical service was enroute at 2:20 p.m., and arrived on the scene at 2:21 p.m.

The tilt machine operator's left leg was severely lacerated behind the knee. Two major blood vessels (the popliteal artery and vein) that supply blood to the leg were completely severed, causing extensive blood loss. His leg also sustained nerve, muscle and skin tissue damage. The paramedics evaluated the worker and found that the belt used as a tourniquet was not stopping the loss of blood. Direct pressure applied to the laceration did not stop the blood flow either, so Military Anti Shock Trousers (MAST) were placed on the injured worker to control the bleeding. MAST pants are inflated and constrict the flow of blood to the legs. The paramedics estimated the blood loss at up to two units (pints) by this time (enough to cause shock). The injured worker was placed on oxygen, and a cardiac monitor and an IV of normal saline was started in each arm. His heart rate was slow, and paramedics were unable to take a blood pressure reading. The ambulance was enroute to a local acute care general hospital at 2:33 p.m., and arrived at 2:41 p.m.

The emergency department removed the MAST pants, now full of blood, and applied direct pressure which appeared to stop the visible bleeding. By this time, the emergency

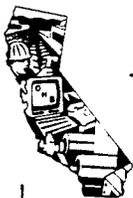


department staff estimated that he had lost more than four units (pints) of blood, or about one-half his total blood. The injured worker was transferred to the operating room for emergency surgery to repair the damage to the popliteal artery and vein.

After eleven days in the hospital, the injured worker was discharged to his home. At the time of the NURSE interview on August 18, 1992 (23 days after the injury), the injured worker was still at home and told the nurse that he was unsure whether the attempt to save his left leg would prove successful. At the time of discharge, medical records suggest the possibility of permanent damage to the circulation of the injured leg.

PREVENTION STRATEGIES

1. Employers should insure that the work environment is free from hazards. Moving machinery (i.e., forklifts) can create hazards to workers. The environment should be designed to insure the visibility of all workers regardless of worker location. In this incident, the forklift driver could not see the tilt machine operator when the tilt machine operator was directly in his path. Immediately after this incident, the cooling plant installed a large round mirror above and to the left of the tilt machine to give forklift drivers a view of the area directly in front of the tilt machine.
2. Employers should design work environments that protect workers from moving machinery. In this plant the tilt machine operator must frequently step down to realign fallen lettuce boxes. A stop light located above the tilt machine could notify the forklift driver that the tilt machine operator is on the plant floor. Before stepping off the tilt machine, the tilt machine operator could turn the stop light on, notifying the forklift driver to wait until the stop light was off before approaching the tilt machine. If a stop light or alarm had signaled the forklift driver that someone was moving in the area, making it unsafe to operate the forklift, this injury may not have occurred.
3. Equipment should be designed with safety engineering in mind. Employers should consider replacing outdated equipment with equipment with modern safety features. This forklift design did not allow the forklift driver to see straight ahead when the prongs were raised. In this incident, if the forklift had been replaced by a forklift that gave the driver full visibility, the driver may have seen the tilt machine operator and prevented the injury.
4. Employers should use a standard operating procedure where worker safety is the first priority. In this incident, the lettuce boxes fell into the grooves where the forklift prongs are inserted. Stacking the lettuce boxes in a way that places the long side of the boxes perpendicular to the grooves where the forklift prongs are inserted would keep the boxes from falling into the grooves. Stacking the boxes this way is common practice in some cooling plants. Wrapping material around the stack of boxes to strap them together while they are on the pallets would also keep the boxes in place when they are tilted.



5. Workers who are working as a team need to be sure that there is constant communication and visual contact between themselves. In this incident, the injured worker who was operating the tilt machine should have told the forklift driver that he needed to step down and realign the boxes. If the two workers had paused momentarily at the completion of each step, and checked with each other to make sure they were ready for the next step, this injury may not have occurred.

6. The employer should have a comprehensive written injury prevention program.¹ Workers should be trained to recognize and avoid hazards associated with specific tasks. In this incident, if a written program had been in place in the plant, and all of its components carried out, this injury may not have occurred.

1. Title 8 California Code of Regulations 3202 -- Injury and Illness Prevention Program (see Background).



REPORTE NURSE #22

PIERNA CORTADA SEVERAMENTE POR DIENTE DE MONTACARGAS

CDHS(COHB)-FI-92-005-022

Resumen

En una planta resfriadora de lechuga, cajas de lechugas son amontonadas en una paleta. Un chofer de montacargas las traslada a una máquina de inclinación que remueve las paletas. En la maquina de inclinación, las cajas se voltean hacia un lado para que las paletas se deslicen libremente. Luego, el chofer de montacargas mete los dientes en las ranuras debajo del montón, levanta las cajas carga el camión.

Cuando el chofer de la máquina de inclinación levantó el montón de cajas, dos cajas se soltaron, cayendo en las ranuras debajo del montón. El chofer se bajó del montacargas para poner las cajas en su lugar. Mientras tanto, otro chofer de montacargas venía hacia el montón de cajas, listo para levantarlas. El chofer de la montacargas atropelló al operador de la máquina de inclinación, golpeándolo con un diente del montacargas en la parte de atrás de la rodilla. El operador perdió bastante sangre, pero compañeros de trabajo que habían visto lo que pasó le dieron primeros auxilios y rápidamente llamaron a los paramédicos.

¿Cómo se hubiera podido prevenir esta lastimadura?

- El uso de una luz de advertencia o cualquier otro sistema de alerta en la planta para avisar a los choferes de montacargas cuando otros empleados estan trabajando en la misma area.
- Tener constante comunicación entre los choferes de montacargas y los operadores de máquinas de inclinación.
- Entrenar a los trabajadores en métodos de seguridad en el trabajo. Esta planta no tenía un programa escrito de seguridad.

CASO 292-260-01

23 de diciembre de 1992

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #23

RAISIN PICKER BREAKS LEG WHILE RIDING ON BIN TRAILER

CDHS(COHP)-FI-93-005-23

Summary

Raisin pickers were riding bin trailers from the vineyard to the road. These trailers carry bins of raisins and are pulled by tractors. They have narrow platforms for workers to stand on and sort raisins while a tractor slowly pulls the trailer down the row. When the tractor leaves the field, other workers sometimes climb onto the platforms and catch a ride.

After a few hours of work, the platforms get slippery with dirt and raisins. As a raisin picker was riding the bin trailer out of the field, he slipped, and his foot hit a moving tire. The tire pulled his foot into the gap between the tire and the edge of the platform. His leg was crushed. No crew member had been trained in first aid. A co-worker tried to free the leg of the injured worker by backing the trailer up, which might have resulted in further damage to the leg. He spent forty-three days in the hospital while doctors tried to save his leg.

How could this injury have been prevented?

- Equipment should be designed with safety in mind.
- Workers should not ride on equipment that is not designed for transport.
- Employers should not purchase/use equipment that can easily catch a foot or clothing with a tire or moving parts.
- Every field work team should have a person certified in first aid.
- Workers and employers should call 911 if someone has a severe injury.

CASE 192-382-01

January 7, 1993

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.



BACKGROUND

On September 2, 1992, NURSE staff identified an injury in a vineyard while reviewing records at a Level I Regional Trauma Center. A 54 year-old Hispanic male raisin picker fractured his lower left leg on August 29, 1992 while riding on a bin trailer. His left foot slipped off the trailer and was caught between a moving tire and the trailer's stationary work platform.

A nurse from the NURSE Project interviewed the injured worker in the hospital on September 4, 1992. On October 19, 1992, the senior safety engineer and the nurse from the NURSE Project discussed the incident with the farm co-owner and conducted an on-site investigation. NURSE staff also reviewed the medical records of the injured worker.

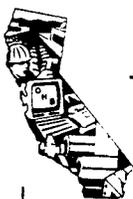
The farm co-owner notified the California Occupational Safety and Health Administration (Cal/OSHA) of the incident on August 31, 1992, but Cal/OSHA did not investigate the incident because it was not a fatality.

The farm's Injury and Illness Prevention Program was not available for review by NURSE staff. However, the farm co-owner stated that he had a written program, as required by Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program, and was considering hiring a full-time safety person to carry out his written program. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. a health and safety program.)

The incident occurred on an 1,800 acre farm that has been in operation since the early 1940's. The farm grows cotton, grapes, and almonds. It is co-owned and operated by two brothers. The number of employees depends on the season. During the year, this farm usually employs 11 full-time workers (working 38+ weeks per year), 100 casual workers (working 1-12 weeks per year), and 10 seasonal workers (working 13-37 weeks per year). The injured raisin picker was a seasonal worker, and had been hired by the farm co-owners five days before the incident to pick and box raisins. He had previously been hired in past seasons by a farm labor contractor to pick grapes in this same vineyard. The injured worker had been migrating to this region from Mexico for the past 20 years to harvest raisins.

INCIDENT

At approximately 10:15 a.m. on August 29, 1992, a 54 year-old male Hispanic raisin picker sustained an open fracture of his left tibia and fibula, and a large laceration to his groin. (An "open" fracture is one in which the broken bones protrude through the skin.) The worker broke his leg when he slipped between a stationary work platform and a moving tire on a bin trailer. Bin trailers have work platforms on each side. This is a



narrow ledge about 12 inches wide and 12 inches above the ground. Workers stand on the work platform while the bin trailers are slowly pulled down the rows by a tractor. These bin trailers carry raisin bins, 4 feet by 4 feet square containers for the raisins. One group of workers walk down the rows and roll the paper trays of raisins and throw them into the bins. Another group of workers stand on platforms and reach into the bins to separate the paper trays from the raisins. These paper "trays" are actually sheets of paper holding sundried grapes.

This particular bin trailer was built at a local high school as a student project, from a design suggested by a local agricultural manufacturer. During the manufacturing, the tires were moved three inches back from the original design. The co-owner said his workers had suggested this because moving the tires back would make the bin trailer more stable. However, moving the tires created approximately a three-inch gap between the trailer tire and the work platform.

It was three hours into the work day, when the work platforms of bin trailers were covered with slippery debris, including dirt, leaves and raisins. The bins were full, so the raisin pickers jumped on the work platforms to ride the trailer out of the field, instead of walking. The raisin picker slipped on the work platform and his left leg became caught in a gap between the edge of the platform and the moving tire. The moving tire dragged his leg deeper into this gap and crushed it between the tire and the edge of the platform, breaking both bones in his lower left leg.

The injured raisin picker cried out. His son was standing on the same work platform and yelled at the tractor driver to stop. After the tractor driver stopped, the crew told him to reverse the tractor to release the injured worker's leg.

A co-worker drove a private vehicle two miles to the farm co-owner's home and notified him of the incident. The co-owner, certified in first aid and cardiopulmonary resuscitation (CPR), went to the scene with bandages and applied pressure to the bleeding leg. At 10:45 a.m., 30 minutes after the injury occurred, he called 911 from his truck phone. The Emergency Medical Services (EMS) arrived on the scene 26 minutes after the 911 call. EMS paramedics immobilized the injured worker's leg, started an IV for hydration, and gave him oxygen. At 11:13 a.m., EMS transported the worker to a road junction, where they requested air evacuation to the Regional Trauma Center. The injured raisin picker was transported by helicopter and arrived at the trauma center at 11:21 a.m.

The trauma center staff diagnosed a fracture of the left tibia and fibula with a large open wound. The wound was contaminated by debris. The injured worker was admitted and taken to the operating room, where his wounds were flushed with fluid and cleaned, and damaged skin removed. His broken bones were surgically realigned and pinned to an external rod to hold them in place.

After his surgery, the wound was treated by administering pure oxygen under high pressure to his leg (hyperbaric treatment). Five days after admission to the hospital, he



underwent a second surgical procedure for further wound treatment. All of the infected skin around the injury site was removed and the area was thoroughly irrigated with antibiotics and saline.

This second debridement (removal of infected skin and tissue) left a large open wound in the leg, which required a third operation for a skin graft. Healthy skin was taken from the worker's upper thigh and transplanted into the area of the open wound on the lower leg.

On October 13, 1992, the injured raisin picker told the nurse from the NURSE Project that he had been released after 43 days of hospitalization. He also said he was moving to another area of the state with another son, because he could not properly care for himself in the farm labor camp where he had been living. The hospital had given him a copy of his medical records and an appointment for follow-up care with a doctor in the area he was moving to.

PREVENTION STRATEGIES

1. Workers should not ride on moving equipment that is not designed for transport.¹ In the past year, NURSE staff have investigated two severe leg fractures caused by workers riding on bin trailers. Bin trailers are not designed to carry workers out of the field. Workers should ride on the work platforms only when they are performing the task of pulling the raisin trays out of the bins, and the trailer is being pulled at a very slow rate of speed. If this worker had not ridden on this trailer, his leg would not have been caught between the moving tire and the trailer.
2. Equipment should be designed with safety in mind. Employers should only use professionally designed equipment or have a safety professional verify that the equipment will be safe. This trailer had been manufactured as a project at the local high school and the original design of the trailer had been altered. This alteration, which moved the tires of the bin trailer three inches away from the edge of the work platform, created an opening large enough to catch a person's leg. If the design of the bin trailer had not been changed, the gap between the tire and the edge of the work platform may not have been large enough to catch the worker's leg. A fender over the tire would also have prevented the worker's leg from contacting the moving tire. (After this incident the farm owner/operator welded a piece of metal over the gap.)
3. Employers should keep the work environment free of hazards. In this incident, the workers stood on a platform covered by slippery debris. If the work platform had been periodically cleaned, the injured worker's leg might not have slipped into the open area between the platform and the moving tire.
4. Employers should hold tailgate safety meetings at least once per week and preferably before each work shift. The foreman should re-emphasize the importance of safety



procedures at the work site before starting the workday. Foremen should point out specific hazards related to tasks and ensure that employees understand that safety procedures must be followed to prevent injuries. If this employee had been told not to ride the bin trailers, this injury might have been prevented.

5. Every field work crew should have a person certified in first aid and cardiopulmonary resuscitation, who is always present at or nearby the work site. In this incident, the co-owner was certified but not present at the site of the incident. If a person certified in first aid and cardiopulmonary resuscitation had been present, the worker would have received first aid more quickly and risk of complications from the injury could have been reduced.²
6. Injured workers should not be moved by anyone other than Emergency Medical Service (EMS) personnel, except in a life threatening situation. In this incident, the crew at the scene attempted to extricate the worker from the trailer without having the training needed to first assess the worker's condition. In their attempt to free the injured worker, the crew had the tractor driver reverse the tractor to pull the injured worker's leg out. This action may have caused additional damage or contamination to the worker's leg. If the crew had waited for arrival of EMS, the raisin picker would have been extricated by trained EMS personnel, thereby minimizing further damage to his leg.

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1. Title 8 California Code of Regulations 3441a(2): "Permit no riders on agricultural equipment other than persons required for instruction or assistance in machine operation."
 2. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."
- Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."



REPORTE NURSE #23

PIZCADOR DE UVA SE QUIEBRA UN PIERNA MIENTRAS IBA MONTADO EN UN REMOLQUE

CDHS(COHB)-FI-93-005-023

Resumen

Pizcadores de uvas iban montados en un remolque desde la viñera hacia el camino. Estos remolques cargan cajas de pasas y son jalados por tractores. Tienen una plataforma muy angosta para que los trabajadores se paren y separen pasas mientras que el tractor jala despaciosamente el remolque por el surco. Cuando el tractor deja el fil, otros trabajadores también montan la plataforma para salir del fil.

Después de unas cuantas horas de trabajo, las plataformas se ponen muy resbalosas con tierra y pasas. El pizcador iba montado en el remolque para salir del fil, se resbaló y su pie pegó contra una llanta que daba vueltas. La llanta jalo el pie a un portillo en medio de la llanta y la plataforma. Su pierna fue apachurada. Ningún miembro de la cuadrilla había tenido entrenamiento en primeros auxilios. Un compañero de trabajo intentó sacar la pierna del trabajador lastimado regresando el remolque, que quizás haiga resultado en hacerle más daño a la pierna. El trabajador duró 43 días internado en el hospital donde doctores intentaron salvarle la pierna.

¿Cómo se pudo haber prevenido esta lastimadura?

- Equipo debe de ser hecho con la seguridad en mente.
- Trabajadores no deben de montar equipo que no está hecho para transporte.
- Empleadores no deben comprar o usar equipo en que fácilmente se pueda atrapar en una llanta un pie o prenda o cualquier otra parte que esté en movimiento.
- Trabajadores y empleadores deben llamar al 911 si alguien se lastima severamente.

CASO 192-382-01

7 de enero de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #24

FARM WORKER'S SKULL FRACTURED BY EXPLODING BRAKE CDHS(OHB)-FI-93-005-24

Summary

Workers were harvesting almonds. The trailers they used to haul the almonds were leased. Moving these trailers was to be done only by the company owning the trailers, or the farmer could use a forklift. In order to save time, the farmer told his son and a farm worker to move the trailer without using a forklift.

