



SAN FRANCISCO
STATE UNIVERSITY

Electrical Safety Practices

A tutorial for interpreting this category
on the lab safety checklist

Electrical Safety Checklist Statements

This presentation is a tutorial to help you understand what to look for when using the lab safety checklist to inspect for electrical safety issues.

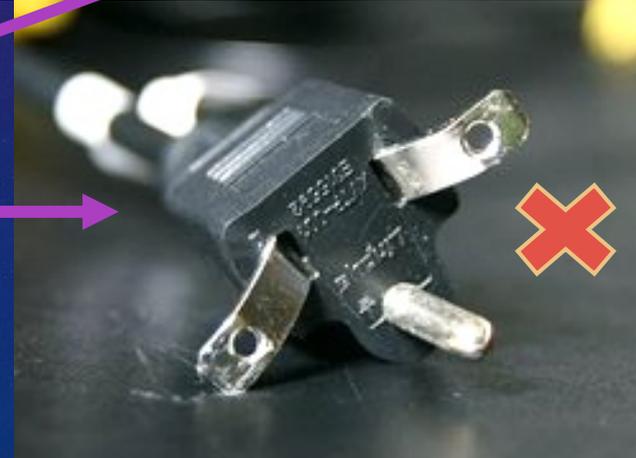
At right are the nine items to look for during the inspection.

Category	#	INSPECT Statement
ELECTRICAL	1	3-prong plugs are un-altered from original manufacturer's condition.
ELECTRICAL	2	All electrical outlets have cover plates.
ELECTRICAL	3	Electrical panels are covered to protect against electrocution or shock. Missing circuit breakers are replaced with blanks.
ELECTRICAL	4	All multi-plug adapters and power strips are equipped with overcurrent protection (circuit interrupter) in case of overload.
ELECTRICAL	5	Extension cords, multiple plug adapters, and power strips are not "daisy-chained".
ELECTRICAL	6	Power cords do not travel under doors, or through pinch points
ELECTRICAL	7	Power cords are not left as a trip hazard on the floor.
ELECTRICAL	8	Potentially live, bare electrical conductors (wires), are not left exposed.
ELECTRICAL	9	ELECTRICAL - OTHER

Statement #1

3-prong plugs are un-altered from original manufacturer's condition.

- Please ensure that 3-prong plugs remain 3-prong. Do not remove the bottom, grounding plug for any reason, such as making it fit into a 2-prong outlet.
- This statement is intended to apply to plugs that have been modified by the user to circumvent the ground.
- Record damaged or bent plugs as non-compliant under Statement #9 – **Other**.
- You are not required to unplug anything to check.



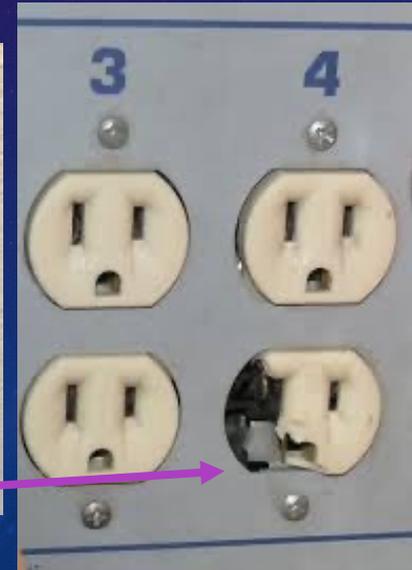
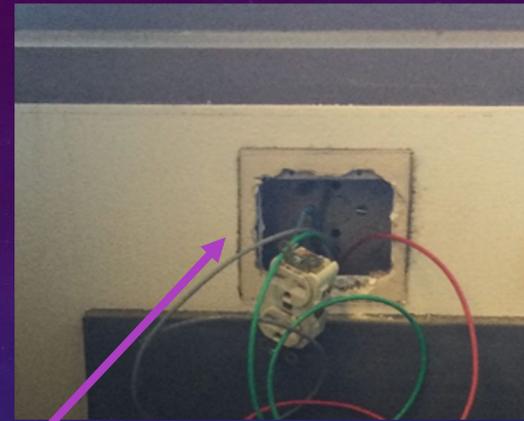
Statement #2

All electrical outlets have cover plates.

To prevent access to live electrical wires, **please ensure that all electrical outlets have cover plates.**

This is an image of an outlet under maintenance, but it provides an example of a missing cover plate. Lack of a cover plate allows access to live wires posing an electrocution risk. Facilities staff should cover this up if they are leaving it.

Also check that cover plates are well fitted, without cracks around the edges, undamaged and are not coming loose from wall.



