California
Occupational
Health
Program

NURSE REPORT #20
October 1992

Teenage Irrigator's Finger Mangled by Pipe[1]

California NURSE Project[2]

SUMMARY : CASE 192-344-01

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.

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.

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1. This document, CDHS(COHP)-FI-92-005-20, was extracted from a series of the Nurses Using Rural Sentinal 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: October 1992

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

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.

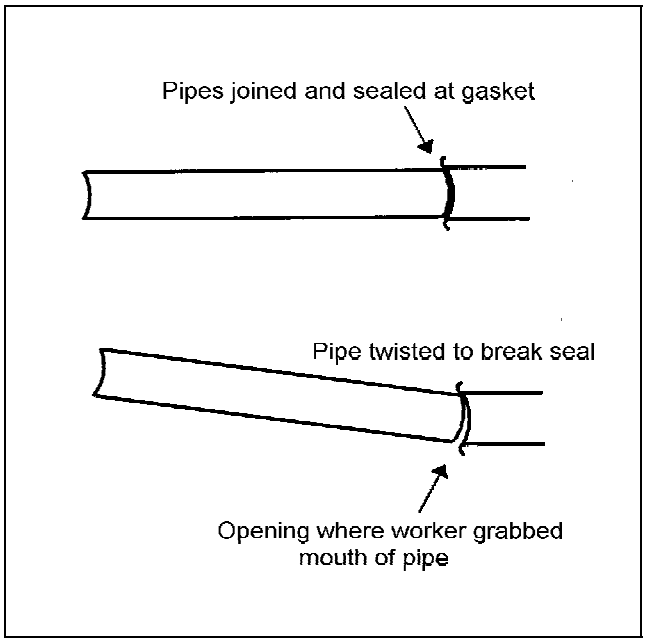

Figure 1. Point of injury

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

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).** 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. **** 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.".**

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.

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.