The son and farm worker crawled under the trailer to unlock the brakes. They loosened the ring clamp from the outside housing of the brakes. This released a loaded spring, which sent the top of the outside housing flying into the farm worker's forehead.

Neither the farmer nor co-workers were trained in first aid. The farmer put the injured farm worker in his pickup truck, called 911, and drove him to a nearby road. An ambulance took him to a trauma center, where he was admitted with a broken skull.

How could this injury have been prevented?

- Employers should not ask workers to do tasks which they have not been trained to do.
- Equipment should be designed so that workers will not be exposed to hazards.
- Employers should have written safety programs. These programs can help workers and employers identify hazards.
- At the work site, at least one person should be trained in first aid.

CASE 192-383-01

January 19, 1993

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.



BACKGROUND

On September 2, 1992, NURSE staff received a written report of an agricultural injury from a Regional Trauma Center. On August 29, 1992, a farm worker was struck in the head by the outside housing to the brakes on a flatbed trailer. The injury occurred while the farm worker was attempting to deactivate the brake system to move the trailer. This trailer was leased from a trucking company. Deactivating the brake system was usually done only by the trucking company.

A nurse from the NURSE Project interviewed the injured farm worker in the hospital on September 2, 1992. The NURSE senior safety engineer discussed the incident with the farmer hired to harvest the almonds on November 2, 1992. The senior safety engineer was unable to inspect the trailer because the trucking company had removed it from the farm. NURSE staff also reviewed the injured farm worker's medical records and the Emergency Medical Services (EMS) records.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

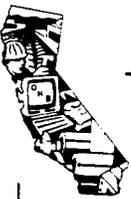
The incident occurred on a 200-acre almond orchard. The injured farm worker was employed by a farmer who was hired by the orchard owner to harvest and deliver almonds to a hulling and processing plant. He had been employed by this farmer as a full-time employee for seven years. He had never received any training from this farmer, and had not disassembled any brake systems in the past. The farmer who employed him did not have a formal written safety program for his harvesting operation, as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide training and instruction.)

INCIDENT

On August 29, 1992, at approximately 7:30 a.m., a 32 year-old Hispanic male farm worker was connecting a conveyor system to pick almonds off the ground. Almonds are harvested with a machine which clamps an arm to the tree and shakes the nuts onto the ground. A sweeping machine then sweeps them into the rows between the trees. A picking machine then sucks them up and places them on a conveyor belt, which leads to a bin behind the picking machine. When the bin is full it is emptied into a trailer. The trailer is eventually taken by a trucking company to the hulling and processing plant.

In this incident, the farmer leased the trailers needed for hauling the almonds. The trucking company set up the trailers with the brakes activated, locking the wheels. The trucking company told the farmer to move the trailers with a forklift. If the farmer needed the brakes deactivated, he was to call the trucking company.





However, to save time, the farmer told his son and the farm worker to deactivate the safety brakes on a trailer, and to move it without using a forklift. They crawled under the trailer. Neither of them had ever deactivated a brake system. They did not know that a special bolt must be screwed into the top of the brake system's outside housing. This special bolt takes the pressure off a loaded spring, thus safely releasing the brakes.

The farmer's son began by unfastening the ring clamp which kept the metal (outside) housing of the brake together. With the top of the metal housing loosened, the loaded spring released and sent the top of the housing flying, striking the farm worker on his forehead above the left eye. According to co-workers, he immediately lost consciousness. Neither the farmer nor his employees had any training in first aid or cardiopulmonary resuscitation (CPR). The farmer placed the injured farm worker in his pickup truck, and drove him out of the almond orchard to a nearby road. He called 911 on his truck phone. The Emergency Medical Services (EMS) was en route at 8:05 a.m., and met the pickup truck at 8:14 a.m.

They found the injured farm worker conscious, nauseated and complaining of pain in his neck. He could not remember the incident. He had a five-inch laceration over his left eye, and open facial and skull fractures. (An open fracture is one in which the broken bones cut through the skin.) The paramedics gave him oxygen and started an IV. They immobilized him and applied a dressing to his open wounds. The injured farm worker was transported to the Regional Trauma Center, arriving at approximately 9:00 a.m.

The injured farm worker was admitted to the hospital, with a depressed skull fracture and a torn lining (dura) of the brain. A brain scan revealed a depressed fracture in the left orbital (around the eyes) and left frontal bones (forehead) of the skull. It also revealed swelling of the brain in the left frontal lobe. An x-ray of the cervical spine did not reveal any damage. He had surgery the following day to clean the wounds, remove bone fragments, and repair the dura.

Two days later the injured farm worker developed a fever of 102°F, and was treated with antibiotics to prevent infection. He spoke Spanish, and understood very little English. When the nurse from the NURSE Project visited him, he asked for help to explain the nature of his injuries and the medical treatment he was receiving.

The injured farm worker was released after eleven days in the hospital. He was taking anti-seizure medication and was instructed to wear a hard hat because another blow to his skull could result in severe brain damage (possibly death). Nine days after discharge, he returned to the neurological clinic for a follow-up examination. He complained of sleepiness. On December 11, 1992, almost four months after the incident, the injured worker contacted the nurse from the NURSE Project with questions about his anti-seizure medication. He told the nurse he was continuing to have severe headaches and vision problems. His physician estimates that he will be out of work for at least a year.



PREVENTION STRATEGIES

1. Employers should have a comprehensive injury and illness prevention program.¹ If there had been a written and implemented injury and illness prevention program, the hazard of deactivating the brakes might have been recognized and this incident might not have occurred.
2. Employers should use a standard operating procedure where worker safety is the first priority. Employers should follow and instruct workers to always follow standard operating procedures. Instruction should be presented in a manner and in a language that workers understand. In this incident, the injured employee was asked to perform a task for which he had not received any training. Therefore, he was not aware of the hazards involved in disassembling the brakes. Normal operating procedure called for the trucking company to deactivate the brakes. In this incident, the farmer instructed his son and the injured farm worker to bypass this procedure to save time. If the standard operating procedure had been followed, this incident might have been prevented.
3. Every field work crew should have a person certified in first aid and cardiopulmonary resuscitation (CPR) who is always present at the work site.² In this incident, no one was trained in first aid and there was no written procedure for handling emergencies. Field crews should have an adequate emergency response procedure which is written and followed; this would include training workers in handling emergency situations. If a person certified in first aid and CPR had been present, the injured worker would have received first aid more quickly and the risk of complications from the injury may have been reduced.
4. Injured workers should not be moved by anyone other than Emergency Medical Services (EMS) personnel, except in a life threatening situation. Although the employer called 911, the injured worker should not have been moved before the arrival of the EMS. The extent of the injuries sustained by the injured employee was unknown at the time of the incident. The improper movement of the injured employee could have resulted in more severe injuries and possibly permanent damage to the central nervous system.
5. Manufacturers of equipment should test designs with safety in mind before making them publicly available so that workers will not be exposed to hazards. In this incident, if the brake housing had been manufactured with an interlocking mechanism or one-way bolts, as is now being manufactured and sold, the employer's son would not have been able to dismantle the housing. This would have required the employer to follow standard operating procedure and call the trucking company to move the trailer, thus eliminating the risk of injury to untrained workers. The new design, using an interlock mechanism or one-way bolts, can only be dismantled in an authorized workshop.



Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program.

Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."



REPORTE NURSE #24

EXPLOSION DE FRENOS FRACTURA EL CRANEO DE UN TRABAJADOR AGRICOLA

CDHS(COHB)-FI-93-005-024

Resumen

Unos trabajadores agrícolas estaban piscando almendras. Los remolques que usaban para transportar almendras eran rentados. Los remolques eran movidos solo por la compañía de quien se rentaban, o el patron podía usar un montacargas. Para ahorrar tiempo, el patron le dijo a su hijo y a uno de los trabajadores que movieran el remolque sin usar el montacargas.

El hijo y el trabajador se metieron debajo del remolque para quitar los frenos. Aflojaron la abrazadera de la tapadera exterior de los frenos. Esto soltó un resorte cargado, el cuál mandó una parte de la tapadera volando y pegandole al trabajador en la frente.

Ni el patron, ni los compañeros de trabajo estaban entrenados en primeros auxilios. El patron llevó en su troque al trabajador lastimado, llamó al 911, y se lo llevó a un cruce de caminos cercano. La ambulancia se lo llevó a un centro de trauma, donde fué internado con su craneo quebrado.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Patrones no deben pedir a los trabajadores hacer cosas en las cuales no han sido entrenados.
- El equipo debe ser diseñado para que los trabajadores no sean expuestos a peligros.
- Patrones deben tener programas en escrito de seguridad. Estos programas pueden ayudar a los trabajadores y patrones a identificar peligros.
- En el lugar de trabajo por lo menos una persona debe ser entrenada en primeros auxilios.

CASO 192-383-01

19 de enero de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #25

TRACTOR DRIVER'S HEAD CRUSHED BY MOVING TRACTOR

CDHS(COHP)-FI-93-005-25

Summary

During the raisin harvest a farm owner noticed that one of his tractor drivers seemed sick. He was shaking and looked like he had a fever. The farmer asked the driver if he felt sick, but the driver wanted to keep working.

The next day the farm owner and five workers drove a line of tractors from one vineyard to another. The tractors traveled along a county road at about 12 miles per hour. One of the tractors went off the road and into a field. The driver was the worker who had seemed sick the day before. It looked as if he was having a seizure as his tractor crossed the field. He fell to the ground when his tractor ran into a row of grape vines. The tractor continued moving forward. A rear wheel crushed the tractor driver's head. He died instantly.

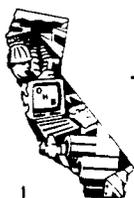
How could this death have been prevented?

- All tractors should be equipped with seat belts and rollover protective structures (ROPS).
- Workers should not try to work when they are feeling sick.
- Tractors should be equipped with safety devices which stop them from moving forward when the driver is not in the seat.

CASE 192-459-01

March 15, 1993

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.



BACKGROUND

On September 29, 1992, NURSE staff identified a fatality in a vineyard while reviewing the county coroner's log. The death occurred on September 17, 1992, when a tractor was being driven from one vineyard to another about one mile away. The tractor was part of a six tractor convoy. The tractor ran off the paved county road into a plowed field, and continued into a vineyard through a row of grape vines. The driver fell off the tractor when it struck the second row of vines. His head was crushed by the left rear wheel of the moving tractor. The tractor driver died at the scene.

A nurse from the NURSE Project was unable to interview the other tractor drivers in the convoy because they had returned to their homes in Mexico. The Senior Safety Engineer discussed the incident with the vineyard owner and employer of the tractor driver on October 20, 1992. This employer witnessed the incident. The Senior Safety Engineer also examined the tractor involved in the incident. NURSE staff reviewed the Medical Examiner/Coroner report, the California Highway Patrol report, and the Emergency Medical Service patient care sheet.

The Senior Safety Engineer reviewed the employer's written injury and illness prevention program and noted that it did not address all points required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.) Only five of these seven points were covered. The written injury and illness prevention program did not have the hazard evaluation and the safety training components.

The California Highway Patrol responded to the scene and investigated the death. The employer reported the fatality to the California Occupational Safety and Health Administration (Cal/OSHA) on September 22, 1992, but Cal/OSHA did not investigate the incident.

The incident took place on a 270 acre grape vineyard which produced raisins. This vineyard was owned by two brothers, and located on two pieces of land approximately one mile apart. The farm owners usually hire a farm labor contractor who recruits, hires and manages 150 raisin pickers in the late summer and 20 vine pruners in the winter. They also hire 3-4 casual workers (working 1-12 weeks per year) to box raisins and move machines and equipment.

The fatally injured tractor driver had been hired by the farm owners two days prior to his death. For the past three years, however, he had been hired by a farm labor contractor to work on this farm. Although he had previously driven tractors, the owners gave him verbal instructions on safe tractor driving at the time he was hired.



INCIDENT

On September 17, 1992, at approximately 5:00 p.m., a 48 year-old Hispanic male was driving a tractor which pulled a raisin bin trailer. Earlier that day he was boxing raisins. His tractor was part of a convoy of six tractors led by a pickup truck, traveling between two vineyards on a paved county road. Five of the tractors in the convoy were driven by farm workers. One farm owner drove the last tractor in the convoy and the other owner drove a pickup truck in front of the convoy. The tractors were traveling at approximately 12 miles per hour. This was a cloudy, relatively cool day. A toxicology test showed no alcohol or drugs in his blood at the time of death. (There was no recorded spraying of pesticides in the vicinity of the vineyards during September, 1992.)

The tractor driver was driving a low profile tractor, that is, a tractor with a low center of gravity and a wide wheelbase. Low profile tractors used in vineyards are not legally required to have rollover protective structures (ROPS) and seat belts. The farm owner driving the lead pickup truck told NURSE staff that he saw the victim's tractor leave the convoy and run off the county road into a plowed field, creating so much dust that he lost sight of the tractor. The driver appeared to have a seizure as the tractor traveled through the plowed field. The tractor continued into a vineyard, passing through one row of grape vines and striking a second row. The tractor driver fell off the tractor. The tractor continued traveling forward and its left rear wheel ran over and crushed his head.

The farm owner in the lead pickup truck called the Emergency Medical Service (EMS) from his truck phone at 5:04 p.m. EMS arrived at 5:14 p.m. and found the tractor driver's head crushed. They pronounced him dead. The coroner stated that the cause of death was a crush injury to the head due to blunt force impact, with death occurring immediately.

One of the farm owners told NURSE staff that the day before the fatality, he and the foreman noticed the tractor driver was shaking and appeared to have a fever. However, when asked if he felt sick, the tractor driver said he felt good enough to work. The autopsy report noted that the deceased tractor driver had advanced cirrhosis of the liver. His lungs were congested and his abdominal cavity contained 1,500 cubic centimeters of fluid. These findings suggest that the tractor driver may have been extremely sick at the time of his death.

PREVENTION STRATEGIES

1. Tractors should be equipped with seat belts. The use of a seat belt would have prevented the tractor driver from falling off the tractor when it hit the row of grape vines. Tractors with seat belts must also be equipped with rollover protective structures (ROPS). Although the California Code of Regulations has a special section that exempts low profile tractors used in orchards and vineyards from the ROPS requirement, the safest alternative is to equip all tractors with seat belts and ROPS. (A low profile tractor is 18 inches or less from ground to chassis, with the front wheel



spacing equal to the rear wheel spacing.) This is the third incident the NURSE Project has investigated in which workers have fallen off low profile tractors because a seat belt was not available. If the tractor involved in this incident had a seat belt and ROPS, the driver would not have fallen off the tractor when it ran into the rows of grape vines.¹

2. Workers should be encouraged to state when they are feeling ill. Likewise, employers should ensure that workers are healthy enough to perform assigned tasks safely. In this incident, the exact cause of the seizure prior to death will never be known. One of the farm owners noted that the driver was in poor health, but allowed him to continue working. If the tractor driver could have alerted co-workers as to his ill condition, or the farm owner had realized that the tractor driver was too sick to drive a tractor safely, his death may have been prevented.
3. Employers should have a comprehensive written injury and illness prevention program.² In this incident, the program was incomplete, and lacked written safety training procedures. The fatally injured tractor driver received verbal training on safe tractor operation when he was hired for the season. However, safety training should be reviewed at the beginning of each day. This is especially important if the work tasks change. In this incident, the tractor driver was going to drive the tractor down a public road instead of in a field. This involves a different procedure and skills than driving a tractor in a field. Tractor drivers who operate agricultural machines on public roads should receive training comparable to drivers licensed to operate motor vehicles on public roads.
4. Agricultural machines and equipment should be designed with safety in mind. This death occurred when the driver fell off the tractor and the tractor continued to move forward, crushing his head. If the tractor had a mechanism that would stop it when the driver was not in the seat, this incident might not have occurred. Some tractor manufacturers have already incorporated this safety feature.

1. Title 8 California Code of Regulations 3651: Agricultural and Industrial Tractors.

Title 8 California Code of Regulations 3653: Seat belts. "Seat belt assemblies...shall be provided on all equipment where rollover protection is installed and employees shall be instructed in their use."

2. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program. See Background.



REPORTE NURSE #25

CABEZA DE TRACTORISTA ES APLASTADA POR SU TRACTOR

CDHS(COHB)-FI-93-005-025

Resumen

Durante la pisca de pasas, un ranchero notó que uno de sus tractoristas parecía estar enfermo. Temblaba y parecía como si tuviera fiebre. El ranchero le preguntó si se sentía enfermo, pero el tractorista quería seguir trabajando.

Al siguiente día, el ranchero y cinco trabajadores conducían en una fila, los tractores de un viñedo a otro. Los tractores iban a través de un camino rural a una velocidad aproximada de 12 millas por hora. Uno de los tractores se salió del camino hacia un fil. El tractorista era el mismo trabajador que había parecido estar enfermo el día anterior. Parecía como si él estuviera sufriendo un ataque cuando el tractor cruzó el fil. El tractorista se cayó del tractor cuando se topo con la hilera de viñas de uva. El tractor siguió hacia adelante. La llanta trcera atropelló la cabeza del tractorista. Murió instantáneamente.

