



TDCJ Risk Management's Training Circular

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Electrical Safety Safety isn't Shocking!



Respect the Power of Electricity

Electricity is a strong invisible force that gives power to machinery, lights, heaters, air conditioners, and many other forms of equipment that we have come to depend upon. However, electricity can be very dangerous, too.

Accidental contact with electrical currents can cause injury, fire, extensive damage and even death. It is very important to remember that working with and around electricity requires your full attention and respect.

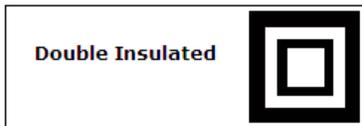
Remember to do your best to avoid making any contact with electricity. Never perform work on unprotected live electrical circuits.



Follow RM-20 "Control of Potentially Hazardous Energy (Lockout/Tagout)" to verify a zero energy state prior to beginning electrical work. Refer to NFPA 70E for information regarding Arc Flash Safety.

Regularly Inspect Your Electrical Tools

Inspect your electrical tools on a regular basis, including the large tools such as table saws, drill presses and bench grinders. Test your equipment first before starting to work. If any tool gives you a slight shock, or smokes and sparks when the power is turned on, don't use it, and notify your supervisor immediately.



Inspect the Power Cord

Check the insulation around the power cord to make sure

it is in good condition. You should not see any exposed wires or frayed ends.

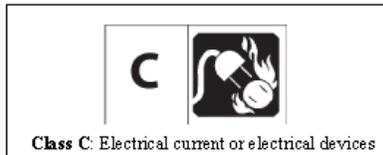
Power cords in poor condition should be replaced, never taped or spliced. Check the plug at the end of the cord to make sure the prongs are secure in the Extension cords are to be used temporarily and never as a permanent source of power to equipment.



Never Throw Water on an Electrical Fire

As mentioned, water and electricity do not mix. In fact, water is an excellent conductor of electricity, and if water is thrown on an electrical fire, it will only spread the fire. Instead, use an appropriate ABC dry chemical fire extinguisher.

Make sure you know how to operate a chemical fire extinguisher and where the nearest one is in case of emergency. If you have questions or have difficulty locating an extinguisher, ask your supervisor for help.



Practice Good Housekeeping

Electrical safety involves more than just ensuring that electrical equipment is in good working order, it also involves ensuring that you can get to the main power source as quickly as possible without climbing over obstructions in the event of an emergency.

Keep the aisles and walkways clean and clear of garbage, and make sure all flammable liquid, such as gases or chemicals, are stored away from the area where any electric tool will be operated. Many electric tools produce sparks, which could ignite the flamma-



ble liquid's fumes and cause extensive damage.

Types of Common Electrical Hazards

Poorly maintained or exposed electrical wiring increases the likelihood of fires and electrical shocks in the workplace. Employee safety is particularly at risk if wiring is prone to accidental contact.

Both the Occupational Safety and Health Administration (OSHA) and the National Fire Protection Association (NFPA) require the insulation and protection of wiring energized at 50 volts or higher if the wiring is equal to or below eight feet off the ground. Both OSHA and NFPA also prohibit direct contact between wires and conductive materials, such as metal or water.

Junction boxes without covers are the most common places to find exposed and hazardous wires. Electricians use junction boxes to connect new installations or extend existing installations.

When energized junction boxes are uncovered, the wiring is vulnerable to damage and accidental contact. If easily combustible materials, such as paper or cardboard, are stored near unprotected energized wiring, a spark or electrical arc could easily start a fire.

Electrical outlets and light switches with broken, displaced, or missing covers may

also expose wiring which endangers any employee plugging in an appliance or turning on a light. Both OSHA and NFPA require that outlets and switches remain covered.



Electrical hazards may also be found in light fixtures. Uncovered fluorescent lights, incandescent light fixtures without bulbs, or light fixtures hanging by wiring are all dangerous. Fluorescent lights have energized wiring, starters, and ballasts under their protective covers. If the light's cover is not properly replaced, these hazards are exposed.

