MEMORANDUM

DATE: December 15, 2013

TO: Campus Community

FROM: Tim Ridley, CSP, ARM-P
Director, Safety and Risk Management

SUBJECT: APPROVED POWER STRIPS AND SURGE PROTECTORS

Safety & Risk Management inspections continue to identify electrical power cord deficiencies. We understand that offices frequently do not have enough outlets to accommodate all of the electronic equipment desired. This memo is to remind everyone that improper use of extension cords poses a potential danger of electrical fire, and to provide a suggested interim solution that will reduce the risk of electrical fire. Attached are two information sheets discussing power strips, surge protectors, and general electrical safety. You may find them useful in resolving an extension cord deficiency on a safety inspection.

Regulations require that appliances which demand currents greater than 600 watts or 5 amperes (such as microwave, coffee pots, space heaters, and refrigerators) be connected directly into a wall socket. Utilization of a standard extension cord or power strip is unsafe and a violation of Fire Safety Code for these appliances. In an effort to meet occupant needs, and the requirements of the State Fire Code, power strips equipped with internal fuses are permissible to connect appliances in the absence of permanent wiring.
Where use of the appliances is anticipated to be permanent, i.e. more than one school year, a work order requesting additional outlets is recommended.

Surge protectors with cords of not more than six feet may be used when multiple low-amperage devices are to be connected; however, the TRIPP-LITE ISOBAR with an 8 foot cord has been approved for campus use. The TRIPP-LITE can be found at the following link: http://www.tripplite.com, Safety Power Strip Model #TLM609GF is appropriate for most applications. Where low amperage devices are used, such as computers and desktop printers, a surge protector may be preferred. The IBAR4 and ISOBAR 8 have 6 ft and 8 ft cords, respectively.

If you have questions or require further information regarding this issue, please contact me at extension 2066.
WHAT IS A SURGE PROTECTOR AND HOW DOES IT DIFFER FROM A POWER STRIP OR EXTENSION CORD?

Surge protectors, also called multiple outlet strips and surge suppressors, are corded devices used to provide additional electrical connections for appliances or electronics. There are some basic differences between them:

The surge protector absorbs power surges or “energy spikes” thereby preventing voltage from reaching the devices, “protecting” sensitive electrical devices such as computers or expensive TVs. These have fuses which “trip” when a surge is detected. Surge protectors can be defeated, but adding a compatible, properly rated surge protector can help extend the life of appliances and electronics.

Extension cords are typically used to move the location of power to a location where an outlet does not exist. Extension cords are only designed for temporary use. Power strips are for increasing the number outlets available, and can be used like an extension cord; in addition, power strips and extension cords do not have the safety features of a surge protector as they do not block surges or spikes in energy.

DIFFERENTIATING A SURGE PROTECTOR FROM A POWER STRIP

When purchasing a surge protector, the package will indicate whether the device has surge protection and will also include additional performance ratings. If you did not purchase the power strip or surge protector and have questions about its protection capacity, you can look for certain features on the device itself. It is important to verify and compare performance ratings before using, or continuing to use a surge protector. The following performance ratings and features may be found on a quality surge protector:
• UL 1449 Voltage Protection Rating (VPR) - Measures let-through (clamping) voltage, which is the maximum voltage a surge protector will let through a connected device. A lower VPR, typically 330 volts, usually indicates better protection.

• UL 1449 Suppressed Voltage Rating (SVR) - Earlier measure of let-through voltage based on a test using 500-amp current. This rating may be found on some surge protectors, as the VPR rating was effective September, 2009.

• Joules Rating - Determines the total amount of energy a surge protector is capable of absorbing over time.

• Response Time - The faster the device reacts to a surge, the better.

• Indicator Light/Sound - A device may have both features, will alert you when surge protector needs to be replaced.

• Ground Indicator Light - Light shows ground path is intact.

• Power Shut-Down Protection - Shuts off power to all outlets once the surge protector reaches its capacity to protect.

• Resettable Circuit Breaker - Stops the flow of electricity when circuit is overloaded to protect connected devices and surge protector.

• 3-Line Protection - Hot, neutral, ground protection in an electrical circuit.

• GFCI Protection - Reduces the risk of electrical fire.

• Energy Saving Designs - Load sensing plugs, master/power save plugs, remote control/timer surge protectors

• Warranties - Check manufacturer’s warranty.