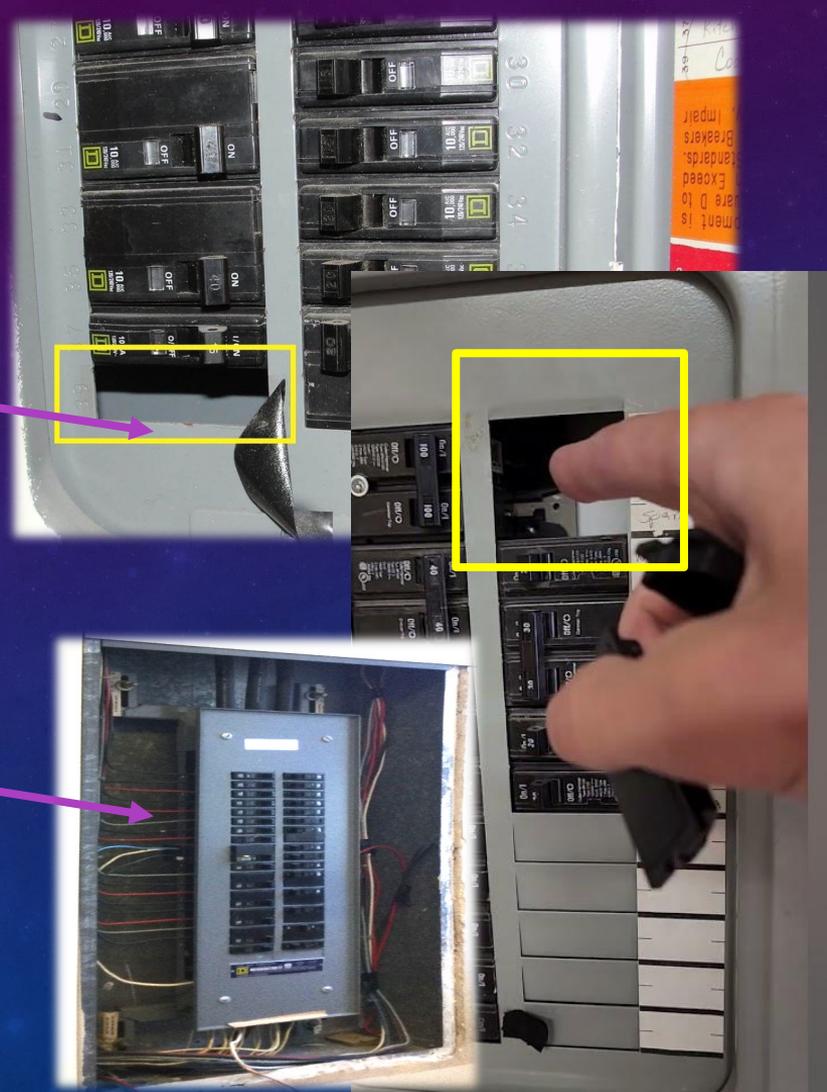
Statement #3

Electrical panels are covered to protect against electrocution or shock. Missing circuit breakers are replaced with blanks.

To prevent access to live electrical wires in electrical panels, ensure that all missing circuit breakers are replaced with blanks (knockout covers).

In this photo, the surrounding panel is missing, allowing access to the wires.

In both cases, the lab owner must ask their stockroom staff to submit a work order.



