Lead-acid batteries contain sulfuric acid and can generate hydrogen gas when they are being charged. Hydrogen gas is a very reactive which can ignite with heat. Sulfuric acid is a strong corrosive acid that can cause severe burns.
Improper charging can cause batteries to explode and cause serious injury. The following measures explain how to control these hazards.

Battery Storage

Lead-acid batteries that are not in use should be stored in spill containment (such as plastic trays). Batteries should not be stacked on top of each other.

For consultative advice on battery-charging areas, the following EH&S Specialists are available:
Laboratory/Research Areas – Brenda Coolbaugh, Lab Safety Specialist at blc32@cornell.edu
Shop/Industrial areas – Greg Smith, Industrial Hygienist at gjs25@cornell.edu or Lyndsey Beaudin, Safety Specialist at leb255@cornell.edu

Battery Charging Area Requirements

OSHA Requirements (1 – 5)

1) Prohibition of smoking in areas with ignitable vapors Cornell University policy 2.3 prohibits smoking in all of its facilities. Other ignition sources such as Bunsen Burners, welding and gas cutting, or equipment that may spark may not be used in the charging area. Post a 'No Smoking sign' in battery charging area.

2) Eyewash accessibility within 25-feet. An eyewash unit is required when corrosive liquids are handled. Eyewash & Safety showers are recommended when electrolyte levels are being checked or water is being added. Please consult Cornell's guidelines for Eyewash & Safety showers for further information.

3) Proper Ventilation - When charging lead-acid batteries, adequate ventilation is crucial. The EHS Specialists listed above are available to assess ventilation concerns.

4) Personal Protective Equipment (PPE) when charging
Personnel charging lead-acid batteries need to wear the following PPE:

- -Double eye/face protection – safety glasses or safety goggles and a face shield
- -Rubber or poly apron
- -Gloves (butyl rubber or neoprene type)

5) Fire extinguisher

A fire extinguisher that is properly rated for the area, a BC-type to handle chemical & electrical fires should be accessible in the battery charging area. Contact EHS at 255-8200 to request a fire extinguisher.

EH&S Best Practice (6-7)

6) Work Practices

- Read, understand, and follow all instructions for the charger and battery
- Never lean over the battery while boosting, testing, or charging
- Keep vent caps tight & level
- Assure ventilation is flowing
- Notify others in the area of what you are doing
- Remove all jewelry
- Properly connect charger clips Positive (red) charger clip to Positive (Pos, P +) post of battery then connect Negative (black) charger clip to the Negative (Neg, N, -) post of the battery, then plug in and turn on charger.
- When battery is fully charged, turn off charger and disconnect the charger in reverse order of connecting procedure.

7) Spill Countermeasures

In the event of a spill in the area, a spill kit should be accessible with appropriate materials for clean-up. Only use this material if you are comfortable with cleaning up a spill. Consult chapter 5.0 of the Laboratory Safety Manual (sub-section 5.4.3 specifically) for spill clean-up procedures and material list for spill clean-up. EHS is also available and staffed 24/7 for spill response, contact Cornell police at 255-1111 for on campus facilities.

Battery Disposal

Lead Acid Batteries are required to be recycled per NYS Department of Environmental Conservation (NYSDEC). If you do not already have a properly maintained battery charging area as outlined above, you may want to turn new, used, or spent units in for recycling. Cornell R5 can pick up your batteries free of charge and assure they are properly recycled. Contact R5 Operations at 255-1666 or email recycle@cornell.edu.