

Preventing Electrical Fires

Human Service Providers need to be aware of the very real risk of a fire occurring at their agency and take action to prevent a fire from occurring. Fires are the most severe and often the most frequent type of property claim that providers face. We have found that electrical fires are often the cause of fires at provider agencies. There is a great potential for damage to the property itself, but there is a great concern for the safety of the individuals being served and staff. One fire can have long term effects, including loss of life or severe injury to consumers and staff, interruption in services provided and the upheaval of individuals from their home if the fire occurs in a residence.

Electrical fires can result from appliance defects, misuse and poor maintenance of electrical appliances, incorrectly installed wiring and overloaded circuits, extension cords and power strips, and the often overlooked electrical system (“fixed wiring”).

For most provider agencies, updates have been completed in most major areas of their buildings, such as new appliances, circuit breakers and fuse boxes. Many providers make these types of changes when the occupancy of the building changes, however the wiring system itself is rarely replaced. Modern electronics and appliances place a demand on the electrical system of a building that is far greater than most systems were designed to handle. Almost all of the systems that were installed prior to 1960 are at or past their design life and those systems installed during the 60’s and 70’s may have aluminum wiring which was deemed unsafe by the Consumer Product Safety Commission back in 1974!

The fact of the matter is that all wiring degrades over time. Heat, light and temperature affect the insulating materials. Oxidation can cover connection points and affect conductors. The conductors themselves get brittle from flexure and the heat generated from light fixtures. And, because the wiring for electrical systems are most often buried in walls and basement, electrical fires can burn in wall cavities or basements for quite some time before they are noticed and can spread quickly throughout the building.

To prevent electrical fires from occurring in your agency due to the wiring system, consider having a complete electrical system inspection by a qualified, licensed electrician or electrical inspector. This is particularly important for buildings built during the 70’s and earlier. Please note, however, that newer buildings should not be forgotten about either and a thorough inspection should be done for all buildings, regardless of age, after completing major renovations, after adding a new appliance, when obtaining a new building, or when changing the usage of the building.

The following should be included in the inspection:

- Capacity of the electrical service to the building
- Load test to ensure that the service is adequate for the current and foreseeable future
- Quality of exposed wiring, including that at the service entrance

- ☑ Excessive voltage drop at receptacles
- ☑ The condition of the panel box, connections, receptacles, switches and light fixtures
- ☑ The polarity and ground wiring of receptacles
- ☑ Required Ground Fault Circuit Interrupters (GFCI)
- ☑ Type of wiring, insulation, conditions and temperature rating
- ☑ Age and type of various components
- ☑ Surge suppression and surge arrestor

In addition, routine building inspections can often point out potential problems with the wiring system, appliances, loads on circuits, usage of extension cords and power strips. Spotting early warning signs can prevent disaster. The following items are things that should be included in an inspection or items that may indicate bigger problems:

- ☑ Fuses and circuit breakers
 - Ensure that the correct fuse size should be used. Fuses are rated according to the wire that makes up the branch circuit. Using a fuse that is larger than what the wiring can handle is hazard.
 - Record the fuses or circuits that frequently blow or trip. Be sure to determine which branch circuits were involved and which appliance was in use! Consult with a qualified electrician to determine the cause.
- ☑ Switches and outlets
 - Check outlets and switches to see if they feel warm to the touch. If they are, unplug all appliances and turn off all switches and contact a qualified electrician immediately.
 - Look for discoloration of the outlet or switch which can indicate heat buildup.
 - Make sure that outlet and switch cover plates are in good condition and no wiring is exposed.
 - Make sure safety caps are in unused outlets.
 - Check outlets to make sure that loose-fitting plugs which can overheat and lead to fire.
- ☑ Power cords
 - Make sure power cords are in good condition, not frayed, stiff or cracked.
 - Make sure cords are out of traffic areas.
 - Make sure cords are not nailed or stapled to the wall, baseboard or other object.
 - Make sure that cords are not pinched against walls or furniture.
 - Make sure cords are not placed under carpets or rugs and that furniture is not resting on them.
 - Make sure that 3-prong plugs have all 3 prongs and that the grounding feature has not been ground or clipped off.

- ☑ Extension cords
 - Make sure extension cords are only being used as a *temporary* power source. Rearrange furniture or appliances so that extension cords are not needed or have a new outlet near the point-of-use installed.
 - Make sure extension cords are being used according to their rating, intended use and power needs of the appliance or tool plugged into it.
 - Use cords with polarized and/or three-prong plugs.
 - Buy only extension cords that have been approved by the Underwriters Laboratory (UL).
 - Make sure only one appliance or tool is plugged into an extension cord at a time.
- ☑ Power strips and surge protection
 - Power strips only provide the ability to plug more products into the same outlet; they do not provide more power to the outlet. Be sure the circuit is not being overloaded by items plugged into the power strip.
 - Make sure that surge suppressors are being used correctly. Surge suppressors only protect the items plugged into it and should be replaced after a large surge or spike.
 - Make sure that if you want a surge protector that it is a surge protector, not all power strips are surge protectors.
- ☑ Light bulbs
 - Make sure the correct type and wattage light bulbs are being used.
 - Make sure bulbs are screwed in securely, as loose bulbs can overheat.
 - Make sure all light sockets have bulbs screwed in. Bare sockets pose an electrical hazard as well.
- ☑ Small appliances and tools
 - Make sure small appliances are approved by the Underwriters Laboratory (UL).
 - Make sure appliances are being used and maintained according to the manufacturer's instructions.
 - Small appliances and tools should be unplugged when not in use.
 - Make sure that any appliances or tools that are being used within six feet of water are plugged into Ground Fault Circuit Interrupter's (GFCI).
 - Power tools should have a 3-prong plug or double insulated cord.

In addition to inspections, you also need to train your employees and consumers to understand and avoid electrical hazards! This should include how to safely use and maintain appliances and tools and the warning signs of potential problems and how to report potential problems so that they can be inspected immediately.

Warning signs include:

- ☑ *Flickering lights* – This may be caused by faulty wiring of the receptacle, wall switch or the electrical product itself.

- ☑ *Electrical shocks, smoke or sparks* – If an appliance, outlet or light switch does any of these, stop using it at once!
- ☑ *Warm, hot or even discolored cover plates* on outlets and light switches. This could indicate an unsafe wiring condition which should be inspected immediately.
- ☑ *Frequent circuit breaker trips or blown fuses* can indicate a problem with the wiring, an overload or a problem with a particular appliance.
- ☑ *Crackling, sizzling or buzzing from your outlets.* – If this occurs, stop using it at once!

It is also important that everyone know what to do in the event of a fire. Make sure that either a Class C (for energized electrical equipment) or Class ABC (multipurpose) fire extinguisher is available and that all staff should know how to use it.

For more information on preventing electrical fires, contact your electrician or visit the following:

National Fire Protection Association, www.nfpa.org

U.S. Fire Administration, www.usfa.fema.gov

Consumer Product Safety Commission, www.cpsc.gov

Underwriters Laboratory, www.ul.com/consumers

Electrical Safety Foundation International, www.electrical-safety.org