

# **SAFETY MEETING TOPIC: Electrical Safety for Offices**

According to the U.S. Consumer Product Safety Commission (CPSC), top electrical safety hazards include electrical fires caused by aging wiring and misuse of surge suppressors and include electrocutions from wiring systems and large appliances. Electricity causes more than 40,000 fires every year in the United States, resulting in hundreds of injuries and deaths. Electrical fires kill more than 750 people and cause more than \$1 billion in property damage annually. Extension cords have been identified by the CPSC as a leading cause of electrical fires in the home. Every six minutes there is an extension cord-related electrical fire in the United States. Extension cord fires outnumbered fires beginning with attached or unattached power cords by more than 2-to-1. Employers and employees need to consider an important element of electrical safety in the workplace is the safe use of extension cords, power strips, and surge protectors.

Electricity is essential to the operations of a modern automated office as a source of power. Electrical equipment used in an office is potentially hazardous and can cause serious shock and burn injuries if improperly used or maintained. Electrical accidents usually occur as a result of faulty or defective equipment, unsafe installation, or misuse of equipment on the part of office workers.

## **General Electrical Safety Tips**

- Replace or repair loose or frayed cords on all electrical devices.
- Avoid running extension cords across doorways or under carpets.
- In areas with small children, electrical outlets should have plastic safety covers.
- Follow the manufacturer's instructions for plugging an appliance into a receptacle outlet.
- Avoid overloading outlets. Consider plugging only one high-wattage appliance into each receptacle outlet at a time.
- If outlets or switches feel warm, shut off the circuit and have them checked by an electrician.
- When possible, avoid the use of "cube taps" and other devices that allow the connection of multiple appliances into a single receptacle.
- Place lamps on level surfaces, away from things that can burn, and use bulbs that match the lamp's recommended wattage.

## **Outlet Safety**

The outlet, or receptacle, is perhaps the most commonly used and least thought of device in the home. Every electrical appliance, tool, computer, and entertainment center component we use is powered through one. We just plug in and forget about it, assuming all our power needs will be met. And that's true if we follow some simple but important safety principles.

- Check outlets regularly for problems, including over-heating, loose connections, reversed polarity, and corrosion. Consider having an electrical inspection performed by a

qualified, licensed electrician to help determine the integrity of your outlets and your entire electrical system.

- Check for outlets that have loose-fitting plugs, which can lead to arcing and fire.
- Avoid overloading outlets with too many appliances. Never plug more than one high-wattage appliance in at a time in each.
- Check for any hot or discolored outlet wall plates. Look from across the room; sometimes you'll see a darkened area in a teardrop shape around and above the outlet that may indicate dangerous heat buildup at the connections.
- Warm to the touch is OK, hot is not. If an outlet or switch wall plate is hot to the touch, immediately shut off the circuit and have it professionally checked.
- Replace any missing or broken wall plates.

### **Power Cords**

We can sometimes get so caught up in the safety awareness of our appliances and lamps that we forget about the safety principles that relate to its power cord. An appliance can look like it's in good operating order and yet still represent a hazard if its cord is damaged.

- Make sure all power cords and extension cords are in good condition, not frayed, cracked, or cut. If the power cord to a lamp or appliance is damaged, take the item to an authorized service center, or cut the power cord and dispose of the item safely. Cutting the cord helps ensure that no one else will pick up the item and take the hazard home with them.
- Never attempt to repair or splice a cut cord yourself. "Electrical" tape, as commonly referred to—usually black vinyl tape—is not rated for the heat generated by electricity running through wires. The tape will melt and burn.
- Make sure all electrical items, including appliances, extension cords, and surge suppressors, are certified by a nationally recognized independent testing lab, such as Underwriters Laboratories (UL), CSA, ETL, or MET.
- Do not coil power cords when in use.
- Do not place power cords in high traffic areas or under carpets, rugs, or furniture.
- Power cords should never be nailed or stapled to the wall, baseboard, or another object.
- Make sure appliances are turned off before connecting cords to outlets.
- Never remove the ground pin (the third prong) to make a three-prong plug fit into a two-prong outlet; this could lead to an electrical shock.
- Never force a plug into an outlet. Plugs should fit securely into outlets, but should not require much force to fit.
- Make sure to fully insert the plug into the outlet.
- Unplug appliances when not in use to conserve energy but also to minimize the opportunities for electric shock or fire.

