

DESIGN CRITERIA FOR EMERGENCY POWER SHUTDOWN OF EXPERIMENTAL EQUIPMENT

The requirements for Emergency Power Shutdown of Experimental Equipment should be commensurate with the hazards this equipment presents to our facility and personnel. In general, the hazards presented by experimental equipment can be characterized by three classifications:

Low Hazard

Usually, a small experimental setup with small amounts (volumes and flow; e.g., < 1ft³/h) and moderate flammable material. The consequences of a fire should be generally limited to the experiment. No serious personnel hazards.

Actions to Take

1. Essentially none. Ensure the removal of power is self-evident; that is, it is clearly posted that persons are to remove plugs or throw disconnects.

Moderate Hazard

An extended experiment with large amounts of power, possibly many power sources, and large amounts of flammable material, but with moderate amounts of flammable gases. No serious explosion hazards or lethal threats to personnel. Limited fire hazard to surrounding facility.

Actions to Take

1. Identify and label power sources.
2. Identify the location of power sources if not self-evident at experiment entrance.
3. Provide this information to F&ES Watch, experiment, and at all experiment entrances.

High Hazard

An experiment where there is a possible explosion or implosion hazard resulting from a one or two failure sequence, a lethal threat to personnel, or a serious fire hazard to our facility. These experiments usually contain large amounts of flammable gases or flammable gas or liquid targets.

Actions to Take

1. Identify and label all power sources.
2. Provide for automatic disconnect of power sources to critical equipment. Note: this may NOT be all power.

3. Identify the location of all power sources. Provide this information to F&ES Watch, experiments, and at all experiment entrances.
4. Determine and institute the automatic and manual actions to be taken to mitigate the possible failure nodes.