¿Cómo se hubiera podido prevenir esta muerte?

- Todos los tractores deben estar equipados con cintos de seguridad y estructuras para prevenir las volcaduras (ROPS).
- Trabajadores no deben intentar trabajar cuando estén enfermos.
- Tractores deben estar equipados con sistemas de seguridad, tal como, sistemas que detengan movimiento hacia adelante cuando el chofer no esté en el asiento.

CASO 192-459-01

15 de marzo de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patronos y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patronos y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #26

TRACTOR DRIVER KNOCKED OFF TRACTOR BY TREE BRANCH

CDHS(COHP)-FI-93-005-26

Summary

A tractor driver was pulling a discer through an apricot orchard. A discer is made of two rows of round metal blades that the tractor drags through the soil. The driver looked over his shoulder to check the discer. As he turned to face forward again, a low tree branch hit him on the head and knocked him off the tractor.

The driver fell between the back of the tractor and the discer. The tractor was still pulling the discer forward. The driver rolled as far out of the way as he could. A blade of the discer caught his forearm and cut it to the bone. Luckily, the tractor ran into a tree and stalled, so the blade was not pulled all the way across the driver's arm.

He did not have a phone or radio to call for help. Also, he was working alone. The driver walked to a house about a quarter mile away, where he called for an ambulance.

How could this injury have been prevented?

- Trim branches along orchard rows before driving a tractor down the rows.
- Tractors should have a rollover protective structure (ROPS) and seat belts.
- Tractors should have a cage to protect the driver from branches.
- Workers should have a telephone or radio to call for help.

CASE 192-548-01

March 3, 1993

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.



BACKGROUND

On November 18, 1992, the NURSE staff received a telephone call from a rural ambulance service. That morning they had responded to an agricultural injury in an apricot orchard. A tractor driver was knocked off his tractor by a branch, then run over by the farm implement (discer) his tractor was pulling. The driver sustained a laceration to his forehead, and his right forearm was almost severed.

A nurse from the NURSE Project interviewed the worker in his home on November 23, 1992. On December 4, 1992, the nurse discussed the incident, by telephone, with one of the orchard's owners. On December 17, 1992, the nurse conducted an on-site investigation. NURSE staff also reviewed the Emergency Medical Services (EMS) ambulance record and the hospital medical records.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

During the telephone interview, the farm owner stated that he had a written safety program. However, this program was not available for review at the time of the site visit. During this visit, the nurse outlined the seven point injury prevention program required by Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program. The farmer said that his written plan covered five of the seven points, but lacked the written hazard communication and hazard evaluation components. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The incident took place in an apricot orchard owned and operated by a father and son. The farm includes grape vineyards and apricot, plum, and nectarine orchards that cover approximately 1,000 acres. The farm employs 4 full-time workers, 20 casual workers (working 1-12 weeks per year), 50 seasonal workers (working 13-37 weeks per year), and 2 family members.

The injured tractor driver had worked for the farm owners for nine years and had eight years of experience in discing. He stated that he had received safety training in discing. He told the nurse that two years ago he had experienced a similar incident where a branch hit him and cut his head, but had not knocked him off his tractor.



INCIDENT

On November 18, 1992, at approximately 8:30 a.m., a 42 year-old male Hispanic tractor driver was working alone, discing the ground between rows of fruit trees. A discer has two rows of round metal blades. The blades are dragged through the ground by a tractor, which breaks up and cultivates the soil. The tractor used was a low profile tractor, that is, a tractor with a low center of gravity and a wide wheelbase.

The tractor driver entered an apricot orchard after discing the rows between plum trees. The tractor was about 60 feet into the new row, traveling at an estimated speed of 4-5 miles per hour. The driver turned around to check that his discer was properly aligned in the row. The moving tractor passed under a low branch. As he turned to face forward, this branch struck him on the forehead and knocked him off the tractor. He fell off the back of the tractor, into the space between the tractor and the discer he was pulling.

There was a distance of about ten feet between the back of the tractor and the front of the discer. The driver rolled as far out of the path of the moving discer as he could. The tractor continued moving, but veered to the right, in the direction of the tractor driver. One of the discer blades ran over his right forearm, lacerating it almost to the bone. Before completely severing the arm, the tractor and discer hit a tree and stopped.

The injured tractor driver received a deep, four inch laceration to his forearm, and a minor laceration to his forehead from the branch. He got up and walked about one-quarter mile to the nearest house to seek help. The homeowner called 911. Emergency Medical Services (EMS) received the call at 8:49 a.m., and arrived on the scene at 8:55 a.m. They immobilized him, applied dressings to his forehead to stop the bleeding, and applied a splint to his right arm. An IV was started and oxygen administered. The injured tractor driver was taken to the nearest hospital, arriving at 9:19 a.m. His forehead was stitched in the emergency department. He was given pain medication, admitted to the hospital, and taken to the surgery unit to repair his right arm laceration. He also suffered multiple abrasions and experienced back pain.

The injured tractor driver was discharged from the hospital the next day with appointments for follow-up visits to have his stitches removed. At the time of the interview, five days after the incident, he told the nurse from the NURSE Project that he was experiencing severe back pain and dizziness.

PREVENTION STRATEGIES

1. The employer should have a comprehensive written injury prevention program.¹ In this incident, the employer's safety program should have included components on hazard evaluation and hazard communication. Hazard evaluation of the work environment should include evaluating the orchard before it is discing. Routine orchard maintenance should include cutting low branches that overhang the rows. If a complete injury prevention program had been written and implemented, this injury might not have occurred.



2. Tractors should be equipped with seat belts. The use of a seat belt would have prevented the tractor driver from falling off the tractor when he was struck by the branch. Tractors with seat belts must also be equipped with rollover protective structures (ROPS). Although the California Code of Regulations has a special section that exempts low profile tractors used in orchards and vineyards from the ROPS requirement, the safest alternative is to equip all tractors with seat belts and ROPS. (A low profile tractor is 18 inches or less from ground to chassis, with the front wheel spacing equal to the rear wheel spacing.) If the tractor involved in this incident had a seat belt and ROPS, the driver would not have fallen off the tractor when he was struck by the branch.²
3. Equipment should be designed with safety engineering in mind. The NURSE Project investigated a similar incident (NURSE Report #3) in which a tractor driver was knocked off his tractor by a branch. After the incident, the farm designed and built a driver's cage with a steel mesh screen to protect the tractor driver from low-lying branches. Being struck by branches is a common occurrence. In this incident, the injured worker reported that he had been struck by a branch and injured his head in a previous incident. If the tractor had been equipped with a protective cage for the driver, this injury would not have occurred. (Fiberglass shields are available commercially and may be installed on tractors to prevent drivers from being hit by branches. However, these are not popular with farm owners because they do not last more than one season.)
4. Employers and manufacturers of agricultural equipment should consider safety engineering when using or designing equipment. In this incident, the most severe injury occurred when the tractor pulled the discer forward over the driver's forearm. If the tractor had a mechanism that would stop it when the driver was not in the seat, the driver might not have been run over by the discer. Some tractor manufacturers have already incorporated this safety feature.
5. Employers and manufacturers of agricultural equipment should consider safety accessories when using or designing equipment. The discing of orchards is usually done alone and requires the driver to continually turn around and check if the discer is aligned in the row. If the tractor had a wide-angle rear view mirror which the driver could use to check the discer without turning his head, he might have seen the low branch and avoided it in time. The tractor could also be equipped with an alignment beam so that the driver could keep the tractor aligned without looking over his shoulder. Tractors that push instead of pull implements are also now available. If any of these safety features had been in use, this injury might not have occurred.
6. Workers should be issued portable communication devices to call for help in emergencies. Also, employers who have workers working alone should have a routine method of monitoring their employees. In this incident, the worker had to walk approximately one-quarter of a mile to request help. If the injured worker had a portable communication device to call the co-owner for help, emergency medical



treatment would not have been delayed while he walked to the nearest telephone.³ If the injured worker had been unable to walk, he may not have been found for several hours and may have bled to death. Employers should establish contact with workers on a periodic basis throughout the day.

1. Title 8 California Code of Regulations 3203. See Background.

2. Title 8 California Code of Regulations 3651: Agricultural and Industrial Tractors.

Title 8 California Code of Regulations 3653: Seat belts. "Seat belt assemblies...shall be provided on all equipment where rollover protection is installed and employees shall be instructed in their use."

3. Title 8 California Code of Regulations 3400(f): "At isolated locations, provisions must be made in advance for prompt medical attention in case of serious injuries. This may be accomplished by...a telephone communication system for contacting a doctor.



REPORTE NURSE #26

RAMA DE ARBOL TUMBA A UN TRACTORISTA DE SU TRACTOR

CDHS(COHB)-FI-93-005-026

Resumen

Un tractorista iba jalando un harado de discos por un huerto de chabacano. El harado de discos está hecho de dos filas de navajas redondas de metal que el tractor arrastra sobre la tierra. El tractorista voltió hacia atrás sobre su hombro para revisar el harado. Cuando voltió su cara hacia adelante otra vez, una rama baja de un árbol le golpeó en la cabeza y lo tumbó del tractor.

El tractorista cayó entre la parte de atrás del tractor y el harado. El tractor seguía hacia adelante, jalando el harado. El tractorista se aventó rodando, dando vueltas tan lejos del harado como pudo. Una de las navajas del harado alcanzó a agarrarle el brazo, cortándole hasta el hueso. Afortunadamente, el tractor chocó contra un árbol y se apagó, evitando que la navaja no le cortara el brazo completamente.

El no tenía radio ni teléfono para pedir ayuda. También, estaba trabajando solo. El tractorista caminó como un cuarto de milla a una casa para hablarle a la ambulancia.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Cortar las ramas bajas antes de entrar con el tractor a los surcos.
- Tractores deben tener una estructura protectora para prevenir volcaduras (ROPS), y cinturones de seguridad.
- Tractores deben tener una jaula para proteger al chofer de las ramas.
- Trabajadores deben tener teléfono o radio para pedir ayuda.

CASO 192-548-01

3 de marzo de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #27

ARM CAUGHT IN MECHANICAL COTTON PICKER CDHS(COHP)-FI-93-005-27

Summary

A mechanical cotton picker was stopped in a field. The machine driver and his foreman were cleaning the machine's spindles. These spindles pull the cotton off the plant and into the machine. They get clogged with cotton leaves and twigs. To clean them, spindle covers must be lifted off the spindles. On top of the machine are power shafts, running from the engine to the spindles.

The foreman told the driver to start the cotton picker. The driver started the machine, but kept it out of gear. This meant that the spindles were not turning, but the power shafts were. They noticed a spindle cover was loose. The driver climbed up on the machine to bolt it down. The driver's sweater sleeve became caught in one of the turning power shafts. The sleeve wrapped around the shaft and cut into his arm, almost taking it off. He spent two weeks in the hospital, and his arm has permanent nerve and muscle damage.

How could this injury have been prevented?

- Never work around unguarded power shafts.
- Fit equipment with necessary safety devices, including guards for power shafts.
- Employees should not be asked to place themselves in dangerous positions.

CASE 192-549-01

March 3, 1993

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.



BACKGROUND

On November 16, 1992, NURSE staff identified an injury in a cotton field while reviewing records at a Regional Trauma Center. A 39 year-old Hispanic male cotton picker driver injured his arm on November 11, 1992 while bolting down a spindle cover on a mechanical cotton picker. An unguarded, rotating power shaft caught his sweater sleeve and tightened the sleeve around his arm. The sleeve cut into his arm and nearly amputated it.

A nurse from the NURSE Project interviewed the injured driver in the hospital on November 16, 1992. On January 5, 1993, the senior safety engineer from the NURSE Project interviewed the farm labor contractor (the injured driver's employer) at the contractor's field office and equipment yard. At this time, he examined the mechanical cotton picker involved in the injury. NURSE staff also reviewed the worker's hospital records.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

The incident occurred on a 200-acre cotton farm. The injured driver had driven mechanical cotton pickers for the past six years. His employer, a farm labor contractor, had been hired by the farm owner to harvest a cotton field. The injured driver had worked for him for one month. This farm labor contractor recruits and manages workers for farm owners in a variety of crops and tasks. He employs 6 full-time workers, 150 casual workers (working 1-12 weeks per year), 50 seasonal workers (working 13-39 weeks per year), and 4 family members.

The injured driver stated he had received formal, verbal safety training, but the farm labor contractor could not give details of the training. The farm labor contractor said he had a written safety program, but it was not available for review by the NURSE senior safety engineer. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction. Title 8 California Code of Regulations 3203.)



INCIDENT

On November 11, 1992, at approximately 11:00 a.m., the driver of a mechanical cotton picker stopped his machine to clean plant debris off the cotton picker's spindles. A mechanical cotton picker is a large, self-propelled machine. Vertically rotating spindles pull the cotton into rubber disks which remove the cotton from the plant. The cotton is then vacuumed into a holding basket at the rear of the machine. Rotating drive shafts run from the engine to the spindles to power them.

The foreman and the driver lifted the covers off the cotton picker's spindles to clean them. Upon completion, the foreman wanted to see if the rotating drive shafts were working properly. He told the driver to start the cotton picker.

The driver started the machine and put the drive system into neutral. This kept the spindles from turning, but the drive shafts rotated. They noticed a spindle cover was loose. The foreman told the driver to climb up and lay down on the spindle cover to hold it down and bolt it in place. After it was bolted, as the driver was standing up, his sweater sleeve became caught on an unguarded universal joint on the rotating power shaft. The rotating shaft tightened the sweater, which twisted and cut deeply into his upper arm.

The foreman jumped into the driver's seat of the mechanical cotton picker and turned off the machine. With the help of co-workers, he cut the driver's shirt and sweater free from the shaft and released his arm.

The injured driver did not lose consciousness. Co-workers tried to stop the bleeding from his arm with dirty and oily rags. No members of the work crew were trained in first aid. He was placed in a pickup truck belonging to the farm labor contractor and transported to the emergency department of a local hospital. This trip took approximately 23 minutes. He was then transferred almost immediately by ambulance to a Regional Trauma Center for treatment.

The injured driver's upper left arm had a deep laceration caused by his sweater twisting and cutting into his arm. His arm sustained brachial nerve damage and extensive soft tissue and muscle damage. After initial treatment in the emergency department, the injured driver was taken to surgery to clean and temporarily close the wound. A week later he received a skin graft to close the wound. He was discharged from the hospital 13 days after the incident. At the time of discharge he was advised not to return to work for at least a month, and to avoid strenuous activities.



PREVENTION STRATEGIES

1. Standard operating procedures should ensure that employees are never required to intentionally place themselves in hazardous situations to complete a work task. Standard operating procedures should be explained in a comprehensive injury and illness prevention program.¹ In this incident, the foreman instructed the driver to climb onto the machine in close proximity to unguarded rotating power shafts. A method should have been selected which did not involve placing a worker in this vulnerable position. If the worker had not been on top of the machine, this injury would not have occurred.
2. Field crews should have an adequate emergency medical response procedure. The crew should have a cellular phone or radio available to contact the Emergency Medical Services (EMS). Crews should be trained to call 911 before moving an injured worker. One or more members of the crew should be certified in first aid and cardiopulmonary resuscitation (CPR).² In this incident, if a crew member had been trained in first aid, and if a cleaner rag was available at the injury site, he/she would have known to use it instead of the dirty, oily rag to decrease the likelihood of wound contamination.
3. Employers should evaluate their equipment to make sure that it incorporates all modern safety features, and consider replacing or retrofitting equipment to incorporate safety features. Even the newest equipment available should be reviewed for guards and safety devices. The manufacturer of the mechanical cotton picker involved in this incident has since installed guards on all the rotating shafts on the new machines. The manufacturer has also installed a system which turns off all the machinery, including the power shafts, when the driver steps off the seat. If either of these safety features had been present on this cotton picker, this injury might not have occurred.

1. Title 8 California Code of Regulations 3203 - Injury and Illness Prevention Program.

2. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 20 employees at any remote locations with training for the administering of first aid."



REPORTE NURSE #27

BRAZO ATORADO EN MAQUINA DE PISCAR ALGODON

CDHS(COHB)-FI-93-005-027

Resumen

Una maquina de pizar algodón estaba parada en el fil. El maquinista y su mayordomo estaban limpiando las cabezas de la máquina. Estas cabezas jalan el algodón de la planta hacia adentro a la máquina. A veces las cabezas se tapan con las hojas y las ramas de la planta de algodón. Para limpiarlas, es necesario quitar las tapaderas de las cabezas. Encima de la máquina hay unos ejes de motor, que conectan el motor con las cabezas.