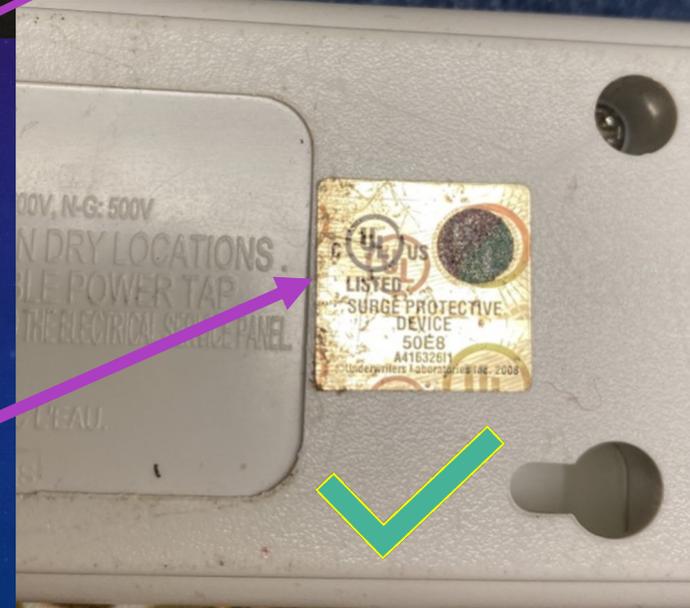
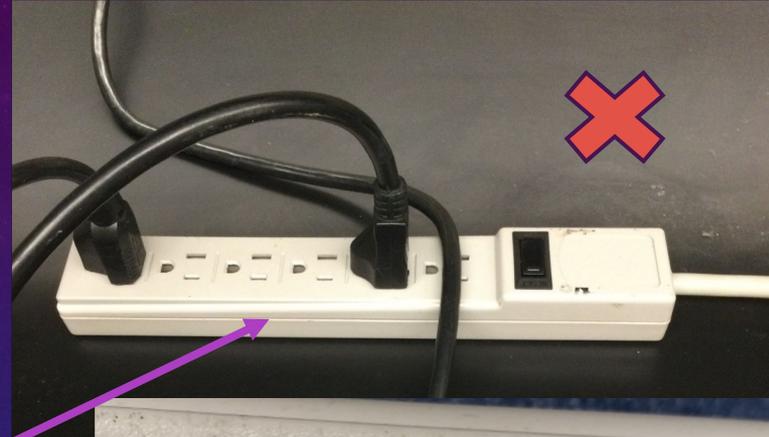
Statement #4

All multi-plug adapters and power strips are equipped with overcurrent protection (circuit interrupter) in case of overload.

This extension cord lacks a circuit interrupter (surge protector). It has a switch to manually turn the power to the plugs on and off, but this, alone, does not mean it has a circuit interrupter.

Most multi-plug adapters that are surge protected will have at least one of the following:

- small light near the switch
- switch or button that says “Reset” on it
- sticker that says “Surge Protected”



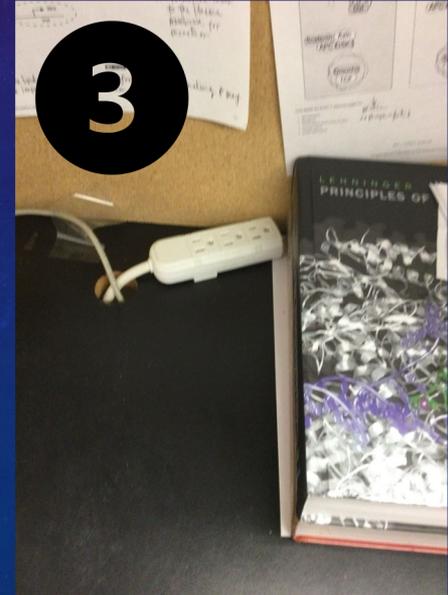
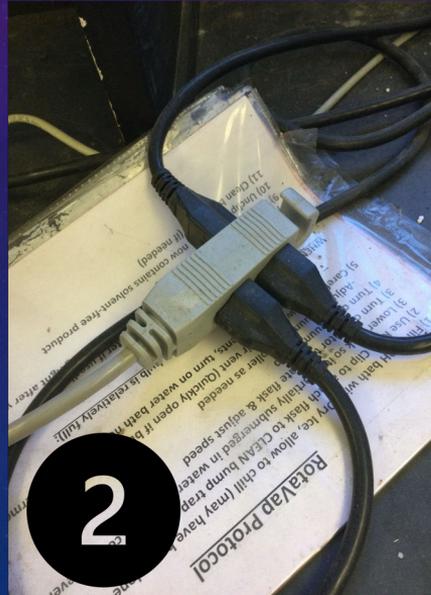
Statement #4 – Additional notes 1

Picture 1, where the use of the **non-surge protected extension cord is obviously only for temporary use, then it is permitted**. If no one is there and equipment is plugged in, then it is probably not "temporary".

Pictures 2 and 3 show types of multi-plug adapters without surge protectors/circuit interrupters that look like they are always in place. These are never permitted. If there is nothing plugged into it, like in Picture 3, please remove it and leave a note for the occupant. Do not unplug computers or other equipment in a situation like the one in Picture 2.



This is an A/V cart for temporary use only.

