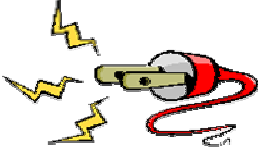


Electrical Hazards

The greater hazards related to electricity are electrical shock and fire. Electrical shock occurs when the human body becomes part of the electric circuit, either when an individual comes in contact with both wires of an electrical circuit, one wire of an energized circuit and the ground, or a metallic part that has become energized by contact with an electrical conductor.



The hardness of an electrical shock depend on a number of factors, including the pathway through the body, the amount of current, the duration of exposure, and whether the skin is wet or dry. Water is a good conductor of electricity, allowing current to flow more easily in wet conditions and through wet skin. The effect of the shock may range from a slight tingle to severe burns to cardiac arrest. Table below shows the relationship between the degree of effect and amount of current for a 60 Hz hand-to-foot path of one second's duration of shock.

Current	Reaction
1 mA	Perception level
5 mA	Slight shock felt; not painful but disturbing
6-30 mA	Painful shock; “let-go” range
50-150 mA	Pain, respiratory arrest, muscular contraction
1000-4,300 mA	Ventricular fibrillation
10,000+ mA	Cardiac arrest, severe burns and probable death

Preventing Electrical Hazards

There are various ways of protecting people from the hazards caused by electricity, including insulation, guarding, grounding, and electrical protective devices. Laboratory workers can significantly reduce electrical hazards by following the following precautions:

- Avoid contact with energized electrical circuits.
- Disconnect the power source before servicing electrical equipment.
- Avoid handling electrical devices that are plugged in.
- If water or a chemical is spilled onto equipment shut off power at the main switch or circuit breaker and unplugs the equipment.
- If an individual comes in contact with a live electrical conductor, do not touch the equipment, cord or person. Disconnect the power source from the circuit breaker.
- For students in the power lab, do not operate the equipment unless your TA approves your connection.