

California Baptist university, 8432 Magnolia Avenue, Riverside, CA 92504

## Extension Cord Safety

Between 2007 and 2011, U.S. fire departments responded to an estimated 47,820 (annual average) reported home structure fires involving electrical failure and/or malfunction. As a result, these fires were responsible for 455 civilian deaths, 1,518 civilian injuries and \$1.5 billion in direct property damage<sup>1</sup>. The U.S. Consumer Product Safety Commission (CPSC) estimated in 1996 that electrical cords and plugs were involved in approximately 7,100 fires which resulted in approximately 120 deaths (about 32 percent of all residential electrical system fires deaths). In 1997, more than 12,000 people were treated in hospital emergency rooms for electrical burns and shocks and about 2,500 of those injuries were associated with extension cords<sup>2</sup>.

In order to mitigate the risk of fire and ensure personnel safety the, Californian Code of Regulations (CCR)<sup>3</sup>, California Fire Code (CFC)<sup>4</sup>, National Fire Protection Agency (NFPA)<sup>5</sup>, and Occupational Safety & Health Administration (OSHA) have established regulations regarding electric safety and the use of extension cords in the workplace and the following guidelines/requirements must be observed:

1. Under no circumstance may a non-surge protected extension cord be used in lieu of permanent wiring. Personnel wanting to plug a device into a receptacle that is out of reach of the factory cord *must use a surge protected power strip* (refer to **Photograph 1**).
2. Devices are that are only going to be used for a *duration of 90 days or less* may connected to an extension cords as long as the device is disconnected from the extension cord when not actively in use. Approved circumstance were an extension cord may be used include, but are not limited to the following circumstances:
  - a. *Construction site / portable power tools.*
  - b. Theater/performance situations were temporary devices (i.e. lighting, sound, etc.) is required *only for the duration of the performance.*
  - c. *Temporary events* in areas not permanently wired for electrical use (i.e. the front lawn).



**Photograph 1 – Surge Protected Multi-Plug Power Strip**

<sup>1</sup> <http://www.nfpa.org/safety-information/for-consumers/causes/electrical/electrical-safety-in-the-home/electrical-safety-tips>

<sup>2</sup> <http://www.cpsc.gov/en/Newsroom/News-Releases/1999/CPSC-Warns-Consumers-About-Faulty-Extension-Cords-Power-Strips-and-Surge-Protectors/>

<sup>3</sup> Title 8 of the California Code of Regulations (CCR), Subchapter 5, Group 1 - Low-Voltage Electrical Safety Orders

<sup>4</sup> CFC chapter 7, section 605 – Electrical equipment, wiring and Hazards (2013)

<sup>5</sup> NFPA 70 National Electric Code, article 240.5 (2015); NFPA 70E Standard for Electrical Safety in the Workplace (2015)

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3. Under *no circumstance* may an extension cord or surge protector be connected to another extension cord or surge protector, also known as daisy-chained (refer to **Photograph 2**). Surge protected power strips and approved extension cords must be directly plugged into a grounded electrical receptacle.

4. When extension cord use is permitted, the following requirements must be met:

a. Extension cords *must be approved* (i.e. Underwriter Laboratories) and properly maintained with no exposed live parts, exposed ungrounded metal parts, damage, or splices. Damaged extensions cords must be disposed of and may not be repaired.

b. Running extension cords through doors, windows, or opening that may present a “pinch” point *must be avoided if possible*. If necessary, extensions cords that are run through opening must be protected from damage.

c. Extension cords must be safely *rated for the load* that they are to be used for (i.e. heavy-duty or extra-heavy-duty rated cable for construction use) and must be a continuous length. Extension cord splicing is not permitted under any circumstance.

d. Extension cords must be protected by a *ground fault circuit interrupter* (GFCI) when used around construction sites, wet or damp areas, or in an area where a person may be in direct contact with a solidly grounded conductive object. The GFCI be the electrical receptacle, a circuit breaker, or built into the cord itself.

e. Extension cords must be *three-conductor* (grounded) regardless of the devise that is going to be plugged into the extension cord.

f. Extension cords that run along the ground in an area that is used as a walkway *must be protected* in such a way to prevent creating a trip hazard.

5. Non-surge protected *multi-plug adaptors* must not be used under any circumstance (refer to **Photograph 3**).



**Photograph 2 –Surge Protector Energizing another Surge Protector**

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**Photograph 3 – Non Surge Protected Multi-Plug Adapter**