El mayordomo le dijo al maquinista que echara a andar la pizcadora. El maquinista echó a andar la máquina, pero la dejó fuera de engrane. Esto significa que las cabezas no daban vueltas, pero los ejes de motor sí. Luego notaron que una de las tapaderas estaba floja. El maquinista se subió a la máquina para atornillarla. La manga del sueter del maquinista se atoró en uno de los ejes de motor. La manga se enredó en el eje, y le cortó el brazo casi completamente. El maquinista duró 2 semanas en el hospital, y su brazo tiene daños permanentes de músculos y nervios.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Jamás trabaje cerca de ejes de motor que no tengan resguardos.
- Ponerle equipo de protección a toda la maquinaria, incluyendo resguardos a los ejes de motor.
- No se debe pedir a los trabajadores que se pongan en situaciones peligrosas.

CASO 192-549-01

3 de marzo de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #28

MACHINE OPERATOR ELECTRICALLY SHOCKED IN TRANSPLANT NURSERY

CDHS(COHP)-FI-93-005-28

Summary

Some greenhouses grow vegetables from seeds. As the plants grow, they need to be trimmed. A celery cutter came back from his afternoon break to continue cutting celery plants. The cutting machine he used looked like a lawn mower. An extension cord was needed to reach an electrical outlet. The extension cord he used was missing the third prong. Also, puddles of water were on the floor from watering the plants. Shortly after grabbing the cutting machine, he received an electrical shock. He couldn't let go of the handle. He screamed for help.

A co-worker ran over and unplugged the cutting machine. The injured worker fell to the ground, dazed and weak. Their supervisor told the co-worker to drive the injured worker to a walk-in clinic. From there he was driven to a hospital, where he was treated and spent the night.

How could this injury have been prevented?

- Employers should make sure work areas are free of hazards (such as water on the floor).
- Supervisors and workers should call 911 if someone has an electrical shock.
- Employers should use injury prevention programs. These programs can help employers identify and fix hazards.
- Workers should wear electrically insulated gloves and boots when working in wet areas with electric equipment.

CASE 292-327-01

March 31, 1993

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 (#U06/CCU906031-04). 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.



BACKGROUND

On August 21, 1992, a nurse from the NURSE Project, while reviewing records at an acute care general hospital, identified an electrical shock injury which occurred at a vegetable transplant nursery. On July 16, 1992, a 23 year-old Hispanic male received an electrical injury while cutting the tops of celery seedlings with an electric cutting machine. He had been employed for 3 years at the transplant nursery, and the last 18 months as a cutter.

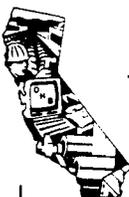
The transplant nursery began operations in 1981. It employs 80 full-time workers (working 38+ weeks per year), 40 seasonal workers (working 13-37 weeks per year), 20 casual workers (working 1-12 weeks per year), and 4 family members. The injured cutting machine operator was a full-time worker. Transplant nurseries grow seedlings of celery, lettuce and other vegetables in protected controlled environments called nurseries. They are grown until ready to be planted by either hand or machine in a field.

A bilingual nurse from the NURSE Project interviewed the injured worker by telephone on September 30, 1992. On November 24, 1992, another nurse from the NURSE Project discussed the incident with the current safety director (not the safety director at the time of the injury), the plant engineer, and maintenance workers at the nursery, and conducted an on-site investigation. The nurse learned that the plant had investigated the incident, but no documentation was available. The NURSE staff also reviewed the injured worker's medical records.

The California Occupational Health and Safety Administration (Cal-OSHA) was not notified and did not investigate this incident.

At the time of the NURSE investigation, the transplant nursery was unable to locate their written injury and illness prevention program, as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The cutting machine operator said he had received oral safety training in operating the electric cutting machine from his supervisor.



INCIDENT

On July 16, 1992, at approximately 4:10 p.m., a cutting machine operator received an electrical shock while cutting the tops of celery seedlings inside a transplant nursery. Cutting celery seedlings is done to keep them at the same height so they receive the same light exposure. Other cutting machine operators had complained of receiving electrical shocks from this same cutting machine in the past.

The electric cutting machine has a 20-inch rotary cutting blade similar to a standard electric lawn mower. The cutting machine is mounted to a large metal frame which holds the machine above the celery seedlings. This metal frame is secured to the floor of the nursery building. The cutting machine is maneuvered by holding the metal frame. It moves on the metal frame from side to side and front to back, and the height is adjustable. It is powered by 110 voltage, from a long 3 prong extension cord connected to an electrical outlet. The extension cord can be plugged into a ground fault circuit interrupter (GFCI) housed in a five-gallon bucket; or, the GFCI can be bypassed and the extension cord can be plugged directly into the growing shed's electrical system. These five-gallon buckets are stored in a maintenance shed. The GFCI's are used in wet environments to cut the electrical circuit if there is a ground fault. Ground faults occur when the electrical circuit is broken or leaks and the electrical current travels through the electric machine user to the ground, instead of through the machine to the ground. 110 voltage in contact with wet skin can provide a shock powerful enough to kill someone.

The ground was wet from the indoor sprinkler irrigation system when the cutting machine operator returned from his late afternoon break. He had been using this cutting machine the entire day. He was wearing tennis shoes and his feet were wet. The third (or ground) prong on the cutting machine's extension cord had previously been broken off so that there was no continuous ground to the cutting machine. The GFCI had been bypassed and the extension cord was plugged into an electrical socket.

When approaching the cutting machine, the cutting machine operator grasped the metal frame to continue cutting the tops of celery. After taking about 10 steps forward, he suddenly received an electrical shock. This electrical shock caused his hands to contract on the handle, and he could not let go. He screamed for help, and a co-worker (also a cutting machine operator) who was working about 100 feet from the area heard the scream. He reached the injured worker within seconds, and unplugged the cutting machine. The injured worker fell to the ground.

The injured cutting machine operator was conscious, but dazed and weak. The same co-worker took him to the lunchroom. He called their supervisor, who arrived in a few minutes. The supervisor instructed the co-worker to take the injured machine operator, by car, to a local walk-in medical clinic which handles minor injuries. The injured worker



arrived at the clinic at approximately 4:45 p.m., and was seen by a doctor at 4:52 p.m. He told the doctor that his hands, arms and legs muscles were cramping. Also, he was experiencing blurred vision. After examining him, the doctor referred him to a local acute care general hospital emergency department for further evaluation. The co-worker placed the injured worker back into his car and drove him to the local acute care general hospital emergency department. They arrived at the emergency department at 6:19 p.m. The injured machine operator now said he had chest pain and was very tired. At 6:30 p.m., an IV was started and blood was drawn to assess the damage to his heart. The injured worker was placed on a heart monitor.

The injured cutting machine operator was admitted to the intensive care unit for observation, laboratory testing, heart monitoring and neurological evaluation for subsequent effects of his electrical shock. After extensive testing, heart damage was ruled out and the next day, the injured worker was discharged with instructions to return if his headache, fatigue or general condition worsened.

At the time of the interview, one month after the incident, the worker told the bilingual nurse that he still felt weak from the injury and was still out of work.

PREVENTION STRATEGIES

1. Employers should ensure that the work environment is free from hazards. In this incident, the floor of the shed was usually wet due to the indoor sprinkler system, allowing water to puddle. In a conversation with the safety engineer, he explained that after this incident drainage systems had been installed in all of the nursery buildings to prevent water from pooling. This injury could have been prevented if the lack of drainage of water had been identified as a potential hazard.
2. In the past workers had received electrical shocks from using this cutting machine. At the time of the incident, the nursery could not locate their written injury and illness prevention program. On February 4, 1993, however, the nurse from the NURSE Project revisited the nursery and was able to review their written injury and illness prevention program with the safety director. It did address all seven points as required by Title 8 California Code of Regulations 3203.¹ Nonetheless, if the employer had an intervention process for correcting hazards, and had corrected this hazard of workers receiving electrical shocks, this injury may have been prevented.
3. Employers should train workers to inspect equipment before beginning their work tasks. In this incident, the extension cord used between the cutting machine and the electrical power source was missing its ground prong (it had been broken off). If the injured cutting machine operator had been trained to care for and inspect the equipment being used, he may have realized that the extension cord needed to be replaced, and the injury may have been prevented. Also, in this incident, if periodic



monitoring of the cutting machine and frame was conducted to test for electrical grounding deficits, this injury might have been prevented. After the incident, the employer began monitoring all of the cutting machines.

4. Employers should have an appropriate emergency response plan.² This includes having supervisors trained in first aid and cardiopulmonary resuscitation (CPR) and workers trained to call 911 when someone is injured. In this incident, the supervisor instructed the co-worker to take the injured machine operator to a medical clinic. If the supervisor had been trained in first aid and CPR, he would have known to call 911 and allow paramedics to transport the injured worker to a hospital emergency department.
5. Employers should consider safety when building or modifying equipment. In this incident, the frame of the cutting machine should have been equipped with an electrically insulated plastic handle for the cutting machine operator to hold and guide the cutting machine. If the cutting machine had been equipped with a plastic handle, the worker would have been protected from electrical shock because plastic will not conduct low voltage (110 volts) electricity. In addition, the ground fault circuit interrupters (GFCI) should be installed as part of the electrical system for the nursery, instead of being in mobile five-gallon buckets.
6. Employers should have written standard operating procedures. In this incident, the standard operating procedure for using GFCI buckets was unwritten, and not enforced. The GFCI buckets were supposed to be picked up from a maintenance shed and taken to the nursery. In this incident, although the worker may have received some training, clearly he did not understand the importance of using the GFCI. If he did understand, he might not have bypassed it. Also, if this standard operating procedure had been enforced, the injured cutting machine operator would not have been able to bypass the GFCI.
7. Workers should be provided with and required to use personal protective equipment. When working with energized equipment in a wet environment, workers should wear electrically insulated gloves and boots. In this incident, if the worker had been wearing insulated gloves and boots, the electrical current may not have established a path to ground through his body and he may not have received an electrical shock.

1. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program.

2. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic, or hospital, in near proximity to the workplace... a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."



REPORTE NURSE #28

OPERADOR DE MAQUINA RECIBE DESCARGA ELECTRICA EN UN VIVERO DE TRASPLANTE

CDHS(COHB)-FI-93-005-028

Resumen

Algunos viveros cultivan verduras, de semillas. Durante el crecimiento, las plantas necesitan podarse. Un cortador de apio regresó de su descanso de la tarde para continuar cortando las plantas de apio. La máquina que usaba era parecida a una cortadora de sacate. Se necesitaba una extensión para alcanzar el enchufe. El cordón eléctrico que usó le faltaba el tercer diente. También se encontraban charcos de agua en el el piso, donde se regaban las plantas. En cuanto tocó la máquina cortadora, recibió una descarga eléctrica. No podía soltar la agarradera. Grito, pidiendo ayuda.

Uno de sus compañeros de trabajo desenchufó la máquina. El trabajador lastimado cayó al suelo, aturdido y débil. El supervisor le pidió a uno de sus compañeros de trabajo que lo llevara a una clínica cercana, que admite pacientes sin hacer cita. De allí, fue llevado al hospital, donde lo atendieron y pasó toda la noche.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Trabajadores deben asegurarse que las areas de trabajo estan libres de peligro. (Por ejemplo, agua en el piso.)
- Supervisores y trabajadores deben llamar al 911 si alguien sufre una descarga eléctrica.
- Patrones deben tener programas de prevención de lastimaduras. Estos programas pueden ayudar a los empleados a identificar y corregir los peligros.
- Trabajadores deben usar guantes insulados eléctricamente, y botas cuando trabajen con equipo electrico en areas mojadas.

CASO 292-327-01

31 de marzo de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.



NURSE REPORT #29

FARM WORKER BURNED IN EXPLOSION

CDHS(COHB)-FI-93-005-29

Summary

A farm worker told the following story. He was fixing a tomato harvester in the shop area of a farm. The farm owner (his boss) came by and told him to burn some boxes full of empty containers. To do so, he was to pour gasoline over the boxes out in a field. Burning was not a usual job for the worker. He had been an irrigator, tractor driver and service person, but he had never burned anything at work. He noticed the containers used to hold liquid pesticides. Still, he went out to a field and threw a match on the boxes after pouring gasoline on them.

Seconds later the boxes exploded. Standing about three feet away, blistering burns covered the worker's face, arms and neck from the flames. He ran back to the shop in horrible pain. His boss poured cool water over the burns. This did not help the pain, so the worker asked his boss to drive him to the doctor.

At a medical clinic, a doctor cleaned the burns and gave the injured worker pain control medication. He then requested the injured worker go to the burn unit of a trauma center for more treatment. The farm owner drove him to the nearest trauma center.

How could this injury have been prevented?

- Employers should not have workers do jobs they are not trained to do.
- Plastic pesticide containers should not be burned.
- Employers should not have workers work in unsafe work environments.
- Workers and employers should call 911 if someone is injured.

CASE 193-208-01

October 29, 1993

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On June 23, 1993, NURSE staff received a written report of an agricultural injury from a rural health center. The health center had treated a 23 year-old Hispanic male farm worker for first and second degree burns (skin reddening and blistering) to his face, arms, hands and neck on June 18, 1993. The farm worker's employer told him to burn boxes containing empty containers in a field. While doing so, they exploded and severely burned the farm worker's face and body.

A nurse from the NURSE Project interviewed the injured worker by telephone on June 30, 1993. The nurse discussed the incident, by telephone, with one of the farm owners on July 6, 1993. The owner stated the nurse could not conduct an on-site investigation due to production time constraints with the tomato harvest. NURSE staff reviewed medical records and received information from the county Pollution Control Board, who is responsible for issuing agricultural burn permits. Agricultural burn permits are issued to farmers for approved burns such as wheat or rice. Also, the Pollution Control Board reports on a daily basis if the area is a burn day or not. Although the owner stated he had a burn permit, the Pollution Control Board reported June 18, 1993 was a no burn day in the incident area.

The California Occupational Health and Safety Administration (Cal/OSHA) was not notified and did not investigate this incident.

The incident took place on a family owned and operated 3,800 acre farm. It produces a variety of crops, including tomatoes, cotton, wheat, cantaloupe and garbanzo beans. The farm employs 8 full-time workers, 10 casual workers (working 1-12 weeks per year), 10 seasonal workers (working 13-37 weeks per year) and 5 family members.

The farm owner stated he has a written injury and illness prevention program, set up by his workers' compensation insurance carrier. However, because a site visit was not allowed, the nurse was unable to review it. A written program is required to comply 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The injured worker had worked for the farm owners as a seasonal worker for the past two years. During this time he had worked as an irrigator, tractor driver and service person (providing maintenance on different farm machinery). On the day of the incident (approximately four months after he started working during this season) he was being trained to service and operate tomato harvesters. He said he had received health and safety training for the work tasks previously assigned, such as tractor safety and electrical safety relating to irrigation. However, he had not received any safety training on burning materials.



INCIDENT

At approximately 3:00 p.m. on June 18, 1993, a 23 year-old Hispanic male farm worker was servicing tomato harvesters in the shop area of a farm. During his interview with NURSE staff, the injured worker said that on the day of the incident one of the farm owners assigned him a new work task. The owner told him to load some boxes full of empty containers into a bin towed by a tractor. The injured worker mentioned to the nurse that the empty containers originally contained a liquid pesticide. He was instructed to drive the tractor to a field approximately one-quarter mile away and burn the boxes and containers by pouring gasoline over them.

A few seconds after throwing a match on the boxes an explosion occurred. Standing approximately three feet away, the farm worker was burned on the face, arms, hands and neck by the flames. The injured worker ran back to the shop area. The owner was still in the shop. Certified in first aid, he poured cool water over the worker's burns. However, the injured worker was in extreme pain and asked the farm owner to take him to the doctor. The owner then drove the farm worker to the nearest medical clinic approximately 20 miles away.

Upon arrival at the clinic, the owner told the medical staff the injured worker was burned while burning a wheat field using a butane torch. During the telephone interview with NURSE staff, the owner also gave the same details regarding the incident. Medical clinic staff noted the injured worker's scalp and nasal hair were singed. He also had first and second degree burns to his nasal bridge, upper and lower lip, cheeks, forearms, hands and neck. He was given an injection for pain control. His burns were cleaned and covered with an antibacterial ointment.

The doctor referred the injured worker for further evaluation to the emergency department of a Level 1 Trauma Center because of the extent and nature of his burns. The farm owner drove the injured worker to the trauma center approximately 40 miles away. Upon evaluation, he was referred to the burn unit where his burns were further treated, and he was released.

The injured worker returned to the burn unit for continuing follow-up. Follow-up appointments consisted of changing his dressings and receiving pain control medication. He did not require skin grafts or any other plastic surgery. On the follow-up visit of July 7, 1993, the injured worker was released to return to work. Returning to the same farm where the incident occurred, the farm worker worked for approximately three weeks and then was laid off. Since then, he has been working intermittently 2-3 days at a time. However, the owner does not assign the injured worker his previous job tasks; instead, he has been assigned tasks that require a lower skill level.