### **Extension Cords**

Extension cords are temporary solutions only, and yet the majority of homes have at least one extension cord plugged in and left in place. Continual use can cause the insulation to rapidly

deteriorate, creating a dangerous shock and fire hazard. In addition to the same safety tips that apply to power cords, keep the following principles in mind when using extension cords.

- Extension cords should only be used on a temporary basis; they are not intended as permanent household wiring.
- A heavy reliance on extension cords is an indication that you have too few outlets to address your needs. Have additional outlets installed where you need them.
- Make sure extension cords are properly rated for their intended use, indoor or outdoor, and meet or exceed the power needs of the appliance or tool being plugged into it.
- Assume 125 watts per amp when converting to determine if the extension cord you intend to use is properly rated for the appliance being connected to it. For example, if your appliance indicates that it uses 5 amps at 125 volts, then its wattage rating is 625 watts (5 amps X 125 volts).

### **Power Strips and Surge Suppressors**

Power strips give us the ability to plug more products into the same outlet, which can be a help but also a hindrance to safety if used inappropriately. Power strips and surge suppressors don't provide more power to a location, just more access to the same limited capacity of the circuit into which it is connected. The circuit likely also still serves a variety of other outlets and fixtures in addition to the multiple electrical items you might be serving with the power strip. In addition to the tips above, keep these safety principles in mind when using power strips and surge suppressors.

- Be sure you are not overloading the circuit. Know the capacity of the circuit and the power requirements of all the electrical items plugged into the power strip and into all the other outlets on the circuit, as well as the light fixtures on the circuit.
- A heavy reliance on power strips is an indication that you have too few outlets to address your needs. Have additional outlets installed where you need them.
- Understand that a surge suppressor only protects the items plugged into it, not back along the circuit into which it is connected.
- Surge suppressors can manage the small surges and spikes sometimes generated by the turning on and off of appliances. They may even protect against a large surge generated from outside sources like lightning or problems along the power lines to the office or house. In the event of a large surge or spike, the surge suppressor is a one-time-use protector and will likely have to be replaced.
- Consider purchasing surge suppressors with cable and phone jacks to provide the same protection to your phone, fax, computer modem, and television.
- Not all power strips are surge suppressors, not all surge suppressors can handle the same load and events. Be sure the equipment you buy matches your needs.

### **Determining Power Strip Capacity**

All appliances indicate how much wattage is consumed when operated. That rating can be found on the appliance itself and often within the use and care booklet that accompanies the product. Other appliances will indicate power usage in amps, rather than watts.

*Quick Tip: If your appliance indicates that it uses 5 amps at 125 volts, then its wattage rating is 625 volts (5 amps X 125 volts).*

If you are going to use extension cords, power strips or surge protectors with two or more appliances, you must add together the wattage rating for all appliances used on the cord. The total of those wattage ratings will help you determine which gauge size you will need.

Some common household examples in watts:

Hair dryer	1,600
Deep fryer	1,500
Portable heater	1,500
Iron	1,000
Vacuum cleaner	600
Portable fan	150
Television	150
Computer	150
VCR	40
Stereo	30
Light bulbs	40, 60, 75, or 100

### **Do the math**

Determine all the electrical items plugged into the extension cord, power strip or surge protector. Determine the power requirements for each item, either in amps or watts. Locate the capacity of the extension cord, power strip, or surge protector you are using. Add up all the power requirements. This total should not exceed 80 percent of the rated capacity of the extension cord, power strip, or surge protector you are using.

### **Example:**

Power strip rated for 15 amps	15 amps X 125 volts = 1,875 watts; 80 percent = 1,500 watts
Computer	2 amps, 250 watts
Monitor	1.2 amps, 150 watts
Speakers	15 watts
Electric stapler	25 watts
Scanner	1.2 amps, 150 watts
Laser Jet Printer (Idle)	2 amps, 250 watts
(Printing)	9.4 amps, 1,175 watts
<b>Total</b>	<b>840 watts when idle</b>
	<b>1,765 watts when printing</b>