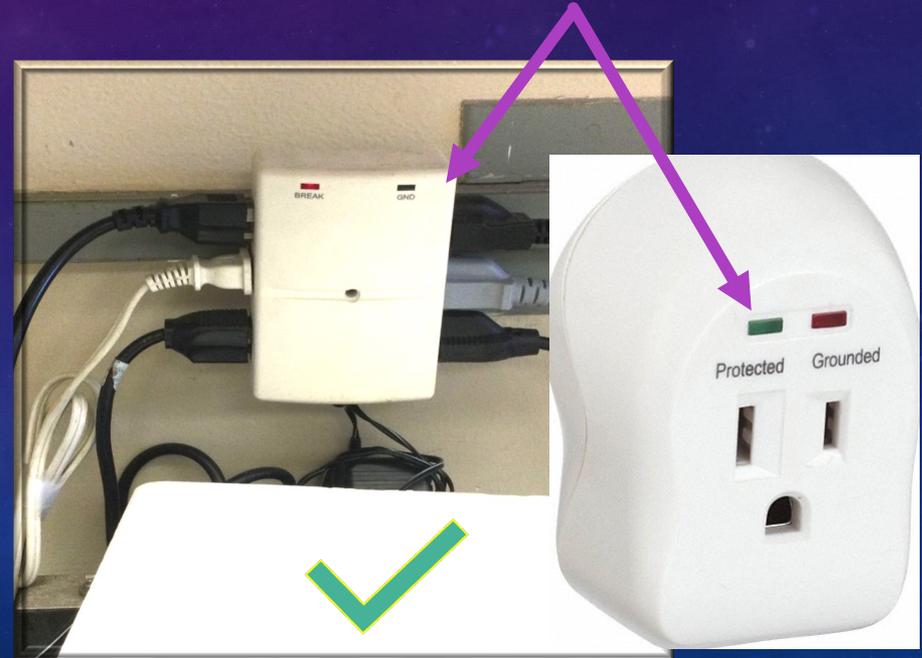


Statement #4 – Additional notes 2

Multiplug adapters that plug directly into the wall socket also have to be surge protected. Therefore, the adapter on the left is not allowed and must be removed. If found by EHS and is not in use, it will be confiscated.



Adapters such as in the picture on the right are allowed as the adapter is surge protected.



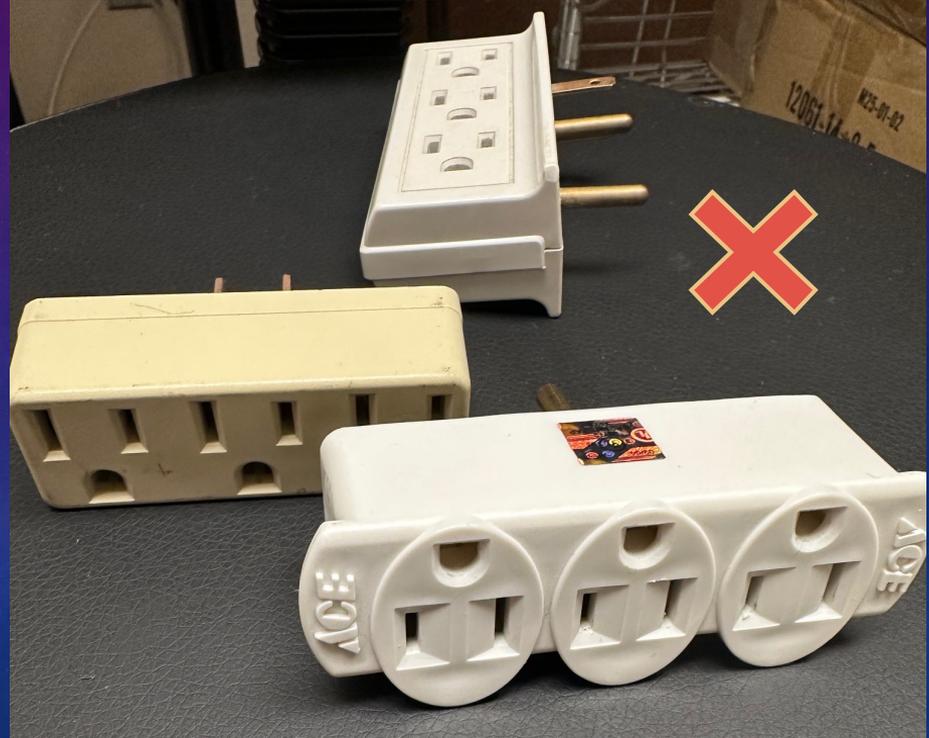
Statement #4 – Additional notes 3

Examples of multiplug adapters that plug directly into the wall socket that are NOT equipped with surge protection.

If found by EHS and is not in use, confiscate them and leave a note for the occupant.

If plugged in, mark their use as non-compliant for this statement.

These are not allowed at SF State workplaces.