**CHOOSING A SURGE PROTECTOR THAT WORKS BEST FOR YOU**

When attempting to determine the wattage of your electrical device, if the nameplate provides you with the volts and amps, the following formula will permit you estimate the wattage (maximum power drawn by appliance):

\[
\text{Watts}= \text{amps} \times \text{volts}
\]

Example: Small fan current draw= 0.45 AMPS; 120V (Most appliances in US).

\[
W= 0.45 \times 120
\]

\[
=54 \text{ W}
\]
The following checklist can help you find a surge protector for your needs.

<table>
<thead>
<tr>
<th>STEP 1-Choose type (Check one)</th>
<th>STEP 2- Choose connection types (Check all that apply)</th>
<th>STEP 3- Compare/ Verify/ Choose Performance Ratings/ Features (Check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole- House (for main electrical panel)</td>
<td>Power cords</td>
<td>Voltage Protection Ratings (VPR); Suppressed Voltage Ratings (SVR)</td>
</tr>
<tr>
<td>Surge Protectors (office, home)</td>
<td>Telephone cords</td>
<td>Joule Ratings</td>
</tr>
<tr>
<td>Battery Backups (for instant backup power in the event of power failure)</td>
<td>Ethernet cords</td>
<td>Response Times</td>
</tr>
<tr>
<td>Wall Mount Surge Protectors (function like standard outlets)</td>
<td>Cable TV coaxial cables</td>
<td>Automatic Warning Devices</td>
</tr>
<tr>
<td></td>
<td>Satellite TV cables</td>
<td>3-Line Protection</td>
</tr>
<tr>
<td></td>
<td>USB cables</td>
<td>Resettable Circuit Breaker</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Warranties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power Shut Down Protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy Saving Designs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GFCI Protection</td>
</tr>
</tbody>
</table>

**SOURCES CITED**

EHS Berkley Campus (2004) Extension Cords and Surge Protectors


Tripp-Lite (2011) ISOBAR8ULTRA

Retrieved September 1, 2011,
http://www.energysavers.gov/your_home/appliances/index.cfm/mytopic=10040
Attachment B
Information Sheet
Electrical Safety Tips

Before purchasing a surge protector, power strip, or extension cord, it is important to know what equipment or devices will be connected to the unit because the units do have limitations. Misused surge protectors, power strips, or extension cords can lead to serious injuries and/or property damage.

The following guidelines should be considered:

- Know the electrical rating of the surge protector, power strip, or extension cord, and do not exceed rating.
- Power cords should remain uncovered, (carpet, furniture, etc.) and should not be rested on, or wrapped around, sharp edges to avoid physical damage.
- Power cords should not be “suspended” so that the cord can separate from the fixture.
- Extension cords and outlets should be inspected routinely to identify damage and institute repair actions. Cords should be inspected for insulation damage.
- When connecting a power cord to within 4 ft of a source of water, ground fault circuit (GFCI) is required, either at the wall socket itself or within the cord.
- Extension cords should not be connected to surge protectors or other extensions (daisy chain). Extensions and surge protectors must be plugged directly into wall outlets.
- Nationally Recognized Testing Laboratories (NRTL) listings recommend that no single load should exceed 600 watts or 5 amperes, and total load should not exceed 1440 watts or 15 amperes. Computers and associated equipment typically draw low total current of 3 to 5 amperes.
- All electrical equipment, including extension cords, power strips, appliances, and surge protectors, should have a NRTL stamp.
• Appliances or devices that require currents greater than 600 watts or 5 amperes should not be powered through surge protectors. The following wattage ratings (marked by an asterisk) were provided by the U.S. Department of Energy and should serve as a reference:
  
  o Portable space heaters (750-1500 watts)*
  o Copy machines (40-70 standby, 1400-1600 in use)*
  o Coffee pots (900-1200)*
  o Microwave ovens (750-1100)*
  o Toaster/Ovens (800-1400)*
  o Refrigerators (frost free, 16 cubic ft., 725)*
  o Small refrigerator (90)

If you are attempting to configure the wattage on your device, but the nameplate on the device only provides you with the volts and amps, the following formula can help you estimate the wattage (maximum power drawn by appliance):

\[
\text{Watts} = \text{amps} \times \text{volts}
\]

Example: Small fan current draw = 0.45 AMPS; 120V (Most appliances in US).

\[
W = 0.45 \times 120
\]

\[
= 54 \text{ W}
\]