

41—Electrical Hazards

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Removing fuses

When it is necessary to remove a fuse, the operating switch should be opened to remove the load and the fuse should be extracted with an insulated fuse puller. If the fuse is not protected with a switch, the supply end of the fuse should be pulled out first. When the fuse is replaced, the supply end should be put in first.

It is important that a fuse be replaced by one of the same type and size and that a copper wire or other conductor never be substituted.

For work on lines carrying over 600 volts, the sources of energy can be opened by tripping the circuit breaker and then opening the disconnects. The conductors should be tagged, and, if possible, a substantial grounded conductor should be clamped to each leg of the circuit before the work is started. The grounding conductors should be removed just before the circuit is reenergized. As an added precaution, tests should be made with a voltmeter or other standard approved tester to make sure the circuit is clear.

In emergencies where the areas around fuse boxes are wet, wood platforms, insulated stools, or rubber boots should be used by maintenance workers.

Wiring

Electrical installations should be made in accordance with the *National Electrical Code* as a minimum standard, and each job should be properly inspected. The use of temporary wiring should be discouraged even though it may be reasonably safe when first put in. As a job progresses and repairs or installations are made, temporary wiring may become unsafe because it is not properly protected from mechanical injury.

Maintenance men should make it a practice to inspect plugs and connections on portable electric equipment to see that the third wire frame ground is properly connected, the grounding prong has not been removed, and the cord is properly connected to the terminals. Where there is any doubt about the safe operation of a tool, it should

be removed from service, tagged, and returned to the tool room for repairs.

When additional equipment is being installed or operated under temporary conditions, no taps should be made into an existing circuit unless an individual switch is installed in the branch line, with provision being made for locking the switch "off" and tagging it. This precaution will prevent service interruptions in the main circuit when power must be shut off in the branch circuit, and it will also prevent accidental starting of extra equipment that is tapped in.

Employee Training

Few plants experience difficulty in selection and installation, but in maintenance and use of electrical equipment, deviation from safe practices is sometimes tolerated, with the usual result that unnecessary hazards are created and men are injured and killed. Therefore, for maximum effectiveness, the safety program should include thorough training of all employees who work with the electrical installation of the plant or operate electrical equipment. In addition to instructions on the hazards of electricity, employees should be trained in first aid, the use of warning signs, guards, and other protective devices, and in safe operational procedures. It is essential that they be trained in the mouth-to-mouth method of resuscitation and, in some cases, external cardiac massage.

The training program should be based on the plant's electrical system and applied specifically to plant operations.

Supervisors should be given such instructions as may be necessary to acquaint them with existing or probable electrical hazards, and they should be required to maintain close supervision over all operations which involve the use of electrical equipment. They should encourage employees to report immediately any electrical defects observed and this equipment should be repaired or replaced at once.

It is recommended that members of the organization's safety department familiarize themselves with the codes and standards which apply to their equipment and operation and that someone from the electrical maintenance staff be an active member of the plant safety committee.