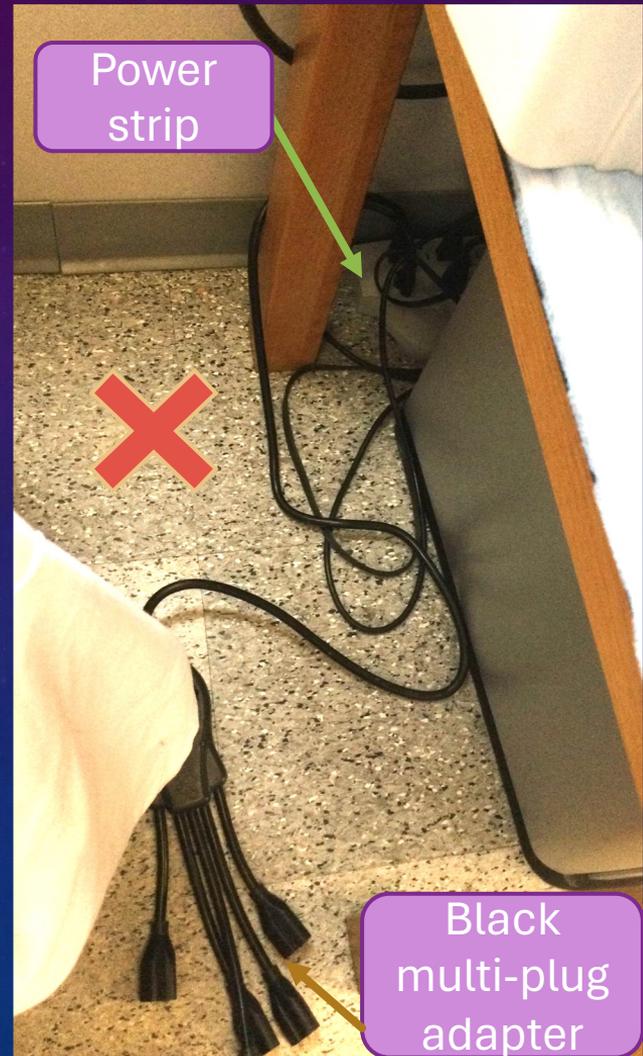
Statement #5

Extension cords, multiple plug adapters, and power strips are not “daisy-chained”.

When looking closely, you can see that the black multi-plug adapter is plugged into another multi-plug power strip instead of directly into the wall.

This is called “**daisy-chaining**” and is not allowed. Plugging in too many things can overload a circuit and cause an electrical fire.

All extension cords must and power outlet strips must be connected directly to the wall outlet— not into another extension cord or power strip.



Power strip

Black multi-plug adapter

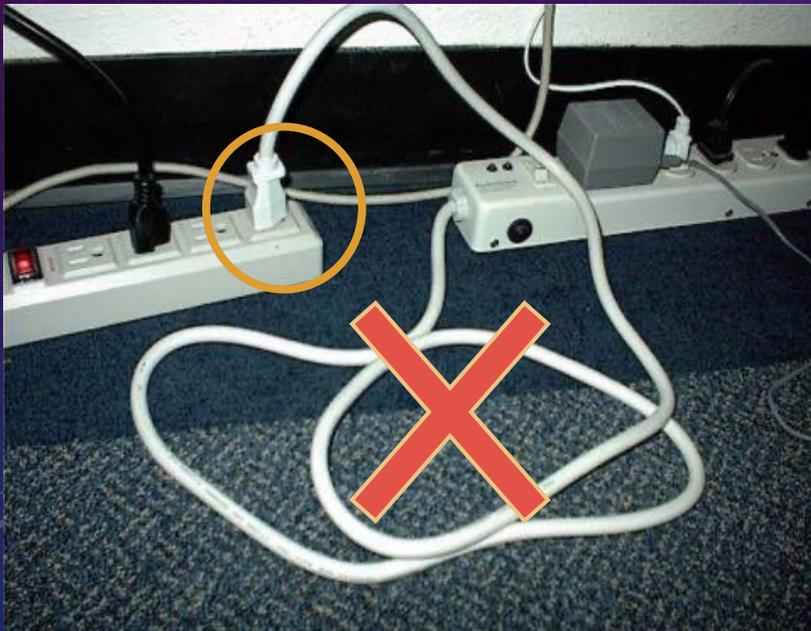
Statement #5 – Additional Notes

One power outlet strip is plugged into another.

Too many power cords are plugged into one standard dual wall outlet. Serious fire risk!



