



Beverly Hills Fire Department Presents: Electrical Awareness 101



POWER STRIPS & DANGEROUS DAISY CHAINS:

According to NFPA, electrical fires consistently rank among the top 5 causes of commercial building fires. One of the reasons is the supply of readily available electrical outlets is inadequate in some buildings, especially older ones. To meet power supply needs, extension cords or surge protected power strips are often interconnected, or “daisy chained,” to readily provide more outlets and/or to reach greater distances. Another common solution is to create a “mixed daisy chain,” interconnecting extension cords and power strips. However, interconnecting these devices is a violation of Occupational Safety and Health Administration (OSHA) regulations and the National Electrical Code because doing so can cause them to become overloaded, leading to their failure and a possible fire. Daisy chains and mixed daisy chains constitute some of the most common violations identified during safety inspections.

PROBLEMS:

OSHA regulations require that conductors and electrical equipment be used in accordance with the conditions under which they are approved by a recognized testing organization (29 CFR 1910.303(a)). Most power strips are approved for providing power to a maximum of four or six individual items; however, when multiple power strips are interconnected, the one directly connected to the building outlet is often supplying power to far more than the approved number. This electrical current overload can result in a fire or can cause a circuit breaker to trip, de-energizing computers and other equipment throughout the area. The risk is magnified when another outlet in the same wall or floor receptacle is also overloaded in a similar fashion. When other outlets on the same circuit are also overloaded, the risk increases. Extension cords are sometimes used to energize power strips in locations far from outlets. Because electrical resistance increases with increased power cord length, interconnecting cords increase the total resistance and resultant heat generation. This creates an additional risk of equipment failure and fire, particularly when paper and other combustible materials are in contact with the wires. Additionally, OSHA’s regulations allow extension cords to be used only as temporary wiring for up to 90 days. Unfortunately once in place, extension cords tend to become permanent wiring and a fire hazard.

SOLUTIONS:

Several safe solutions exist. In many cases, a power strip energized by an extension cord or another power strip can simply be replaced by a power strip with a power cord of adequate length to reach an outlet. Alternatively, desks and associated equipment may be moved so they are closer to existing outlets. Other times, use of a power strip that is better able to accommodate bulkier transformer plugs solves the problem. Several factors should be considered when selecting an appropriate surge protector. Since models vary in the amount of current that they are rated to safely carry, it is important to consider the amperage requirements of the devices to be energized. Models vary in length of power cord, typically ranging from 3 to 15 feet. Choose one whose length is most appropriate for reaching the intended room outlet. Avoid having too much excess cord, and make sure the surge protector is set on its base. Some have swivel plugs which make them easier to connect to the outlet, and helps to protect the plug and cord from damage. Check each surge protector to make sure it is in good condition for use. Only power strips equipped with internal fuses are acceptable as permanent wiring. Those lacking these fuses are equivalent to extension cords, and therefore may not be used as permanent wiring. When there are not enough outlets to supply occupant’s needs, one solution is to request the installation of additional outlets. Their placement should avoid any need to run any wires across walkways, where they can create a tripping hazard. Consideration can also be given to the merits of installing modular furniture that provides multiple outlets at each workstation. Interconnected modular furniture units are energized by the building’s electrical supply through a single, large power cord, or “whip,” providing ample power to all served workstations. Provided below are examples of incorrect use of power strips . Are you in violation?



Use of non-approved multi-plug adaptors. (No Breaker)



Power strip plugged into another power strip.



Extension cord used to provide power to power strip.