

Cotton Harvester Operator Fatally Electrocuted¹

California NURSE Project²

SUMMARY: CASE 193-488-01

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).

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.)

1. This document CDHS(OHB)-FI-94-005-33, was extracted from a series of the Nurses Using Rural Sentinel Events (NURSE) project, 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. Publication date: February 1994.

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

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

FURTHER INFORMATION

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

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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.