Maintenance Worker Electrocuted After Contacting 120 Volts While Testing an Electric Motor

DATE: October 25, 1991

SUMMARY

On May 23, 1991, a 62-year-old maintenance worker was electrocuted after contacting 120 volts at his maintenance bench. The incident occurred at a health club while the worker was completing repairs on an electric motor. The worker was electrocuted apparently as he was connecting the bare wires of a cut-off extension cord to an electric motor in order to test the motor's operation. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- ***Proper work practices and equipment must be used when making electrical repairs.***
- ***Employees should receive periodic safety training to familiarize workers to unsafe electrical hazards and work practices.***

INTRODUCTION

On July 15, 1991, NJDOH FACE personnel were notified by the area OSHA safety supervisor of a work-related electrocution that occurred on May 23, 1991. On July 29, 1991, FACE investigators visited the site to interview the employer's representative and photograph the scene. A second visit was conducted on August 29, 1991 to examine the electric motor that had been impounded at the police station. Other information was derived from witness statements, the OSHA compliance officer, the police report, and the medical examiner's report. The time lapse between the date of the incident and the FACE investigation was due to a delay in the medical examiner's determination of the cause of death.

The employer is a health and fitness club that employs about 50 workers and has been in operation since 1989. The deceased was a 61-year-old male who was hired when the club opened and worked as the maintenance and custodial man. Before taking this job, he had owned his own repair shop and had previous experience as a maintenance worker and small motor repairman. As the club's only maintenance person, he was responsible for maintaining the electrical and mechanical equipment and worked independently of the rest of the staff.

INVESTIGATION

On the day of the incident, the victim had been completing the repair of a ¾ horsepower air conditioner motor that he had worked on during the previous week. The repairs were being done in the victim's workroom, a small room with a wooden workbench located at the back of the building. At about 9:30

that night, he told a co-worker that he would be leaving shortly and was last seen alive at about 10 p.m. The co-worker left the building at about 11:45 p.m., setting the burglar alarm as she left.

When the victim failed to return home, his wife and son became concerned and went to the health club to check on him. At 12:48 a.m., they entered the rear of the building, tripping the burglar alarm which alerted the police. As the police were being dispatched to the alarm, the family found the victim on his back in the workroom. The son began cardio-pulmonary resuscitation (CPR), stopping in order to guide the police into the building. The police then resumed CPR and requested emergency medical service (EMS) assistance. The EMS continued resuscitative efforts and transported the victim to the local hospital emergency room where he was declared dead.

While the police were administering CPR, the victim's workbench was moved, causing wires hanging down from the bench to spark and smoke. The police immediately disconnected the power by unplugging an extension cord which was plugged into a homemade, 4-outlet electrical gangbox. The extension cord was an unpolarized 2 wire "zip" cord that had been cut off to a length of about 4 feet. The cut end had about ¾ inch of insulation stripped from the wires, with one wire twisted onto one of the motor wires. The second wire was hanging free and apparently sparked when it contacted the first wire.

From the available evidence, it appears that the victim was in the process of connecting the extension cord to the motor to test the motor's operation. Burn marks found on the palm of his left hand suggest that he was electrocuted after his hand came in contact with the exposed electrical wires. An examination of the motor by a FACE investigator did not find any short circuits between the motor's case and wires.

CAUSE OF DEATH

The cause of death was attributed to electrocution. The medical examiner's report stated that there was a small burn mark on the palm of the victim's left hand.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Proper work practices and equipment must be used when making electrical repairs.

Discussion: In this case, it appears that the worker was trying to rig a system for supplying power to the motor to see if it would run. Proper work practices would call for testing the motor by first de-energizing any live wires, connecting the motor to a switched power source using insulated connectors (e.g., alligator clips), and energizing the power source to test the motor. By improperly connecting a cut-off extension cord to the motor, he apparently created the hazardous condition that caused his death. Employers must insure that employees are supplied with the necessary equipment to do the job safely and that employees are properly trained in its use. Employees must also tell the employer what equipment is needed, especially if their work is outside of the employer's realm of knowledge.

Recommendation #2: Employees should receive periodic safety training to familiarize workers to unsafe electrical hazards and work practices.

Discussion: Although the employee had previous experience in repairing electric motors, he apparently became careless in following proper safety practices. Employers should ensure that employees get periodic safety training in recognizing electrical hazards and following proper work practices.

REFERENCES

Code of Federal Regulations 29 CFR 1910, 1990 edition. U.S. Government Printing Office, Office of the Federal Register, Washington DC.

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