PREVENTION STRATEGIES

1. Employers should not allow farm workers to be exposed to hazardous work environments. Burning materials of any kind under any circumstances can create a hazardous environment for a worker. Wheat fields are burned to remove wheat stubble to allow planting the following year. For this, agricultural burn permits are issued to farmers by the Pollution Control Board. Besides a permit, there is a daily advisory issued, depending on atmospheric and environmental conditions, which tells farmers if they can burn any agricultural materials that day. Although in this incident the farm owner stated he had a burn permit, there was an advisory issued not to burn on the incident day. In this incident, the farm owner should not have instructed the injured worker to burn any materials. Furthermore, under no circumstances should containers with pesticides (empty or full) be disposed of by burning.
2. Employers should provide and require workers to use personal protective equipment. In this incident, because the farm worker was instructed to burn materials, he should have been provided with fire protective clothing, including gloves, coat and a helmet equipped with a face shield. If the injured worker had been wearing protective clothing his burns could have been prevented.¹
3. Employers should not ask workers to accomplish tasks they are not trained to perform. In this incident, the injured worker was asked to perform a job that he had no safety training in. Burning materials exposed the farm worker to flames and fumes, which are potentially hazardous. The farm worker was not trained to recognize and control these hazards. In this incident, if the farm worker had received safety training on burning materials, he may have known he was exposing himself to a hazardous situation and been able to prevent being burned.²
4. Workers should be issued portable communication devices to call for help in emergencies. Also, employers should assign potentially hazardous work tasks in isolated locations to teams of at least two workers. In this incident, the farm worker, who was working alone, had to run approximately one-quarter mile after being burned to get help. In this incident, the lack of immediate communication with the farm owner resulted in a delay of first aid and medical treatment for the injured worker.
5. Employers should have an appropriate emergency medical response plan. This includes supervisors and workers immediately calling 911 when someone is injured. In this incident, the owner did not call 911, but drove the burned farm worker by private vehicle to a medical facility. If the injured worker's condition had deteriorated (e.g., if he developed breathing problems due to smoke inhalation), the owner could not have provided adequate emergency medical care to the injured worker.

1. Title 8 California Code of Regulations 3380(a): Personal protective devices of the proper type and design shall be provided to eliminate the hazard.

2. Title 8 California Code of Regulations 3203 - Injury and Illness Prevention Program.





REPORTE NURSE #29

TRABAJADOR AGRICOLA SE QUEMA EN EXPLOSION

CDHS(COHB)-FI-93-005-029

Resumen

Un trabajador agrícola contó la siguiente historia. Estaba componiendo una cosechadora de tomate en el área del taller de un rancho. El dueño (su jefe) llegó a él, pidiéndole que quemara algunas cajas llenas de recipientes vacíos. Para poder hacerlo, tenía que echar gasolina sobre las cajas en el fil. Quemar no era el trabajo usual de este trabajador. Había sido un regador, un tractorista, y persona de dar servicio al equipo, pero nunca había quemado nada en el trabajo. El notó que los recipientes habían sido usados para pesticidas líquidas. Sin embargo, salió a un fil, le echó gasolina sobre las cajas y le echó un cerillo a las cajas.

Segundos después, las cajas explotaron. El trabajador estaba como a tres pies de lejos. Quemaduras y ampollas cubrieron su cara, brazos y cuello. Corrió hacia el taller en tremendo dolor. Su jefe le echó agua a las quemaduras. Pero esto no le quitó el dolor. Entonces el trabajador le pidió a su jefe que lo llevara al doctor.

En una clínica médica, un doctor le limpió las quemaduras y le dió medicamento para controlar el dolor. El doctor pidió que fuera llevado a un hospital que contiene un centro quemaduras para recibir más tratamiento. El patrón lo llevó al hospital de trauma más cercano.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Patrones no deben pedir a trabajadores hacer trabajos en los cuales no han sido entrenados.
- Recipientes de plástico de pesticidas no deben ser quemados.
- Patrones no deben exponer a trabajadores a ambientes peligrosos.
- Patrones y trabajadores deben llamar al 911 si alguien resulta lastimado.

CASO 193-208-01

29 de octubre de 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en la agricultura.





NURSE REPORT #30

HOT RADIATOR FLUID SCORCHES FORKLIFT OPERATOR

CDHS(OHB)-FI-93-005-30

Summary

A forklift driver was moving boxes at a raisin packaging plant. The forklift he was driving was rented. It kept losing radiator fluid out the radiator overflow hose, so every few hours he added water.

Suddenly, the radiator cap blew off his forklift. Hot radiator fluid scorched the skin on his back and arm. He jumped off the forklift and bruised his right leg. A co-worker quickly poured cold water over the burned forklift driver. Then a supervisor drove him to the doctor.

An ambulance immediately moved him to the burn unit at another medical center. He spent 13 days in the hospital with 20% total body burns.

How could this injury have been prevented?

- Employers should provide ongoing forklift safety training to workers. This training should include how to handle mechanical problems.
- Workers should report equipment malfunctions to supervisors.
- Workers and employers should call 911 if someone has a burn injury.

CASE 193-378-01

November 29, 1993

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On August 31, 1993, NURSE staff received a written report of an agricultural injury from a Regional Trauma Center. On August 27, 1993, while a forklift operator was moving boxes he received first and second degree burns to his left arm and back from hot radiator fluid. The radiator cap blew off the forklift he was operating. The skin on his back and left arm was sprayed with hot radiator fluid, leaving them red and blistering.

A nurse from the NURSE Project interviewed the forklift operator by telephone on September 13, 1993. On September 16, 1993, the safety engineer discussed the incident with the personnel manager, also responsible for plant safety, and conducted an on-site investigation on September 17, 1993.

The California Occupational Health and Safety Administration (Cal/OSHA) was not notified and did not investigate this incident.

This incident occurred at a raisin processing and packaging plant. This plant employs approximately 150-160 full-time workers (working 38+ weeks per year) and, at most, 40 seasonal workers (working 13-37 weeks per year) during the peak summer harvest season. The injured forklift operator was employed as a forklift operator for the past twenty years at this plant.

The safety engineer reviewed the employer's written injury and illness prevention program and noted that it did address all points as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.) The safety engineer also reviewed specific written safety policies addressing forklift operation. Videos are also used for forklift safety training. However, the forklift operator stated the last forklift safety training he had was five years ago.

INCIDENT

On August 27, 1993, at approximately 2:15 p.m., a 52 year-old male Hispanic forklift operator was moving boxes inside a raisin processing and packaging plant. Suddenly, the radiator cap blew off the forklift he was operating and sprayed his back and left arm with hot radiator fluid.

The forklift operator turned to see what sprayed him, then jumped over the right side control levers and bruised his right leg. He ran to a nearby co-worker who poured cold water over him and helped him to the office. A supervisor transported the injured forklift



operator by private vehicle to a medical office, arriving approximately 17 minutes after the incident. The medical office immediately called an ambulance to transfer him to the burn unit at a Regional Trauma Center. They injected the injured forklift operator with pain medication.

The injured forklift operator was admitted to the burn unit, where his burns were cleaned, dressed, and he was given pain medication. Due to him developing pneumonia he was hospitalized for 13 days, with 20% total body first and second degree surface burns to the left arm and back. After release from the hospital he was to return to the burn unit for follow-up. The nurse from the NURSE Project visited the forklift operator at his home one month after the incident. At this time he still did not know when he would return to work.

To keep up with the packaging demand at peak harvest times, some forklifts are leased at this raisin processing and packaging plant. The forklift involved in this incident was leased approximately ten days before the incident. The lease company was responsible for the upkeep on the forklift. The plant personnel manager reported there had been no mechanical problems with the forklift prior to the incident.

However, the forklift operator reported that earlier in the day the forklift was losing radiator fluid out the radiator overflow hose, so he added water every 2-3 hours. Adding water was an effort to prevent overheating because radiator fluid was being lost. Although a light on the dash of the forklift is supposed to shine when it gets too hot, the forklift operator stated this light never came on.

The safety engineer from the NURSE Project was unable to inspect the cap because a private investigator, hired by the plant's workers compensation insurance, had possession of it. However, she reported there were no visible defects to it. The cap's rating was 16 pounds per square inch (PSI). This is a safety mechanism which forces the cap to slowly release pressure if it exceeds 16 PSIs. The private investigator stated she was unsure if a pressure check would be completed to determine if the cap performed at its specified rating. Consequently, it is unclear why the radiator cap blew off.

PREVENTION STRATEGIES

1. Workers should report equipment malfunctions to supervisors. If the forklift operator had reported the loss of radiator fluid to the supervisor, the forklift may not have been used until it was repaired. If so, the operator may not have been burned by the hot radiator fluid.¹
2. Employers should provide ongoing forklift safety training to workers. Although the plant had a written safety program and training specific to forklift operation, the injured worker had not received training on safe forklift operating procedures for at least five years. In this incident, if the operator had received ongoing training that



addressed forklift maintenance and how to handle malfunctions, the injured worker may have not continuously added water.²

3. Forklift manufacturers should design equipment with safety in mind. If this forklift had a hinged, metal latching door covering the radiator hole leading to the radiator cap, the hot coolant would be deviated away from the operator even if the cap blew off. A rubber seal could also be placed around the metal guard to provide a waterproof barrier, while still providing easy access to the radiator cap. In this incident, if the forklift was equipped with this safety feature, the forklift operator may not have been burned.³
4. Work crews, including supervisors, should have an adequate emergency medical response procedure. Crews should be trained to immediately call 911 in an emergency. In this incident, the supervisor should have called 911 before transporting the injured worker. Also, calling 911 may have expedited medical treatment to the injured worker.

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1. Title 8 California Code of Regulations 3664(a)(7): "Drivers shall check vehicle at least once per shift, and if it is found to be unsafe, the matter shall be reported immediately. . ."
 2. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program.
 3. Title 8 California Code of Regulations 3664(b)(32): "Every employee who operates an industrial/agricultural truck or tractor shall be instructed in the following procedures. . ."



REPORTE NURSE #30

LIQUIDO CALIENTE DE RADIADOR QUEMA A CHOFER DE MONTECARGAS

CDHS(COHB)-FI-93-005-030

Resumen

Un chofer de montecargas estaba moviendo cajas en un planta empacadora de pasas. El montecargas que manejaba era rentado. El radiador del montecargas iba perdiendo líquido por la manguera de descarga, y por ésta razón el chofer seguía agregando mas agua cada cuantas horas.

De repente, la tapadera del radiador explotó. El líquido caliente del radiador quemó la piel de la espalda y brazo del chofer. El chofer brincó del montecargas y se golpeó la pierna derecha. Otro trabajador rapidamente echó agua fría sobre el chofer lastimado. Despues, un supervisor lo llevo al doctor.

Inmediatamente, una ambulancia lo traslado a un hospital con un centro de quemaduras. El chofer paso 13 dias en el hospital con un total de 20% de quemaduras en el cuerpo.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Patrones deben proveer entrenamiento continuamente de seguridad de montecargas para los trabajadores. Este entrenamiento debe incluir que hacer cuando hay problemas mecanicos.
- Trabajadores deben reportar malfuncionamientos de equipo a los supervisores.
- Trabajadores y patrones deben llamar al 911 si alguien sufre alguna quemadura.

CASO 193-378-01

29 de noviembre 1993

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.





NURSE REPORT #31

WORKER SCALPED IN FRUIT PACKING PLANT

CDHS(OHB)-FI-94-005-31

Summary

Early one morning a worker was setting up her work station in a packing plant. Her job was to stamp fruit boxes as they moved past her on a roller transport system. First she had to put a hair net on and arrange the stamps on her table. Her table was right next to the roller transport system. As she laid the stamps on the table, one fell on the ground.

The worker began bending over to pick up the stamp. Her hair net was not on yet. Her long, loose hair grazed the fast moving rollers and started tangling in them. The rollers continued pulling her hair in until a large part of her scalp tore off.

Immediately, her supervisor turned off the rollers and wrapped the injured worker's head in a shirt. Co-workers ran to the plant office to call 911. Later, at a hospital doctors tried, but could not reattach the worker's scalp.

How could this injury have been prevented?

- Employers should require workers to put on all personal protective equipment before entering the work area (such as hair nets).
- Employers should make sure work areas are free of hazards (such as unguarded rollers).
- Employers should install the safest possible equipment in the work area.
- First aid kits should be in the work area.

CASE 193-209-01

January 3, 1994

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.



BACKGROUND

On June 23, 1993, NURSE staff identified an injury in a packing plant while reviewing records at a Regional Trauma Center. On June 16, 1993, a packing line worker lost 40% of her scalp while setting up her work station area. Her hair became tangled in a roller conveyor system when she bent over to pick up a stamp off the floor.

On July 14, 1993, a nurse from the NURSE Project interviewed the injured worker by telephone. On September 10, 1993, the nurse and a safety engineer conducted an on-site investigation. They also discussed the incident with the plant co-owner and a supervisor who was in the plant during the incident. NURSE staff also reviewed the California Occupational Safety and Health Administration (Cal/OSHA) "Accident Report," the ambulance patient run sheet, and hospital medical records.

The plant co-owner notified Cal/OSHA on June 17, 1993. At the time of this NURSE Report, the Cal/OSHA investigation report was not available.

During the on-site investigation, the safety engineer reviewed the employer's written injury and illness prevention program and noted it addressed all points as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The incident took place at a packing plant owned and operated by two brothers. It employs 10 full-time workers (working 38+ weeks per year), 30-90 seasonal workers (working 13-37 weeks per year), and 6 family members. The injured packing line worker was hired as a seasonal worker two and one half months before the incident. She stated she had received verbal and written safety training relating to her tasks.

INCIDENT

On June 16, 1993, at approximately 7:50 a.m., a 21 year-old Caucasian female packing line worker was setting up her work station table. Her job task consisted of stamping boxes with the type and size of fruit as they moved past her on a chain driven roller conveyor system. The rollers rotate rapidly to move the boxes down the conveyor system (see Picture 1).

The packing line worker laid the stamps on her work station table, located next to the conveyor belt. One of them fell to the ground. Because she had not yet started her job task, her long hair was not in a hair net. As she bent over to pick up the stamp, her hair became tangled in an unguarded section of the rapidly moving roller conveyor system.



Although she tried, the packing line worker could not reach the emergency turn off button approximately 10-12 inches from the roller. The right front section of her scalp tore off.

A supervisor heard the packing line worker screaming. He saw her standing with her face and clothes covered in blood. He quickly shut off power to the roller conveyor system. Certified in first aid, the supervisor wrapped a shirt around her head to control the bleeding. Then, he retrieved the scalp from the roller conveyor system and placed it in a bag on top of ice. Concurrently, co-workers ran into the plant office to call 911.

Emergency Medical Services (EMS) received the call at 8:07 a.m., and arrived on the scene at 8:13 a.m. They applied head pressure dressings, administered oxygen, and started an IV. At 8:29 a.m., the injured packing line worker was transported to a Regional Trauma Center. Arriving at 8:52 a.m., emergency department staff cleaned her exposed skull bone and applied a clean, sterile dressing. She was given pain control medication.

At 10:20 a.m., she was transported, by helicopter, to another medical facility for microsurgery to reattach her scalp. She remained hospitalized for seventeen days and then was released for a holiday weekend. Upon readmission after the holiday, it was apparent the attachment was unsuccessful. The scalp was surgically removed. However, skin grafting surgery was performed in which the top layer of skin was taken from another part of her body and transplanted on her skull. She was released July 13, 1993.

The nurse and the safety engineer from the NURSE Project again met with the injured packing line worker on September 1, 1993. Although she stated she was recovering well and the graft was successful, she did not expect to return to work for at least a year.

