

Office Electrical Safety

Electrical equipment used in an office is potentially hazardous. It can cause serious shock and burn injuries if improperly used or if equipment is poorly maintained.

Electricity travels through electrical conductors, which can include parts of the human body. Metals and moist skin both offer very little resistance to the flow of electrical current and can easily conduct electricity. Other substances such as dry wood, porcelain, or pottery offer a high resistance and can be used to prevent the flow of electrical current.

If a part of the body completes the electrical circuit, a shock will occur. The electrical current will enter the body at one point and leave at another. The passage of electricity through the body can cause pain, burns, destruction of tissue, and even death.

Factors influencing the effects of electrical shock include the:

- type of current (DC or AC),
- voltage,
- resistance,
- amperage,
- pathway through the body, and
- duration of contact.



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The longer the current flows through the body, the more serious the injury. Injuries are less severe when the current does not pass through or near nerve centers and vital organs.

Electrical accidents usually occur as a result of faulty or defective equipment, unsafe installation, or misuse of equipment on the part of office workers. Here are some details:

Equipment grounding

Most fixed equipment, such as large, stationary machines, must be grounded. Equipment connected by cord and plug must be grounded if located in hazardous or wet locations or if specifically required in the Cal-OSHA regulations (e.g. refrigerators, power tools, and air conditioners). Smaller office equipment, such as typewriters, computers, and coffee makers are usually not required to be grounded. However, it is much safer to purchase equipment with grounded three-prong plugs as a precaution. (Also, ungrounded appliances are often of lower quality and may not give good service over time.) In any case, never remove the third (grounding) prong from any three-prong piece of equipment.

Overloaded Outlets

Avoid overloading the electrical outlets available. If necessary, have additional circuits installed. Overloading electrical circuits and extension cords can result in a fire. Floor-mounted outlets should be carefully placed to prevent tripping hazards.

Unsafe/non-approved equipment

All electrical equipment must be approved by an independent testing organization, such as Underwriters Laboratory (UL). The use of low-quality, non-approved appliances, such as inexpensive coffee makers, radios, lamps, and space heaters is unsafe. Such appliances are more likely to develop electrical shorts and create fire and/or shock hazards. They should be removed from the workplace.

Defective, frayed or improperly installed cords

When the outer jacket of a cord is damaged, the cord may no longer be water-resistant and the insulation can absorb moisture, which may then result in a short circuit or excessive current leakage to ground. If wires are exposed, they may cause a shock to a worker who contacts them. These cords should be replaced. Flexible electrical cords should be examined on a routine basis for fraying and exposed wiring.

Appliance cords

A cord should not be pulled or dragged over nails, hooks, or other sharp objects that may cause cuts in the insulation. In addition, cords should never be placed on radiators or steam pipes, run through walls or windows, or placed under carpets, rugs or furniture. Particular attention should be given to outlets behind furniture. Files, desks, and bookcases may be pushed tightly against electric outlets and severely bend the cord at the plug. This can damage the insulation and break strands of the wire.

Extension cords

An adequate number of electrical outlets should be provided. Extension cords should only be used in situations where fixed wiring is not feasible, generally for temporary uses. However, if it is necessary to use an extension cord, avoid running it across walkways where it can be damaged and will pose a potential tripping hazard. If it is unavoidable to run a cord across a walkway, either tape it down with duct tape or other industrial tape made for the purpose, or purchase a cord runner.

Receptacles and switches

Wall receptacles and switches must be maintained so that no current-carrying parts will be exposed. Damaged wall plates should be replaced to eliminate the possibility of shock.

Plugs

Never pull a plug out by the cord. To remove a plug from an outlet, take a firm grip on the plug and pull the plug itself, not the wire.

Disconnect appliances before maintenance

Disconnect electrical appliances before cleaning, adjusting, or applying flammable cleaning solutions. If a machine guard is removed for cleaning or repair, replace the guard before testing the equipment or returning it to service.

Do not block electrical panel doors

Nothing should be placed within 36" of any electrical panel door. If an electrical malfunction should occur, the panel door, and anything else in front of the door will become very hot. This could ignite combustible materials stored too close. Electrical panel doors should always be kept closed, to prevent "electrical flashover" in the event of an electrical malfunction.

Recommendations

- ☑ Electrical appliances can be fire hazards. Be sure to turn off all appliances at the end of the day.
- ☑ Use only grounded appliances plugged into grounded (three prong) outlets.
- ☑ If electrical equipment malfunctions or gives off a strange odor, disconnect it immediately.
- ☑ Promptly disconnect and replace cracked, frayed, or broken electrical cords.
- ☑ Keep extension cords clear of doorways and other areas where they can be stepped on or chafed.
- ☑ Don't fasten extension cords with staples, hang from nails, or suspend by wire.
- ☑ Don't use equipment with worn or frayed cords and cables.
- ☑ Plugs should fit securely into outlets, but *never* force a plug into an outlet if it doesn't fit.
- ☑ Check for outlets that have loose-fitting plugs, which can overheat and lead to fire.
- ☑ Ensure that all appliances are certified by an independent testing laboratory.