Extension cords plugged into a multiplug adapter (with no surge suppression)

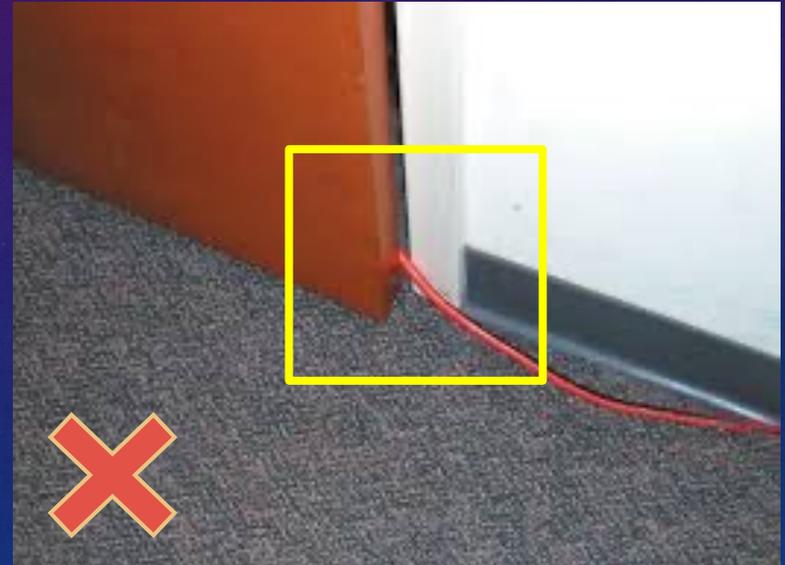


Statement #6

Power cords do not travel under doors, or through pinch points

Check that extension cords and other power cords are protected from damage. For example, This set-up is not allowed as the cord travelling through the doorway is a pinch-point.

Damaged power cords increase the risk of electrocution and electrical fires.



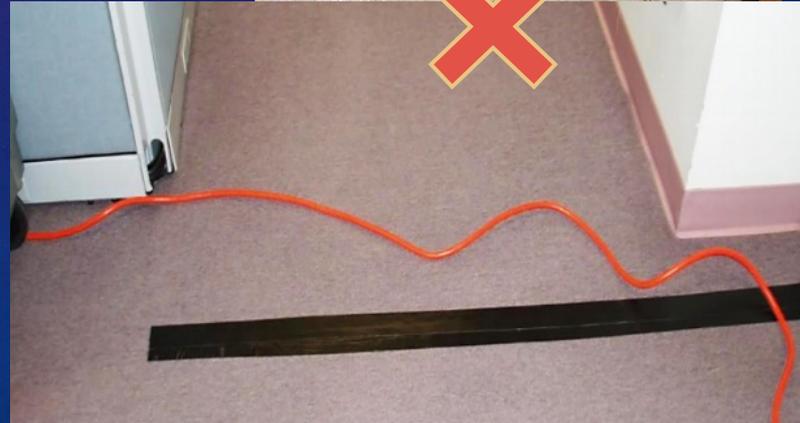
Statement #7

Power cords are not left as a trip hazard on the floor.

Please ensure that cords are not trip hazards by either isolating them to the edges of the room and out of walkways, or putting a protective cover over them.

Note: If a power cord is not there only temporarily, then the lab owner must either relocate the equipment or ask for a new power outlet so the cord won't be in an aisle or doorway.

The cord in this image runs across the middle of the floor, posing a trip hazard.