PREVENTION STRATEGIES

1. Employers should require workers to put on all personal protective equipment before entering the work area. In this incident, the employer did require workers to wear hair nets. However, the injured worker was setting up her work station, and putting a hair net on was a part of that process. If she had been trained to put on her hair net before entering the work area, her hair may not have been loose and able to tangle in the rapidly moving roller conveyor system. The plant owners did implement this policy after the incident.¹
2. Employers should keep the work environment free from hazards. In this incident, an unguarded area of the roller system caught the injured worker's hair. Although the chain drive was guarded, the moving rollers were not (see Picture 2). After the incident, the owners placed a temporary cardboard guard over the



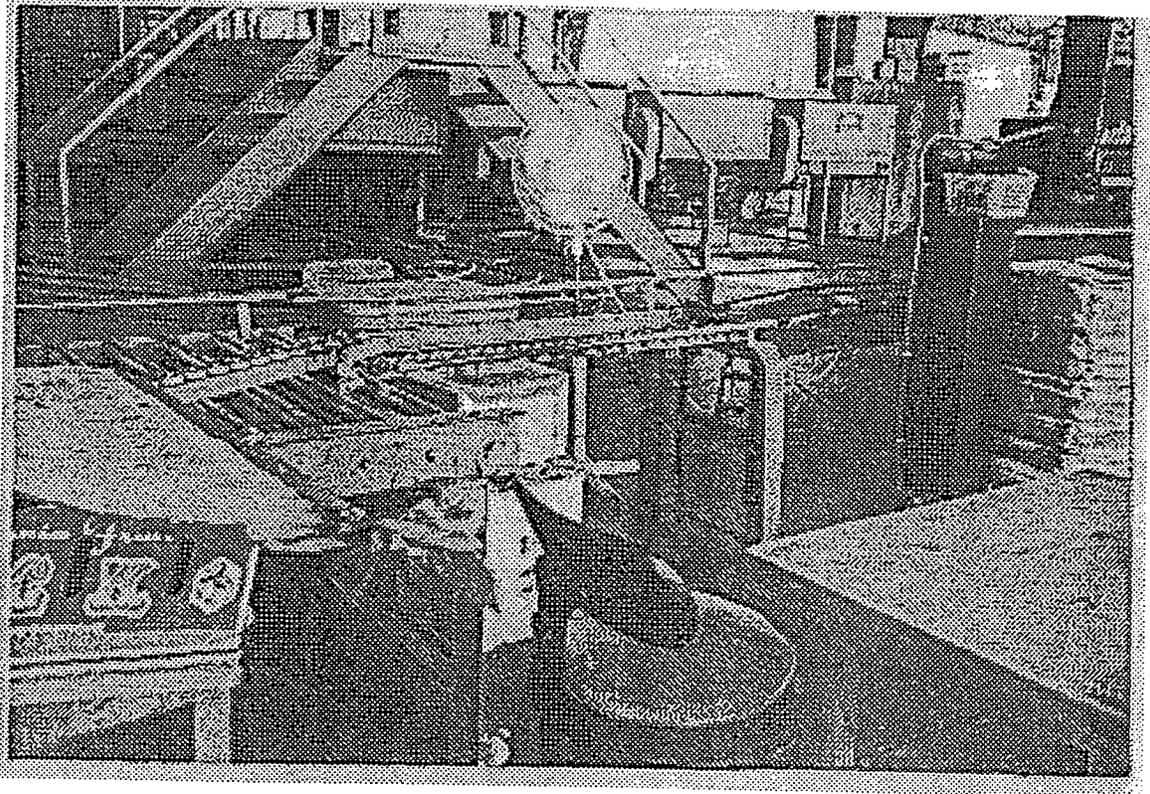
rollers not used to move smaller boxes. This covered the unused moving rollers closest to the injured worker's station while still allowing the system to function. A permanent adjustable guard should be installed.²

3. Employers should consider safety when installing and upgrading equipment. At the time of this incident, the employer was in the process of replacing the entire conveyor system with a pressure sensitive belt driven roller conveyor system. This type of system is designed to stop moving as soon as there is resistance in the rollers. An example of resistance is hair entanglement. In this incident, the older style conveyor system was still in place at the injured worker's work station. If the plant would have installed the safer conveyor system, this incident may not have occurred.
4. Employers should place first aid kits in easily accessible locations in the work area. In this incident, although the supervisor was certified in first aid, he did not have quick and easy access to a first aid kit. It was in the plant office, which is approximately 200 feet from the incident location. In this incident, the supervisor responded quickly to stop the bleeding by wrapping a shirt around the injured worker's head. However, if the supervisor had quick and easy access to the first aid kit, the injured worker's head could have been wrapped in clean and sterile dressings instead of a shirt.

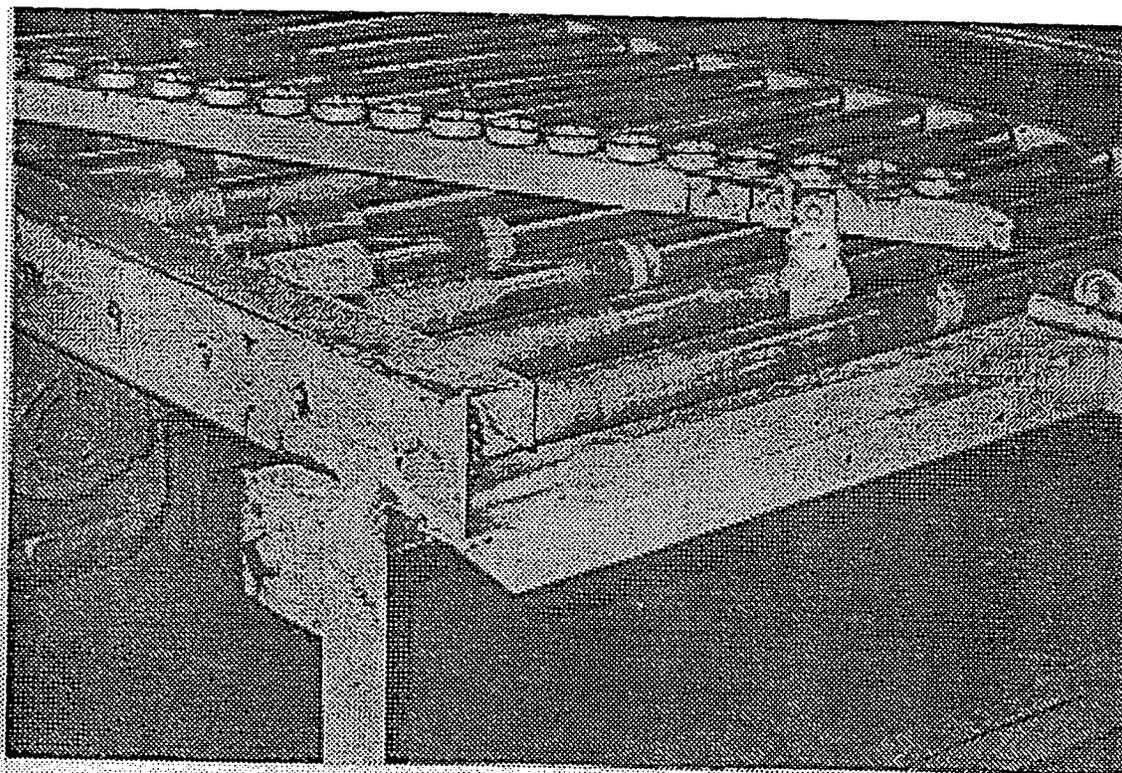
-
1. Title 8 California Code of Regulations 3380(a): Personal protective devices of the proper type and design shall be provided to eliminate the hazard.
 2. Title 8 California Code of Regulations 4002(a): All machines, or parts of machines which create hazards, shall be guarded.



PICTURE 1



PICTURE 2





REPORTE NURSE #31

TRABAJADORA ES ESCALPADA EN UNA PLANTA EMPACADORA DE FRUTA

CDHS(OHB)-FI-94-005-031

Resumen

Temprano una mañana, una trabajadora arreglaba su puesto de trabajo en una planta empacadora. Su trabajo era estampar cajas de fruta mientras pasaban frente de ella sobre un sistema de transporte de rodillos. Usualmente, antes de empezar, ella se ponía una red para el cabello y arreglaba las estampas en su mesa de trabajo. Cuando puso las estampas sobre la mesa, una estampa cayó al suelo.

La trabajadora se agachó para recoger la estampa. Aun no se había puesto la red en su cabello. Su cabello largo y suelto tocó los rodillos que estaban dando vueltas rápidamente, y el cabello se enredó en los rodillos. Los rodillos siguieron dando vueltas hasta que un gran parte de su cuero cabelludo fue arrancado.

Inmediatamente, su supervisor apagó los rodillos y envolvió la cabeza de la trabajadora lastimada en una camisa. Otros trabajadores corrieron a la oficina de la planta para llamar al 911. Después en el hospital, los doctores trataron pero no pudieron unir de nuevo el cuero cabelludo a la cabeza de la trabajadora.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Patrones deben requerir que los trabajadores se pongan todo equipo protector personal antes de entrar al área de trabajo (como las redes para el cabello).
- Patrones deben asegurar que el área de trabajo estén libres de peligros (como rodillos sin protección).
- Patrones deben instalar el equipo más seguro posible en el área del trabajo.
- Botiquines de primeros auxilios deben estar en las áreas cercanas del trabajo.

CASO 193-209-01

3 de enero de 94

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en la agricultura.





NURSE REPORT #32

NECTARINE PICKER INJURES NECK IN LADDER FALL

CDHS(OHB)-FI-94-005-32

Summary

A nectarine picker was busy picking in the orchard. When his basket was full he would empty it in a bin on the ground. This meant going up and down the tripod ladder often. A tripod ladder has a single pole on one side which supports a set of ladder steps on the other. When emptying his basket, fruit on the ground would stick to the bottom of his boots.

The nectarine picker started climbing down the ladder to empty his basket. Suddenly, his boot slipped off a step. He began falling when his foot hooked on a step. This flipped him upside down, smashing his head on the ground and bending his neck forward. He hung upside down.

Co-workers released the nectarine picker's foot and lowered him to the ground. Then they moved him so a tractor could pass by. It took one half hour to find their supervisor to get instructions on what to do with the injured worker. Finally, the nectarine picker was loaded into a van and taken to a hospital.

How could this injury have been prevented?

- Work crews should be trained not to move an injured worker, especially one with a possible neck or spinal injury.
- Employers should have written safety programs. These programs can help workers and supervisors identify hazards such as fruit on boot soles.
- Supervisors and workers should call 911 if someone has a severe injury.

CASE 193-368-01

February 28, 1994

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On August 31, 1993, NURSE staff identified an injury in a nectarine orchard while reviewing records at a Regional Trauma Center. On August 26, 1993, a nectarine picker's foot slipped as he was climbing down a ladder. As he began falling, his foot hooked on a step which flipped him upside down and left him hanging.

On September 3, 1993, a nurse from the NURSE Project interviewed the injured worker at his home. On October 25, 1993, a safety engineer from the NURSE Project met with the farm labor contractor who employed the worker to discuss the incident. An on-site investigation was not possible because the nectarine orchard was destroyed and replanted soon after the incident. Replanting orchards with younger trees is a routine procedure when fruit trees reach an age at which their productivity decreases. Also, NURSE staff also reviewed the Emergency Medical Services (EMS) ambulance record and hospital medical records.

When meeting with the farm labor contractor, the safety engineer noted he did not have a written injury and illness prevention program, as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.) However, the farm labor contractor told the safety engineer he trains fruit pickers on-the-job after they are hired, along with monthly refresher training. Yet, the injured nectarine picker told the nurse that he never received safety training.

The nectarine picker worked for this farm labor contractor for the past two summer harvest seasons. This contractor employs approximately 550 workers (300 of whom are seasonal employees working 13-37 weeks per year and 250 are casual employees working 1-12 weeks per year). Farm labor contractors are used by some farm owners and operators of large corporate farms in California to recruit, train, and manage workers.



INCIDENT

On August 26, 1993, at approximately 10:30 a.m., a 21 year-old Hispanic male nectarine picker was working in the orchard picking nectarines. He carried a basket, secured by a strap over his shoulder, to hold the nectarines. He stood on a ten-foot aluminum tripod ladder. A tripod ladder is designed for picking fruit, with a single pole on one side that supports a set of ladder steps on the other.

Rotten fruit stuck in the rubber soles of the nectarine picker's boots. As he began climbing down the ladder sideways, his left foot slipped off a step. The foot caught in the third rung from the top of the ladder. He fell backwards with his foot still

caught on the ladder step. His neck bent forward as his left shoulder and back of the head hit the ground. He hung upside down.

Working approximately ten feet way, three other nectarine pickers quickly released the injured nectarine picker's foot and lowered him to the ground. The injured worker complained of neck pain. A co-worker ran to get the supervisor at the other end of the orchard. Meanwhile, the injured nectarine picker was moved again to allow a tractor to pass by. After this, he said he could not move and had lost all feeling in his legs and left arm. The supervisor and five co-workers then loaded the injured nectarine picker into a van to take him to a hospital.

They arrived at a local rural hospital at approximately 11:20 a.m. Because of possible neck injuries, fire department paramedics were summoned to remove the injured nectarine picker from the van. They placed a cervical collar around his neck and immobilized him on a spinal board. This was done to prevent any further injury to his neck and spinal cord during transport.

In the emergency department, he was given pain medication and an IV was started. Feeling returned to his legs and arm, and he was able to move them again. X-rays and a CAT scan were taken, yet no injuries were detected. Therefore, the emergency department requested the injured nectarine picker be transferred, via an ambulance, to a Regional Trauma Center.

The injured nectarine picker was admitted to the Regional Trauma Center with probable spinal injuries. In the Intensive Care Unit (ICU) he was placed in a halo, a device designed to perfectly align the neck and spinal column by immobilizing his head and neck. His progress was monitored daily with x-rays to determine the extent of damage. On August 31, 1993, four days after being admitted, the injured nectarine picker was released with a possible separation of the first and second cervical vertebrae in his neck. The injured nectarine picker contacted the nurse nearly three months after the incident, and stated he is still wearing the halo and is not expected to return to work for several months.



PREVENTION STRATEGIES

1. Employers should have an appropriate emergency response plan. This includes work crews being trained to call 911 and to not move an injured worker suspected of having a neck or spinal injury. Also, supervisors and workers should be trained in first aid and cardiopulmonary resuscitation (CPR). If the supervisor and co-workers had been trained in first aid and CPR, they would have known not to move a person with a possible neck or spinal cord injury unless there was immediate danger.¹ They would have also known to immediately call 911. In this incident, the injured worker was moved three times without proper immobilization of his neck. This may have resulted in further damage to his spinal cord beyond the injury sustained in the fall.
2. Field crews should be issued portable communication devices to use in emergencies. In this incident, it took one half hour to locate the supervisor to find out what action should be taken. This resulted in a delay of medical care for the injured worker. If the workers had a cellular telephone or radio they could have quickly contacted him. Also, if 911 had been called using a portable communication device, the injured nectarine picker would have received emergency medical care much faster than he did.
3. The employer should have an implemented written injury and illness prevention program.² The farm labor contractor's safety program should have included components on hazard evaluation of specific tasks. In this incident, if the nectarine picker had been trained in ladder safety and how to recognize hazards such as rotten fruit on the soles of shoes, this incident may have been prevented.

-
1. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic, or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."
 2. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program. See Background section.



REPORTE NURSE #32

PIZCADOR DE NECTARINAS SE LASTIMA CUELLO EN CAIDA DE ESCALERA

CDHS(OHB)-FI-94-005-032

Resumen

Un pizcador de nectarinas pizcaba en un huerto. Cuando su canasta se llenaba, la vaciaba en un depósito en el suelo. Esto significaba subir y bajar la escalera tripodal varias veces. Una escalera tripodal tiene un palo en un lado que sostiene un conjunto de escalones en el otro lado. Cuando bajaba a vaciar la canasta, la fruta tirada en el suelo se le pegaba en la suela de las botas.

El pizcador de nectarinas iba a bajar la escalera para vaciar su canasta. De repente, su bota se resbaló en un escalón. Empezó a caerse, cuando su pie se le atoró en un escalón. Esto lo voltió en el aire, con la cabeza hacia abajo, estrellándose la cabeza en el suelo y doblando su cuello hacia adelante. Quedó volteado, colgando de un pie.

Sus compañeros de trabajo lo desatoraron y lo bajaron al suelo. Luego, lo movieron hacia un lado para que un tractor pudiera pasar. Duraron media hora para encontrar al supervisor para que les diera instrucciones de qué hacer con el trabajador lastimado. Finalmente, el pizcador de nectarinas fue llevado al hospital en una van.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Los grupos de trabajadores deben ser entrenados de no mover a un trabajador lastimado, especialmente uno que tenga posibles lesiones en el cuello o en la espina dorsal.
- Los patrones deben tener programas de seguridad escritos. Estos programas pueden ayudar a los trabajadores y supervisores a identificar peligros como fruta en las suelas de las botas.
- Los supervisores y trabajadores deben llamar al 911 si alguien se ha lastimado severamente.

CASO 193-368-01

28 de febrero de 94

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en la agricultura.





NURSE REPORT #33

COTTON HARVESTER OPERATOR FATALLY ELECTROCUTED

CDHS(OHB)-FI-94-005-33

Summary

Four brothers and a father were helping a relative harvest cotton. All five of their cotton harvester machines were busy in the field when it began to rain. They decided to stop where they were, and empty the cotton already in the cotton harvester's baskets. The cotton is emptied into a machine (cotton module builder) that packs the cotton into large bales. This machine was parked directly under high voltage power lines.

A driver emptied his cotton into the parked machine. However, roughly 100 pounds of wet cotton stuck in the basket. The cotton harvester operator yelled to the driver to keep the basket raised so he could clean it out.

