

Electrical Safety



ELECTRICAL SAFETY IN THE WORKPLACE

Safety Gram

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Common Lab Equipment Involving Electrical Safety

Working in a lab involves working with heavy machinery. When working with such machinery, it is important to be aware of the potential electrical hazards that can occur from machinery such as:

- Vacuum Pumps
- UV Lamps
- Stir Plates
- Hot Plates
- Centrifuges
- Refrigerators/ Freezers.

Not being cautious around this equipment could lead to electrical accidents resulting in shocks or fires.

Shocks can range from causing mild symptoms such as a faint tingle to severe symptoms such as burns/death. The severity of a shock is dependent upon the duration of exposure and current flow.

Types of Burns:

- **Electrical Burn:** Caused by currents going through the body, cooking tissue and forming channels of dead tissue in and on the body. This can even be caused by low voltage.
- **Arc/ Flash Burn:** Occur at high temperatures from electrical arcs or explosions.
- **Thermal Contact Burns:** Occur when hot surfaces come in contact with skin or when clothing is ignited.

Safety Committee

The purpose of the Chemistry and Biochemistry Department Safety Committee is to help protect researchers, workers, and students in the department.

Please contact us with any questions, concerns, or suggestions about department safety or working conditions.

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Electrical Safety Hazards

Here are some general guidelines to follow when working in a lab that contains potential electrical hazards:

Risk of Electrocution: The risk of electrocution is much greater in wet conditions than it is in dry conditions. To compare, in dry conditions the rate of conductivity is 1mA while in wet conditions it is 120mA.

- **Ground Faults:** Occur when electricity leaks from a current carrying conductor to the enclosure of a piece of equipment. This can lead to a person becoming a part of the circuit. Preventative measures include: grounding circuits, double insulation equipment, and ground fault circuit interpreters (GFCI)
- **Flexible Cords:** These can only be used legally for certain situations. If the product was supplied with a flexible cord that is UL Listed, then it is approved to be used for its intended purpose. It is illegal to use extension cords for situations other than temporary and immediate use. Do not build your own cords.
- **To Protect Cords from Damage:** Don't put rugs on top of cords, fasten doors open when running cords through them, use a protective cover or cord bridge to prevent tripping hazards, don't allow cords to dangle or touch hot surfaces, do not lift a piece of equipment from the cord.
- **Multi-Outlet Cords:** Follow the instructions for how to use these. They could be legally used to power a computer, but it is illegal to cross multi-outlet strips into extension cords. It is also illegal to chain multiple multi-outlet strips together.
- **Visual Inspection:** Always inspect a cord before using it and report any damage on the cord to your supervisor. Don't use chords with damaged insulation, splicing, bare wires, pulled insulation, missing ground pins.
- **When Working with High Voltage Equipment:** Do not work on or near exposed energized areas of 50 volts or higher, unless it is completely necessary and you meet the requirements found in the IRA Fulton College of Engineering Electrical Safety Program. A written plan should be written before working with this kind of equipment and all personnel must be trained properly to handle such equipment.

Real Life Examples

Below are some real life examples from of what could happen if proper electrical safety is not followed.

"A teacher left a heat lamp on to warm a terrarium. The heat lamp was near a bulletin board and the cord was wrapped around the base of the lamp. A short occurred and the papers on the bulletin were set ablaze. The Saturday watchman put out the fire in time. "-Anonymous

"A student plugged in a microscope and the lamp (Swift 900 series) exploded scarring the student and making other students uncomfortable about using anything electrical. Previous students had wrapped the cord too tightly. The soldered connection in the lamp housing short-circuited, clearly a design flaw in a widely used microscope."

-Anonymous