Lesson 0
Safety

EET 150

Lesson Learning Objectives

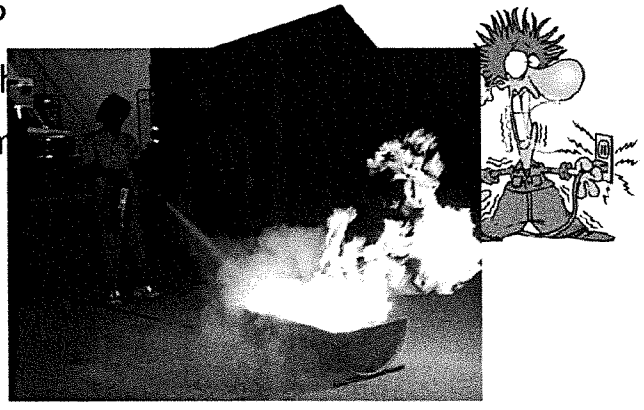
- After this lesson you will be able to:
- Identify codes and standards that relate to electrical/electronic safety.
- List typical safety hazards found in electronics labs.
- Describe the physiological effects of electric shock.
- Explain what a Lock out/Tag out procedure is.
- Explain the difference between arc flash and blast.
- Identify the proper fire extinguisher for use in different types of fires.

Codes and Standards

- National Fire Protection Association (NFPA)
  - Publishes National Electrical Code
- American National Standards Institute (ANSI)
- Occupational Safety and Health Administration (OSHA)
- National Electrical Manufacturers Association (NEMA)

Lab Safety

- Legs of Integrated Chips (IC)
- Powe r short)
- Eye P
- Fire/
- Chem



Electric Shock

- **1 mA Threshold of feeling, tingling sensation.**
- **5 mA Accepted as maximum harmless current**
- **10-20 mA Beginning of sustained muscular contraction ("Can't let go" current.)**
- **100-300 mA Ventricular fibrillation, fatal if continued. Respiratory function continues.**
- **6 A Sustained ventricular contraction followed by normal heart rhythm. (defibrillation). Temporary respiratory paralysis and possibly burns.**

Lock Out Tag Out

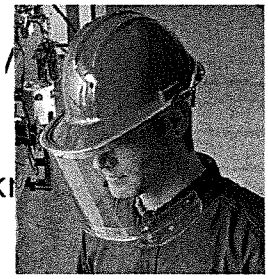
- Importance of policy
- Good communication skills
- Grounding circuit or cage

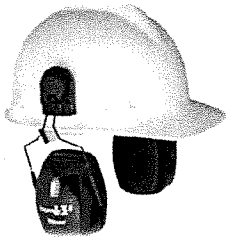
Arc Flash and Blast

- Flash is a discharge of electricity from one connection to another causing a flash that can burn and blind.
- Blast is when the air around the equipment is ionized and conductive
- Use protective gear when working around such areas (shields, clothing, blast walls)

Personal Protective Equipment (PPE)

- Hard Hats (with or with out shield)
- (
- H
- S
- F
- Back support and kn
- Rubber mats





Basic First Aid

- Call 911 or Safety Supervisor
- Shock- lack of blood or oxygen
- Bleeding
- Burns and Scalds-flushing stations
- Choking
- Heat exhaustion and heat stroke
- Poisoning

Electrical Safety Procedures

- Identify the work environment
- Use lock out tag out
- Determine if shielding is needed
- Wear proper protective gear
- Let others know what you are doing
- Know locations of fire and first aid supplies

Fire Protection

- Fire Blanket
- Fire Extinguishers
  - Class A ordinary combustibles
  - Class B Flammable liquids
  - Class C Electrical Equipment
  - Class D Combustible metal
  - Class K Commercial cooking grease

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END LESSON 0 SAFETY