The cotton harvester operator climbed on top of the machine to get to the basket. Just as he touched the basket, he was electrocuted. His father, then the paramedics, tried to get his heart pumping again. Nonetheless, within one hour the cotton harvester operator was pronounced dead at the hospital.

How could this injury have been prevented?

- Employers should have written safety programs. These programs can help workers and supervisors identify hazards such as power lines.
- Employers should follow standard operating procedure no matter whose field they are working in. On their own farm, family members never parked the cotton module builder under high voltage power lines.
- Every work crew should have a person certified in first aid and cardiopulmonary resuscitation (CPR).

CASE 193-488-01

February 28, 1994

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On October 29, 1993, NURSE staff identified a fatality in a cotton field while reviewing records at a regional district compliance office of the Division of Occupational Safety and Health Administration (Cal/OSHA). A cotton harvester operator was electrocuted on October 15, 1993, when attempting to remove wet cotton from a cotton harvester basket into a cotton module builder. Upon touching the harvester basket, he was electrocuted.

On November 15, 1993, a safety engineer from the NURSE Project interviewed the cotton harvester operator's employer, the victim's father. An on-site investigation was conducted during their meeting. NURSE staff reviewed the medical examiner records and the Cal/OSHA "Accident Report." Cal/OSHA conducted an on-site investigation on October 18, 1993. However, the Cal/OSHA investigation report was not available at the time of this NURSE Report.

The safety engineer noted the employer did not have a written injury and illness prevention program. A written program is required to comply 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The cotton harvester operator was raised on his family's farm and had worked and driven cotton harvesters and other farm equipment for the last four years, since age 16. The father stated all his sons were trained in the safe operation of harvesting equipment and were made aware of the hazards associated with harvesting cotton. Their 2,000-acre farm is family owned and operated. Cotton is planted on approximately 900 acres, while corn and alfalfa are planted on the remaining acreage. The farm employs 3 full-time workers, 6 casual workers (working 1-12 weeks per year during the peak harvest season) and 6 family members. Although this is the farm where the cotton harvester operator usually worked, the incident occurred while he and four family members were helping a relative harvest cotton at a neighboring farm.



INCIDENT

On October 15, 1993, at approximately 3:20 p.m., a 20 year-old Caucasian male cotton harvester operator and his family were helping a relative harvest his cotton. Cotton harvesting involves two pieces of equipment: 1) a cotton harvester, and 2) a cotton module builder. A cotton harvester picks cotton off plants, while a cotton module builder compresses the cotton into large bales.

Five cotton harvesters, driven by the cotton harvester operator and his three brothers and father, were busy harvesting when it began to rain. They all drove to the stationary cotton module builder to finish for the day due to the rain. The cotton module builder had been placed on the edge of the field next to a dirt road. It was also placed directly under high voltage power lines. One driver had just finished unloading the harvester basket on the left side of the module. The left side was the side distant from the power lines and is also the usual side to dump into because the hydraulic lines are on the right side.

Another brother pulled his harvester to the right side of the module builder. When the harvester basket was emptied, roughly 100 pounds of cotton stuck in the basket because it was wet from the rain. The cotton harvester operator yelled to the brother to keep the basket raised so that he could try to clean out the cotton.

He climbed on top of the module builder and began climbing into the cotton harvester basket. Just as the cotton harvester operator touched the basket, he was electrocuted. The 14,000 volts of electricity from the power line had arced to the wet basket. Arcing occurs when electricity "jumps" from power lines to a metal object that touches the ground. If a metal object is wet, the chance of arcing is increased.

The brother yelled for help. The father, standing nearly 20 feet away, heard the cry, ran, and climbed up on the cotton module builder. He caught his son as he was falling after losing contact with the energized basket. Although not certified, the father started cardiopulmonary resuscitation (CPR) immediately on top of the module builder. A brother ran to a house that was within 100 yards and called 911.

Emergency Medical Services (EMS) personnel arrived and continued CPR while transporting him to the nearest hospital approximately 15 minutes away. They arrived at 4:05 p.m. Resuscitative efforts continued in the emergency department until the electrocuted cotton harvester operator was pronounced dead at 4:55 p.m.

The electrocuted cotton harvester operator had multiple thermal burns across his chest, extending to both armpits. These burns were in a feathered pattern indicating high voltage burns. His second left toe and boot had burn marks where the electricity exited to the cotton module builder and to the ground. Neither the cotton harvester basket nor the cotton module builder were damaged.

The county medical examiner stated the cause of death to be electrocution.





PREVENTION STRATEGIES

1. Employers should have a comprehensive written injury prevention program.¹ In this incident, the employer's safety program should have included components on hazard identification and hazard communication. Although the brothers had been trained in the safe operation of cotton harvesters and cotton modular builders, they did not recognize the immediate danger created by having the cotton modular builder directly under the high voltage power lines. High voltage power lines pose a serious threat of injury or death to workers. Hazard identification of the immediate work environment should take place before beginning a job. If the workers had been trained in hazard identification, this incident may have been prevented.
2. Standard operating procedures should ensure that workers are never required to place themselves in hazardous work situations. This employer had a standard operating procedure in which the cotton module builder is always placed in an area away from high voltage power lines. However in this incident, the employer was working on a relative's farm instead of his own. Even so, standard operating procedures are developed to ensure safe working practices and should be followed wherever workers are working. Another standard operating procedure this employer has is to always unload cotton on the left side of the cotton modular builder. The main reason for this is to prevent damage to the hydraulic lines on the right side of the cotton modular builder. Again, this operating procedure was disregarded. In this incident, if the family had continued to follow these standard operating procedures, the cotton modular builder would not have been placed under the power line and it would not have been approached from the right side. In doing so, this death may have been prevented.
3. Manufacturers of cotton harvesting equipment should include safety training materials, including videotapes, on the safe operation and maintenance of this equipment when it is purchased. These materials could assist owners in ensuring that workers have the proper safety training before using new equipment. In this incident, if the manufacturer had specifically emphasized the danger of working with cotton harvesting equipment around power lines, the family may have recognized the hazard and moved the cotton modular builder away from the high voltage power lines.
4. Every field work crew should have a person certified in first aid and cardiopulmonary resuscitation (CPR).² In this incident, although the employer did attempt to perform CPR, he was not certified. His son telephoned 911. Though this was the appropriate emergency response, there was no written emergency response plan and no one trained in first aid or CPR. Having a plan and trained workers may serve to increase the probability for survival in an incident such as an electrocution.

1. Title 8 California Code of Regulations 3203: Injury and Illness Prevention Program. See Background section.

2. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic, or hospital, in near proximity to the workplace... a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."





REPORTE NURSE #33

OPERADOR DE PIZCADORA DE ALGODON MURIO DE ELECTROCUCION

CDHS(OHB)-FI-94-005-033

Resumen

Cuatro hermanos con su padre ayudaban a un familiar en la cosecha de algodón. Todas sus cinco máquinas pizcadoras de algodón estaban pizcando cuando empezó a llover. Decidieron parar todo y vaciar el algodón de las canastas de las pizcadoras. El algodón se vacía a una máquina (empacadora modular de algodón) que empaqueta el algodón en bloques grandes. La empacadora estaba estacionada directamente bajo líneas eléctricas de alto voltaje.

Uno de los manejadores vació su algodón en la empacadora estacionada. Pero casi 100 libras de algodón mojado se pegó en la canasta. El operador de la pizcadora, gritándole al manejador, le dijo que mantuviera la canasta arriba para que él la pudiera limpiar.

El operador de la pizcadora se subió encima de la empacadora para alcanzar la canasta. Tan pronto como tocó la canasta, fue electrocutado. Su padre y luego los paramédicos trataron de revivir su corazón. Pero, dentro de una hora, el operador de la pizcadora fue declarado muerto en el hospital.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Los patrones deben tener programas escritos de seguridad. Estos programas pueden ayudar a los trabajadores y supervisores a identificar peligros tales como líneas eléctricas.
- Los patrones deben seguir los procedimientos normales de operación, no importa en qué campo estén trabajando. En su propio rancho, miembros de esta familia nunca habían estacionado la empacadora modular de algodón debajo de líneas eléctricas de alto voltaje.
- Cada grupo de trabajo debe tener una persona certificada en primeros auxilios y resucitación cardiopulmonar (CPR).

CASO 193-488-01

28 de febrero de 94

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Nurses Using Rural Sentinel Events
Occupational Health Branch





NURSE REPORT #34

COTTON HARVESTER OPERATOR'S ARM MANGLED IN COTTON HARVESTER SPINDLES

CDHS(OHB)-FI-94-005-34

Summary

A cotton harvester operator was warming up his cotton harvester before going out to the field. While sitting in the cab, he heard a strange noise coming from the front of the machine. Leaving the cotton harvester on, he jumped down to investigate.

Standing in front of the machine, he saw a spindle hitting the head cover. Spindles are very sharp cone-shaped pieces of metal inside the head unit. They pull cotton off the plant by turning very fast. A head is covered except where the cotton enters the machine. Therefore, the spindles are partially exposed. It is at this spot where the cotton harvester operator stood and saw the spindles hitting the head cover.

Unsure how, his left hand or sleeve suddenly became caught in the turning spindles, and his arm was pulled into the machine. He screamed. Co-workers came running. Luckily, the cotton harvester operator pulled his arm out from the turning spindles. His fifth finger was dangling, while his arm was mangled and covered in blood.

How could this injury have been prevented?

- Workers should never place any part of their body in or near running equipment.
- Old cotton harvesters should be equipped with new safety devices that shut the power off when the operator leaves the cab.

CASE 193-489-01

May 31, 1994

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On October 29, 1993, NURSE staff identified an agricultural injury while reviewing records at the California State Department of Industrial Relations, Occupational Safety and Health Administration (Cal/OSHA). On October 19, 1993, a cotton harvester operator's left hand and arm were severely damaged when he was investigating an unfamiliar sound near the turning spindles of a cotton harvester.

On November 11, 1993, a nurse from the NURSE Project interviewed the injured worker by telephone. A safety engineer from the NURSE Project conducted an on-site investigation, examined the cotton harvester, and discussed the incident with the farm owners on January 4, 1994. NURSE staff also reviewed the Cal/OSHA "Accident Report" and the hospital medical records.

The incident took place on a family owned and operated 825 acre farm. Two brothers own the farm, while a third brother assists in its operation. Cotton is planted on 457 acres, while corn and alfalfa are planted on the remaining acreage. The farm employees 1 full-time worker, 3 casual workers (working 1-12 weeks per year), 2 seasonal workers (working 13-37 weeks per year), and 3 family members.

During the on-site investigation, the safety engineer reviewed the employer's written injury and illness prevention program and noted it addressed all points as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The injured worker had been employed seasonally as a cotton harvester operator on other farms for the last 17 years, but was hired as a full-time worker on this farm 2 years ago. The incident occurred 11 days after beginning his second harvest season on this farm. At the start of the harvest season, the injured cotton harvester operator attended a safety seminar held by a local farm equipment dealer, and a safety meeting conducted by the supervisor.

INCIDENT

At approximately 11:00 a.m. on October 19, 1993, a 37 year-old Hispanic male cotton harvester operator started the engine of a cotton harvester in the farm shop area. Warming-up cotton harvesters for about 20 minutes before harvesting was a standard operating procedure on this farm. During the warm-up, the cotton harvester operator heard an unfamiliar sound coming from the front of the machine, so he jumped down from the cab to investigate.



On this cotton harvester there were four separate components called heads. Within each head are spindles. Spindles are very sharp cone-shaped pieces of metal that pull cotton off the plant by turning and wrapping cotton around themselves. A cover partially encloses each head, acting also as a guard. The section where the cotton is pulled into the machine is not covered. After the cotton is pulled into the machine, it is suctioned off the spindles into chutes that guide it to a large basket in the back of the harvester.

The cotton harvester operator walked to the number two head and saw a spindle hitting the head cover. Unsure how it happened, his hand or sleeve suddenly became caught in the turning spindles, and his arm was pulled into the machine. He screamed. A co-worker ran over and tried to turn the machine off but did not know how. Regardless, the cotton harvester operator pulled his arm out of the turning spindles. One farm owner, working approximately 20 feet away, ran over and turned the cotton harvester off. The injured cotton harvester operator's arm was bleeding heavily, and the fifth finger of his left hand was dangling. Immediately, a co-worker placed a tourniquet on the injured cotton harvester operator's arm at his elbow. One farm owner grabbed a towel and wrapped it around the bleeding hand. Simultaneously, the other farm owner ran to the nearby house to call 911.

An ambulance and the sheriff responded to the scene; however, the injured cotton harvester operator was already enroute to a hospital in a private vehicle. He had insisted that one of the farm owners drive him to the local hospital, which was about 15 minutes away. At the hospital, his arm was x-rayed, splinted and dressed, and he was given antibiotics and pain medication. At approximately 4:25 p.m., the injured cotton harvester operator was transferred, via helicopter, to a microsurgery center specializing in repairing amputations.

Upon arrival, the injured cotton harvester operator was immediately admitted and taken to surgery. After assessment, he was found to have a partially amputated left fifth finger with severe lacerations to tendons and nerves in his left hand, wrist, and arm. His wrist was also dislocated. During surgery, the dislocation was repaired by placing a pin between the two bones at the wrist, the large open wounds were cleaned, and damaged tissue was removed. An antibiotic-soaked bandage was applied over the open wounds.

The next day, the injured cotton harvester operator underwent a ten-hour operation for further repair of his injuries. Due to extensive damage, his left fifth finger was surgically amputated. Repair to his tendons was done to restore function to his arm and hand. Nerve repair was also accomplished. Muscles from his back were transplanted into his forearm to replace the damaged muscles. Skin was transplanted from his thigh to cover his hand, wrist, and arm where the skin had tore off. The injured cotton harvester operator started physical therapy that afternoon to help him regain function of his arm and hand. He was discharged ten days later.



Four months later, the NURSE Project nurse was told by the injured cotton harvester operator that he had not returned to work, and his doctor put his earliest return as April 1995. He was still going to a rehabilitation center to regain full function of his arm and hand. He also reported no feeling had returned to his fingers.

PREVENTION STRATEGIES

1. Standard operating procedures should ensure that workers never place themselves in hazardous situations to accomplish work tasks. For this farm, the standard operating procedure was for a worker to alert a supervisor if a machine was not running properly. In this incident, the standard operating procedure was bypassed. If training had completely implemented the standard operating procedure, this incident may have been prevented.
2. Manufacturers should design equipment with safety in mind. Cotton harvesters should have a safety interlock device that shuts the power off and disengages the spindles when the operator leaves the cab. Employers should assess old equipment before the harvest season begins, and retrofit it with new safety features. If the cotton harvester had this safety device, the spindles would have stopped turning when the cotton harvester operator left the cab, and this injury could have been prevented. Some cotton harvesters currently manufactured are equipped with this device.
3. Employers should have an appropriate emergency response plan. This should include persons trained in first aid and cardiopulmonary resuscitation (CPR).¹ Although the farm owner and co-worker attempted to control the bleeding and called 911, they used a tourniquet instead of a pressure dressing to control the bleeding, and the injured worker was still driven to the hospital in a private vehicle. If someone had been trained in first aid and CPR, they would have known the importance of using Emergency Medical Services (EMS). Moreover, if the injured worker's condition had worsened on the way to the hospital, the farm owner may not have been able to provide adequate emergency medical care to him.

1. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic, or hospital, in near proximity to the workplace... a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."



REPORTE NURSE #34

BRAZO DE CHOFER DE MÁQUINA DE PIZCAR ALGODÓN ES DESPEDAZADO POR LAS CABEZAS DE LA MÁQUINA

CDHS(OHB)-FI-94-005-034

Resumen

Un chofer de una máquina de pizar algodón estaba calentando su pizcadora antes de salir al campo. Mientras estaba sentado en la cabina, oyó un ruido extraño que venía de la parte de en frente de la pizcadora. Dejando el motor prendido, el chofer se bajó para investigar.

Parándose en frente de la pizcadora, él vió que un eje pegaba contra la tapadera de las cabezas. Los ejes son pedazos de metal muy afilados en figura de cono dentro de la unidad de las cabezas. Los ejes jalan el algodón de la planta, dando vueltas rápidamente. Las cabezas estan cubiertas, con excepción de la parte donde el algodón entra a la pizcadora. Por lo tanto, los ejes son expuestos en parte. Es en éste lugar en que el chofer de la pizcadora se paró y vió que los ejes pegaban contra la tapadera de las cabezas.

El chofer no esta seguro como sucedió, pero su mano izquierda o manga de repente se atrapo en los ejes. Su brazo fue jalado hacia la pizcadora. Él gritó. Sus compañeros vinieron corriendo. Por suerte, el chofer de la pizcadora pudo sacar su brazo de en medio de los ejes. Su quinto dedo estaba colgando, y su brazo estaba despedazado y cubierto en sangre.

¿Cómo se hubiera podido prevenir esta lastimadura?

