



June 2012 Safety Topic of the Month

Electrical Safety

Electricity travels in closed circuits, normally through a conductor. But sometimes a person's body, an efficient conductor of electricity, mistakenly becomes part of the electric circuit. This can cause an electrical shock. Shocks occur when a person's body completes the current path with:

- both wires of an electric circuit;
- one wire of an energized circuit and the ground;
- a metal part that accidentally becomes energized due, for example, to a break in its insulation; or
- another "conductor" that is carrying a current.

When a person receives a shock, electricity flows between parts of the body or through the body to a ground or the earth. An electric shock can result in anything from a slight tingling sensation to immediate cardiac arrest. Dry skin has a fairly high resistance to electric current. But when skin is moist or wet, it acts as a conductor. This means that anyone working with electricity in a damp or wet environment needs to exercise extra caution to prevent electrical hazards.

Proper operation and maintenance of electrical equipment reduces the risk of electric shock.

- Extension cords are for temporary use only and are not rated for use as permanent wiring. Extension cords may not be run across aisles, through doors, windows or ceilings and may not be attached to surfaces.
- Do not plug several power cords into each other ("Daisy Chains") or several plug adaptors into each other ("Christmas Trees").
- Do not disconnect a power supply by pulling or jerking the cord from the outlet as this causes wear and may cause a shock. Equipment with damaged cords or wiring must be repaired or the equipment taken out of service.
- Refrigerators, space heaters, air conditioners, toaster ovens and microwaves should not be plugged into power strips as typical power strips are not rated for this type of load.
- Never break off the third prong on a plug. Replace broken three prong plugs and make sure that the third prong is properly grounded.
- Electrical outlets within six feet of a water source must have ground fault circuit interrupter (GFCI) protection.

Discussion Topics

- 1) Review extension cord use. Eliminate unnecessary cords and contact Facilities Services to have additional outlets installed if necessary. Drops can be installed from the ceiling where needed for central work areas.
- 2) Verify that outlets in damp or wet locations such as near sinks and aquariums are GFCI protected. Contact Facilities Services to have GFCI installed if necessary.
- 3) Inspect all electrical equipment prior to use and verify that all cords and plug ends are intact. Any equipment with frayed or damaged wiring should be repaired or taken out of service (tag as out of service to prevent reuse).
- 4) Inspect the workspace for electrical issues or request an inspection by the EHS office.

References

Occupational Safety and Health Administration (OSHA) 3075 – Controlling Electrical Hazards
<http://www.osha.gov/Publications/3075.html>

Canadian Centre for Occupational Health and Safety (CCOSH) Electricity Safety – Basic Information
http://www.ccohs.ca/oshanswers/safety_haz/electrical.html

National Institute of Occupational Safety and Health (NIOSH) - Electrical Safety: Safety and Health for Electrical Trades Student Manual - <http://www.cdc.gov/niosh/docs/2009-113/pdfs/2009-113.pdf>

Congressional Accountability Office of Compliance Fast Facts “Temporary Extension Cords and Power Connectors Should Not Be Used for Permanent Wiring” <http://www.compliance.gov/wp-content/uploads/2010/08/Temporary-Extension-Cords-Fast-Fact-January-2010.pdf>