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TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Electrician was electrocuted while doing repair work on a restaurant freezer in California

SUMMARY**California FACE Report #92CA014
April 15, 1993**

A 40-year-old white male electrician (victim) was electrocuted while repairing a 3-door freezer in a restaurant. The victim was in the process of doing repair work on the freezer when he came in contact with a live wire. The wire was not grounded properly due to a short in the freezer circuit. The victim was not wearing any personal protection equipment (PPE), and was working from an aluminum ladder at the time of the incident. The victim fell 10 feet from the ladder and struck the back of his head on the floor. Paramedics were called to the scene and cardiopulmonary resuscitation (CPR) was initiated. The victim was transported to the hospital in full cardiac arrest. The California FACE investigator concluded that in order to prevent future similar occurrences, employers and contractors should:

- provide and use electrically insulated gloves when employees and contractors are doing electrical work.
- provide and use only wooden ladders when employees or contractors are doing electrical repair work.
- make sure all electrical circuits and wires are labeled properly before allowing an employee or a contractor to do any electrical work.
- maintain all electrical panels and wiring so that they are in safe working order.
- have an standard operating procedure (SOP) to follow which requires the testing of all circuits to make sure they are deenergized before beginning any electrical work.

INTRODUCTION

On September 24, 1992, at 3:06 pm a 40-year-old white male electrician died after being electrocuted while doing repair work on a 3-door freezer in a restaurant. The victim was electrocuted when he touched a live wire which was not grounded properly. The California FACE investigator received notification of the fatality from the California Occupational Safety and Health Administration (Cal/OSHA) office on September 28, 1992. An on-site interview was conducted with the restaurant manager, the restaurant owner, and a consultant from an engineering company on October 14, 1992. A copy of the Cal/OSHA report, the consultant engineering firm's report, the Coroner's Autopsy Report, and police report were all obtained by the California FACE investigator. Photographs of the incident site were also taken by the FACE investigator.

The victim in this incident was a self-employed electrician who had been hired by the restaurant management company to do electrical repair work on a 3-door freezer which was not working properly. The victim's business partner stated that the victim was highly qualified and was known to be very safety conscious. The victim was working on his own on this particular job, according to his partner. The restaurant management company had a Safety Plan which was in compliance with Title 8 of the California Code of Regulations (CCRs) section 3203 Illness and Injury Prevention Plan's (IIPP) eight requirements, except for sections 3203 (a)(2) and 3203 (b)(3).

INVESTIGATION

The victim in this incident was a self-employed contractor who was doing repair work on a 3-door freezer at a restaurant. He was in the process of repairing a compressor unit for the freezer. The partner stated that the victim had been working on numerous refrigerator repair jobs, on his own, since work had been slow with their business.

The restaurant kitchen contained work areas for food preparation and storage. It was kept clean and did not appear to be cluttered. There were four co-workers including the manager who were working in the vicinity when the incident occurred. They were all doing various tasks ranging from working on the computer to preparing food. None of the co-workers actually witnessed the incident. They all heard the victim scream, however, and came to his aid. The victim had fallen ten feet from a ladder which he had been working from and was laying on the floor.

The victim had been working with the freezer feeder circuit when he received an electric shock (120 volts). The freezer circuit had a short to ground which caused the electrocution. The victim had not tested this circuit for any fault in the electrical system prior to beginning work. It

was determined that the circuit breaker boxes were not marked legibly or correctly as to the equipment they controlled. It was also found that the 3-door freezer was controlled by two separate circuit breakers. One of these two circuit breakers had been deenergized while the other one remained energized. The victim was not wearing any PPE and was using an aluminum ladder when the incident occurred.

Paramedics were summoned to the scene and the victim was taken to the hospital in full cardiac arrest. The paramedics gave the victim CPR until arrival at the hospital. The victim was pronounced dead at the hospital at 3:06 pm on September 24.

CAUSE OF DEATH

The Coroner's Autopsy Report stated the cause of death as electrocution.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers and contractors should provide electrically insulated gloves for employees and contractors to use while doing electrical work.

Discussion: This incident may have been prevented if the victim had been wearing electrical insulated gloves.

Recommendation #2: Employers and contractors should provide and only use wooden ladders when employees or contractors are working on electrical systems.

Discussion: This incident may have been prevented if the victim was using a wooden ladder. The aluminum ladder used was a very good conductor for electricity and was the path to ground for the electricity. If the victim had been using a wooden ladder the electricity would have had no way to reach the ground thus preventing the electrocution.

Recommendation #3: Employers should make sure all electrical circuits and wires are labeled properly before allowing an employee or contractor to do any electrical work.

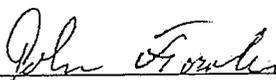
Discussion: The circuit panels in this incident were not labeled properly. The victim may not have been aware that there were two circuit breakers providing energy to the freezer which he was working on. Under Title 8 of the California Code of Regulations (CCRs) section 2340.22 (a) Identification of Equipment - Each means for motors and utilization equipment and for each service, feeder, or branch circuit at the point where it originates shall be legibly marked to indicate its purpose, unless located and arranged so the purpose

is evident. The markings shall be of sufficient durability to withstand the environment involved.

Recommendation #4: Employers should maintain all electrical panels and wiring so that they are in safe working order.

Discussion: In this incident the electrical wiring was not in proper or safe working order. It was found that the 3-door freezer was controlled by two separate circuit breakers. Under Title 8 of the CCRs section 2340.1 Electrical Equipment shall be maintained free from recognized hazards that are likely to cause death or serious physical harm to employees.

Recommendation #5: Employers and contractors should have a standard operating procedure (SOP) to follow which requires the testing of all circuits to make sure they are deenergized before beginning any electrical work.



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