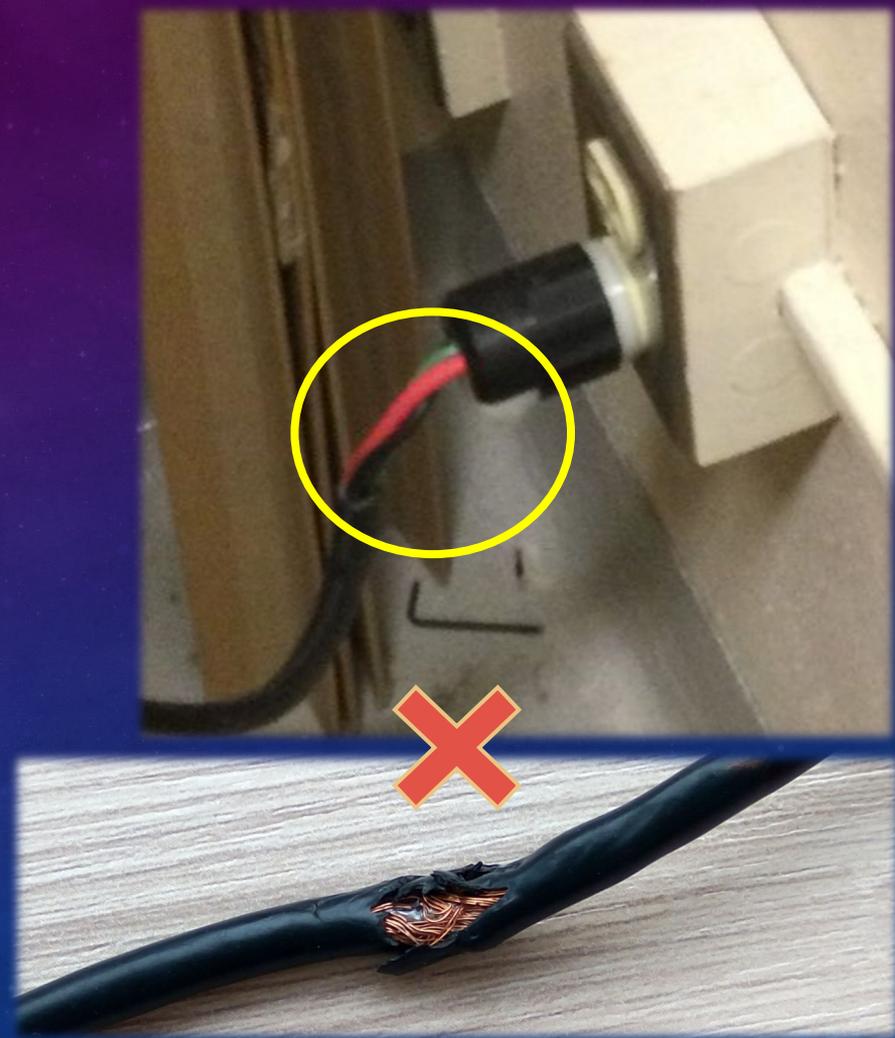
Statement #8

Potentially live, bare electrical wires (conductors), are not left exposed.

In this photo, you can see that the wires of the cord are exposed due to a damaged outer casing.

Remove damaged power and electrical cords from use immediately.

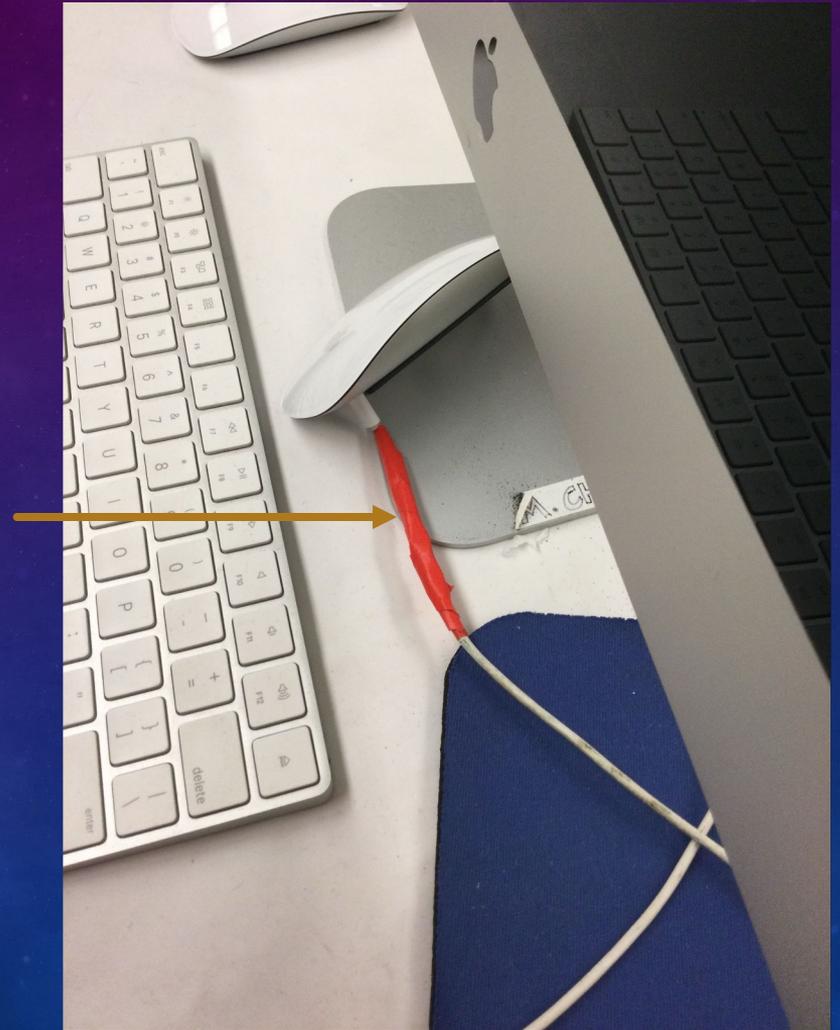
The EH&S office has out of service tags available if equipment is plugged in. Do not unplug equipment that is powered “on”.