- Los trabajadores jamás deben poner cualquier parte de su cuerpo en o cerca de equipo que esté en operación.
- Las maquinás de pizar algodón viejas deben ser equipadas con equipos nuevos de seguridad que apaguen el motor cuando el chofer salga de la cabina.

CASO 193-489-01

31 de mayo de 94

El proyecto NURSE—Enfermeras Usando Eventos Rurales Centinelas—se lleva a cabo por el Programa de Salud Ocupacional de California del Departamento de Salud en cooperación con el Instituto Nacional para Salud y Seguridad Ocupacional. La meta del programa es prevenir lastimaduras ocupacionales asociadas con la agricultura. Los hospitales, servicios de emergencia, clínicas y personal forense son los que reportan las lastimaduras. Se investigan casos seleccionados para lo cual se hace una entrevista del trabajador lastimado, compañeros de trabajo, patrones y todo aquel envuelto en el incidente. También se visita el lugar de los hechos para hacer una investigación sobre la seguridad. Estas investigaciones proveen información detallada sobre el trabajador, el ambiente del trabajo y los factores de riesgo potencial que resultaron en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras; y para el uso de trabajadores, patrones y todo aquel interesado en la salud y seguridad en al agricultura.

Nurses Using Rural Sentinel Events

Occupational Health Branch





NURSE REPORT #35

VINEYARD WORKER CRUSHED BY METAL STAKES CDHS(OHB)-FI-94-005-35

Summary

Three vineyard workers were just about done replacing metal stakes in a vineyard. These metal stakes support grape vines. They are six feet tall and weigh three and one-half pounds each. One worker drove a tractor that pulled a small flatbed trailer loaded with stakes. The two other workers rode on the trailer.

The tractor driver pulled out of one vineyard row and started to turn down the next. He turned too sharply and hit a mound of dirt, causing the trailer to tilt. One worker jumped off the back of the trailer. The other worker tried jumping off the right side, but was pushed onto the ground by a rolling bundle of stakes. This bundle, weighing 1760 pounds, pinned and crushed the worker.

The tractor driver quickly moved the bundle of stakes off the injured worker using a large piece of wood. In doing so, he hurt his back. The farm owner called 911 from his truck phone. Medical care began 25 minutes later when the ambulance arrived.

In surgery, internal cuts and tears were repaired in the injured worker's abdomen. His pelvic bones were broken in three places. Three months later he was still in too much pain to return to work.

How could this injury have been prevented?

- Workers should be trained not to ride on trailers that are not designed for worker transport.
- Trailers should be equipped with a way to secure the load, including strong sides to prevent the load from rolling out.
- Employers should train workers in the safe operation of tractors.

CASE 194-123-01

July 21, 1994

The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the Occupational Health Branch of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health (#U06/CCU906031-04). 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.





BACKGROUND

On April 26, 1994, NURSE staff received a written report of an agricultural injury from a Regional Trauma Center. On April 14, 1994, a vineyard worker was pinned to the ground and crushed by a bundle of metal stakes that rolled off a trailer on which the worker was sitting. The bundle rolled off the trailer when the tractor driver turned too sharply and the trailer tilted.

On April 26, 1994, a nurse from the NURSE Project interviewed the injured vineyard worker by telephone. On May 19, 1994, a safety engineer and nurse from the NURSE Project met with the injured vineyard worker's employer, a farm labor contractor, and the worker's supervisor to discuss the incident. Nurse staff also reviewed medical records, Emergency Medical Services (EMS) ambulance records, and obtained information from an agriculture equipment supplier.

The safety engineer noted the farm labor contractor did not have a written injury and illness prevention program as required by 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: 1. designated safety person responsible for implementing the program; 2. mode for ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.) The farm labor contractor showed the safety engineer the lists of safety and conduct rules in both English and Spanish, given to workers when hired.

The injured vineyard worker was hired by a farm labor contractor as a casual worker three months before the incident. However, he did have experience working in vineyards doing various jobs, such as tying vines, pruning grapes, installing stakes, etc. The farm labor contractor employs two full-time workers (working 38+ weeks per year), 250 casual workers (working 1-12 weeks per year), and 12 seasonal workers (working 13-37 weeks per year). Farm labor contractors are used by some farm owners and operators of large corporate farms in California to recruit, train, and manage workers. The incident took place on a 480-acre farm that grows several varieties of grapes.

INCIDENT

At 7:00 a.m. on April 14, 1994, a 20 year-old Hispanic male vineyard worker and two co-workers began the day replacing metal stakes that support grape vines. The stakes are six feet tall and weigh approximately three and one-half pounds each. A tractor pulled a small flatbed trailer containing stakes and two workers up and down the vineyard rows. When they came to an area where a stake was missing or broken they stopped and replaced it. One worker jumped off the trailer with a new stake and held it in place, while the other worker stood on the trailer and hammered it into the ground.



The trailer was approximately 4 feet wide and 12 feet long. Only the front end had a wall, the other three sides were open. However, steel bars, roughly two feet tall, were in the middle of each long side, and in each back corner. Also, two steel bars, roughly five feet tall, were in each front corner of the trailer. (See diagram 1.) Loose metal stakes and a new bundle containing 500 stakes laid lengthwise on the trailer.

By 8:00 a.m. the job was almost finished. The tractor driver pulled out of one row and started to turn down the next. He turned too sharply and hit a mound of dirt, which caused the trailer to tilt. One worker sitting on the back of the trailer jumped off. The vineyard worker sitting on the right side of the trailer began jumping off, but was pushed face down onto the ground by the rolling stakes. The bundle of stakes, weighing approximately 1720 pounds, pinned the vineyard worker at his lower back.

One co-worker, when he saw the crushed worker, became motionless at the scene. The tractor driver acted promptly and pried the bundle of stakes off the injured vineyard worker using a 4x4 piece of wood that was on the trailer. In doing so, he immediately developed a pain in his back. The farm owner just happened to be driving by the incident area. He quickly called 911 on his cellular phone, and contacted the farm labor contractor. The farm labor contractor called the supervisor, who was on a prearranged errand at the time of the incident. Neither the farm owner nor the work crew had any training in first aid or cardiopulmonary resuscitation (CPR). Emergency Medical Services (EMS) arrived approximately 25 minutes after 911 was phoned. They assessed the injured vineyard worker's injuries and called for a helicopter. They also administered oxygen and started an IV. The vineyard worker was transported, via ambulance, to a nearby airstrip where a helicopter airlifted him to a Regional Trauma Center.

Approximately one hour after the incident, emergency exploratory surgery began at the Regional Trauma Center. The eight-hour surgery revealed internal cuts and tears in the wall of the colon, and one tear in the small bowel. The bleeding was stopped and the cuts and tears repaired. X-rays revealed three bone fractures in the pelvic area. On April 19, 1994, five days after being admitted, the injured vineyard worker was discharged. He was given a cane to use until his fractured bones healed.

The nurse from the NURSE Project spoke with the injured vineyard worker three months after the incident. The injured worker was medically cleared to go back to work on June 27, 1994; however, after working for the same farm labor contractor for three days, he had to quit because he was experiencing too much abdominal pain when bending over.

The tractor driver, who experienced back pain while moving the bundle off the vineyard worker, requested that his supervisor take him to a chiropractor the day of the incident. One month later, when the safety engineer and nurse met with the farm labor contractor, he was still out of work for this injury.



PREVENTION STRATEGIES

1. Workers should not ride on moving equipment that is not designed for worker transport.¹ This is the fourth incident in three years of NURSE surveillance in which a worker was severely injured from riding on a trailer not designed to carry workers. If this worker had not ridden on the trailer, this injury may have been prevented.
2. Equipment should be designed with safety in mind. In this incident, the trailer was a flatbed with no way to secure the metal stake bundle and loose stakes. The trailer also had only one side on the front end. Employers should assess equipment before it is used for a certain task. If the trailer had a securing mechanism (e.g., straps) to secure the metal stakes, and had sides, this incident could have been prevented.
3. Employers should have a comprehensive Illness and Injury Prevention Program (IIPP). As part of their IIPP, employers should:
 - Train workers in the safe operation of equipment.² In this incident, if the tractor driver was properly trained in safe driving techniques, such as avoiding sharp turns, dirt mounds, rocks, etc., this incident may have been prevented. Employers should also document this safety training as required in the IIPP.
 - Have a comprehensive emergency medical response plan for field crews. This would include training workers in how to react to emergencies, and insuring that a person certified in first aid and cardiopulmonary resuscitation (CPR) is always present at the work site.³ In this incident, one crew person became motionless at the scene and so offered no assistance. Additionally, none of the crew persons nor the absent supervisor was trained to give first aid in the field. If the workers had had emergency response training, they may have reacted in a more capable and safe manner resulting in less injury to everyone involved in the incident. If a person certified in first aid and CPR had been present, the injured worker would have received first aid more quickly and the risk of complications may have been reduced.
 - Train workers and supervisors to recognize and avoid hazards associated with specific tasks. In this incident, workers rode on an open flatbed trailer not designed for worker transport along with an unsecured load. If the hazards of this arrangement had been recognized before starting this task, this injury may have been prevented.
4. Work crews should have a cellular phone or radio available to call the Emergency Medical Services (EMS). In this incident, the supervisor had the only portable communication device, and he was three miles away. Fortunately, the farm owner just happened to be in the area and knew to call 911 on his cellular phone. Without the farm owner's assistance, locating a communication device to call 911 might have been difficult, resulting in an even longer delay of first aid and medical treatment for the injured worker.

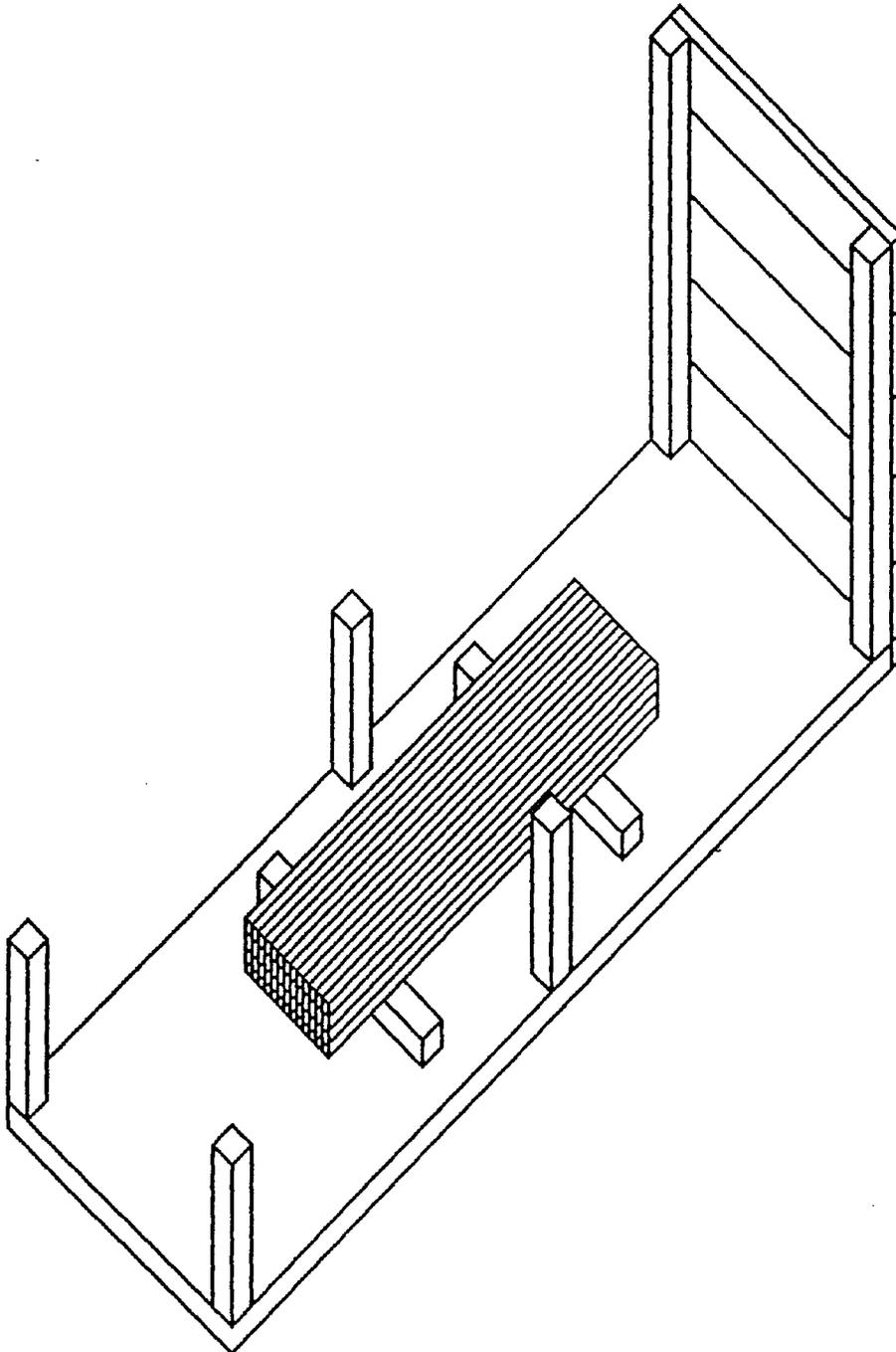


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1. Title 8 California Code of Regulations 3441(a)(2): "Permit no riders on agricultural equipment other than person required for instructions or assistance in machine operation."
 2. Title 8 California Code of Regulations 3664(b)(32): "Every employee who operates an industrial/agricultural truck or tractor shall be instructed in the following procedures. . ."
 3. Title 8 California Code of Regulations 3400(b): "In the absence of an infirmary, clinic, or hospital, in near proximity to the workplace...a person or persons shall be adequately trained to render first aid."

Title 8 California Code of Regulations 3439(b): "There shall be at least 1 employee for every 2 employees at any remote locations with training for the administering of emergency first aid."

DIAGRAM 1

TRAILER HOLDING BUNDLE OF METAL STAKES





REPORTE NURSE #35

TRABAJADOR DE VIÑA PRENSADO CON ESTACAS DE METAL

CDHS(OHB)-FI-94-005-35

Resumen

Tres trabajadores de viñas terminaban de reemplazar estacas de metal en un viñedo. Estas estacas de metal sostienen las viñas. Las estacas miden seis pies de altura, y pesan tres libras y media cada una. Uno de los trabajadores manejaba un tractor que jalaba un remolque cargado con estacas. Los otros dos trabajadores viajaban en el remolque.

El tractorista salía de una de las hileras del viñedo y empezaba a dar vuelta en la siguiente hilera. El tractorista dio la vuelta muy repentinamente y pegó contra un bordo de tierra, que causó que el tractor se ladeara. Uno de los trabajadores brincó desde la parte trasera del remolque. El otro trabajador trató de brincar desde el lado derecho, pero un bulto de estacas rodó sobre él, empujándolo hacia el suelo. Este bulto de estacas pesaba un total de 1760 libras el cual prensó y aplastó al trabajador.

El tractorista rápidamente quitó el bulto de estacas del trabajador lastimado, usando un pedazo largo de madera. Haciendo esto lastimó su espalda. El dueño del rancho llamó al 911 desde el teléfono de su camioneta. Cuidado médico fue administrado 25 minutos después, al llegar la ambulancia.

En cirugía, cortaduras y desgarramientos internos fueron reparados en el abdomen del trabajador lastimado. Su hueso pélvico se había quebrado en tres lugares. Tres meses después, el trabajador todavía padecía demasiado dolor sin poder regresar al trabajo.

- * Cómo se hubiera podido prevenir esta lastimadura?
- * Los trabajadores deben ser entrenados en no viajar en los remolques que no son diseñados para transportar trabajadores.
- * Remolques deben estar equipados de manera que aseguren la carga, incluyendo paredes fuertes a los lados para prevenir que la carga se caiga rodando.
- * Empleadores deben entrenar a los trabajadores en la operación segura de tractores.

CASE 194-123-01

August 8, 1995

El Proyecto NURSE (Nurses using Rural Sentinel Events) es operado por la Oficina de Salud Ocupacional del Departamento de Servicios de Salud de California, en conexión con el Instituto Nacional de Seguridad de Salud Ocupacional. La meta del programa es la prevención de lastimaduras en el trabajo de la agricultura. Las lastimaduras son reportadas por hospitales, servicios médicos de emergencia, clínicas, personal médico, y médicos forenses. Ciertos casos son seleccionados y seguidos conduciendo entrevistas de trabajadores lastimados, sus compañeros de trabajo, patrones y otras personas relacionadas con el accidente. Una investigación de seguridad en el sitio del accidente también se hace. Estas investigaciones proveen información detallada del trabajador, el ambiente del trabajo, y los posibles factores de riesgo resultando en la lastimadura. Cada investigación concluye con recomendaciones específicas diseñadas para prevenir lastimaduras, para el uso de los patrones, trabajadores, y otras personas que tienen interés en la salud y seguridad en la agricultura.



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