When an incandescent bulb is removed and not replaced, the open socket presents a hazard if it remains energized; and therefore, it is best to



leave the burnt bulb in the socket to cover the electrical contact until the bulb is replaced. Storing items too close to light fixtures poses a fire hazard; and unprotected bulbs within 8 feet or in warehouse operations can be dangerous to those who work near them.

Modular furniture provides electrical power and must protect occupants from shock hazards. Because the furniture has live electrical wiring running through it, it is important to enclose and protect the wiring within each module. Corner and baseboard wiring covers are needed to prevent accidental shock hazard contact and damage to wiring.



Inform Your Supervisor of Faulty Equipment

Contact with electricity does not have to happen if you follow a few simple guidelines. It is very important that you immediately inform your supervisor of any faulty equipment so it can get repaired or replaced. Don't attempt to repair the equipment yourself.

Lock out the equipment or, at the very least, tag it so others are aware that the equipment is damaged. Follow procedures outlined in AD-10.20 for state owned units and facilities or the Office of Space Man-



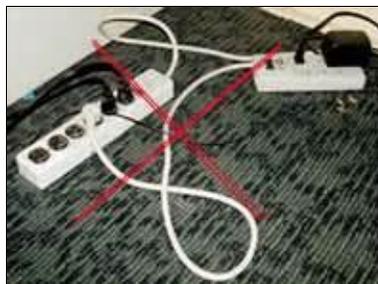
agement (OSM) Tenant Manual to report and deficiencies.

Common hazards that can be identified through a comprehensive inspection program may include:

Check electrical outlets for loose fitting plugs that can cause shocks or start fires. Replace missing or broken wall plates so that the inner wiring components are not exposed.

Inspect all outdoor connections, appliances and tools for frayed cords, broken plugs and cracked or broken housings.

Extension cords should be used on a temporary basis only. They are not a permanent wiring solution. Have ad-



ditional outlets installed where you need them.

Check your electrical panel to make sure that the breakers and fuses are properly rated for the circuit that they are protecting. If you do not know what the correct rating is, have a qualified electrician identify and label the correct size to be used.



Check light bulbs and appliances to make sure the wattage matches fixture requirements. Make sure not to replace bulbs with those that have higher wattage than recommended. Additionally, the bulb should be screwed in securely to prevent overheating.

If an appliance repeatedly blows a fuse, trips a circuit breaker or gives you an electrical shock, immediately unplug, repair or replace it.

Check for or install ground fault circuit interrupters (GFCIs). A GFCI is an inexpensive electrical device that shuts off power instantly if there is a problem. GFCIs

should be installed in all "wet" areas such as bathrooms, kitchens, and basements. GFCIs should be tested monthly to ensure they are working properly.



Space Heaters

Colder temperatures often prompt the use of portable space heaters. The National Fire Protection Association (NFPA) 101 Life Safety Code prohibits the use of portable space heaters in correctional/detention occupancies. Other administrative areas should exercise caution when using space heaters.

Purchase only space heaters that have been safety tested and UL approved. Make sure the unit is equipped with an emergency tip-over shut-off feature and heating element guards. Read and follow all of the manufacturer's instructions for operation and care.

Check to make sure the heater is clean and in good condition, and have all problems professionally repaired.

Do not overload circuits.

Never use extension cords or multiple plugs with a space heater, and make sure the unit is not plugged into the same circuit as other electric appliances.

If your space heater is plugged into a ground fault circuit interrupter (GFCI) and the GFCI trips, don't assume there is something wrong with the GFCI. Immediately stop using the heater until it can be checked by a professional— if not, a serious shock or fire could occur.



References

U.S. Congress and the Legislative Branch Office of Compliance <http://www.compliance.gov/wp-content/uploads/2010/08/Exposed-Energized-Wiring-Fast-Fact-Feburary-2010.pdf>

Texas Department of Insurance Division of Worker's Compensation <http://www.tdi.texas.gov/pubs/videoresource/essielecsafe.pdf>

Safe Electricity. <http://www.safeelectricity.org/>



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