

Fact Sheet

Electrical Safety

We use electricity every day, so making sure that your electrical equipment, cords, and outlets are in good shape and being used properly is a vital part of keeping everybody safe in the lab.



Hazards

Electricity is used every day, but we rarely appreciate how dangerous it can be. There are about 70 fatalities per year associated with commercial electrical products – light switches, outlets, extension cords, and other equipment that you might use every day in your lab. An electric shock can cause severe burns, muscle contractions, and may even stop the heart. Wires carrying electricity also generate heat. This can cause fires, burns, and other hazards. Even if your lab does not have high-voltage equipment, electrical safety is important.

Using the Proper Equipment

- Use only UL or industrial/commercial rated equipment. “Residential use” equipment should not be used in the lab unless that is the only type available. The rating will be printed on the equipment, written on the packaging, or on a tag attached to the equipment.
- Do not use outlet adapters (3-prong to 2-prong), as this bypasses required safety features. You also may not remove the grounding prong of plugs.
- Always follow the manufacturer’s instructions for installing all electrical equipment. Make sure you are using the appropriate power in order to prevent overloading circuits. (Example: don’t use a 100 watt bulb in a fixture that says the max wattage is 60 watts)
- Avoid “daisy chaining”, or plugging a power strip into another power strip. This increases the resistance of the electrical circuit, causing more heat to be generated and possibly causing a fire.
- Maintain all equipment in its original approved condition. “Jury rigging” or DIY electrical installations or equipment are not allowed. Cords should not be duct-taped or repaired.
- If you need more outlets, need to move equipment, or would like to tap into electrical panels/circuits (i.e., for a permanent hard-wired installation), work with your department to contact Facilities Management (FM) to get assistance.
- Contact UHS if you have questions about purchasing the correct electrical equipment.

Using Extension Cords Properly

- Place extension cords out of the way so that they are not tripped over, stepped on, rolled over, pinched in doors/windows, or otherwise abused. If you must run a cord through a pinch point, it should be guarded to prevent damage.

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- Don't use extension cords as permanent wiring. If an extension cord will be used for longer than 30 days, work with your department to contact Facilities Management (FM) and look into installing more outlets.
- Don't place extension cords under rugs, mats, or other floor coverings. This may cause them to overheat or become damaged.
- Don't wrap extension cords around posts, table legs, or other furniture.
- Don't knot or tie extension cords together. This stresses the wires, and may result in breakage or heat generation.
- Don't secure or fasten extension cords to any building surfaces such as floors or walls. This includes taping them down.
- Always uncoil extension cords during use. This prevents heat buildup.
- Always use only one extension cord at a time. Never plug an extension cord into another extension cord.
- Don't use an extension cord if it becomes warm or hot during use. This means the cord cannot carry the electrical load properly. You **MUST** get a lower gauge (thicker wire) extension cord. Contact UHS for help choosing proper extension cords.
- Don't use frayed or cracked extension cords. The plug ends of cords can become detached and pull away from the main cord, exposing the inside. Any frayed, cracked or damaged cord must be replaced.



Using Ground Fault Circuit Interrupters (GFCIs) Near Water

GFCIs are devices that reduce the risk of electric shock, as they shut off electrical power when they detect that current is not equal between input and output. This means that current is flowing somewhere it shouldn't, such as through water or a person. The GFCI reacts by shutting down electrical power.



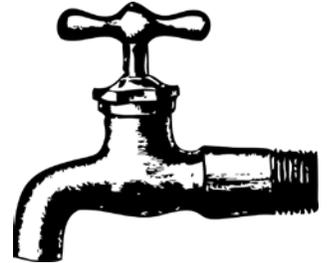
These outlets must be used anywhere that is within 6 feet of water – kitchens, bathrooms, outdoors, garages, and anywhere near a sink. GFCI outlets should be tested monthly by plugging a device into it, turning it on, and then pressing the "TEST" button on the outlet. The device should stop running as power is cut off. Extension cords with a GFCI built in are also available. These are good to use in damp or wet areas.

Avoiding Water and Chemicals

- Keep electrical equipment away from water or wet areas – all electrical equipment should be kept off the ground if there is the potential for water, and they should not be used near sinks/drains. If you need to use electrical equipment in wet or moist conditions, make sure it is properly rated before you use it!
- Keep electrical equipment away from corrosive chemicals and solvents. These can erode the insulation on wires and cords.

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- Don't handle electrical equipment when your hands, feet, or body are wet. This includes sweating, or standing on a wet floor.
- Don't use wet electrical equipment. Be especially aware of this when removing equipment from the cold room. Condensation may cause moisture to be present.
- Don't use electrical devices around flammable vapors (i.e., pouring solvents such as acetone or ethanol). Devices and static-prone textiles (nylon) can cause sparks, igniting vapors.



Working Around Exposed, Energized Conductors and Parts

There are highly specialized training requirements for any person who works with or around parts or conductors that are exposed and energized and greater than 50 volts. This might include people who perform installation, service or maintenance on electrical equipment. This might also include employees who work within 10 feet of overhead power lines or underground installations. Please consult with University Health and Safety if you believe this requirement applies to you or others in your area.

Lockout/Tagout

If your job involves services or maintaining (i.e., installing, setting up, clearing jams, repairing, etc.) machines or equipment which are capable of starting or becoming energized during that work, then you must follow proper lockout/tagout procedures to make sure the equipment is placed into, and remains in a safe state during the work. Remember that specialized lockout/tagout training is required for employees who do this work.

Questions

Contact your Research Safety Professional or the main University of Minnesota DEHS office at (612) 626-6002 if you have any questions about electrical safety. We can help you select the right equipment, provide suggestions on how to arrange your lab to power it safely, and answer any other questions you might have.