Statement #8- Additional Notes

Solutions like this—using electrical tape to cover up or protect a damaged area on a power cord or electrical wire—is not allowed.

Even on a low wattage device, like a mouse, you still need to write it up. The user has to replace the mouse or send it to an electrical repair shop to replace the cord. They can't leave it like this.



Statement #8- Additional Notes

If you see damaged cords or plugs write them up as non-compliance.

If safe to do so AND these are not plugged in, confiscate these items. Leave room occupant a note.



Statement #9

Other

This item is used to report other electrical hazards that do not fit with the other statements in this section.

When you do the inspection, you must check off one of the status options: YES, NO, or N/A

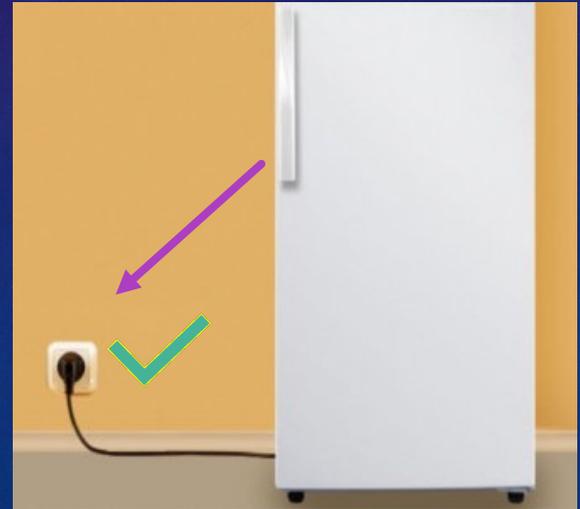
Example: Report signs of an electrical fire or short as non-compliant under “other”.



Statement #9 – Examples of safety issues and “Non-Compliance” not specifically addressed by the other questions.

- Plug that is being abused in a manner that could cause permanent damage or malfunction
- Power cords sitting in pools of water or that are wet
- A household-type light-duty extension cord used to power lab equipment or computers
- An extension cord clearly being used as permanent wiring to reach a distant outlet to power equipment
- Plugging equipment that cycle on and off, such as refrigerators and pumps, into a power strip instead of directly into a wall

[Link](#): Safety - Household light duty extension cords at work



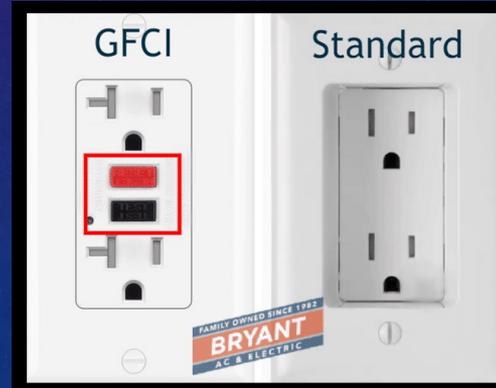
Statement #9 – Use of electric power in wet areas are not specifically addressed in this checklist

Power cords sitting in pools of water or that are wet must be unplugged if safe to do so. This is a safety issue and is non-compliant under “other”.

- Power outlet strips or extension cords used in wet environments MUST be equipped with GFCIs (Ground Fault Circuit Interrupters) to protect people from electrocution hazards.
- Power outlet strips and electrical cords must be of a type intended for wet environments. If you are unsure, mark it as “non-compliant” and select the “required verification” box.



Outlet protected from water



GFCI protection added to a power cord

Statement #9 – Other Electrical Findings

These must be plugged directly into a wall outlet:

- Space heater
- Refrigerator/Freezer
- Water or air pump

If these are plugged into a multi-plug adapter or power strip, this is non-compliant.

Things to consider

Checklist Options



Can mean “good”, “okay”, “in compliance”, “acceptable” “ok but not ideal”



Can mean “unsafe”, “not acceptable”, “not compliant”, “maybe unacceptable, so requires verification”

There are so many unique situations and equipment setups in academic laboratories and activity spaces can't be adequately covered by a handful of safety statements in the INSPECT app.

Often it is a judgement call whether a situation is “in compliance” or not with the language and intent of the checklist statement.

If you have questions or are unsure if your lab is in compliance with standards, please reach out to Environmental Health and Safety (EHS).

Environmental Health & Safety : sfehs@sfsu.edu