**ECHE 362, Senior Laboratory**

**Fall 2015**

**Safety – General Comments**

1. No experiment is foolproof.

2. Even if you aren’t a fool – things can and do go wrong. Preparation is your best defense.

Hazards in the Laboratory:

For each experiment you will learn about its specific hazards and how to handle them. However, there are three items of overall concern you should always be aware of.

1) Fire: there are flammable gasses (alcohol vapor, H2) and liquids (alcohols) in use all the time. There are also heaters and/or steam in use, so there are hot surfaces that can be potential sources of ignition, and pure oxygen or pressurized air is present as well.

* Exits – main door, through the computer lab or through Craig’s shop – preplan your escape route - make sure nothing blocks these doors.
* Fire extinguishers *(by main door and by the shop)*
* Safety shower/blanket *(shower in hall just outside lab, blanket by door)*
* Fire call box (*two in the main hallway, by the exit doors*)
* Phone – 368-3333 for fire/medical emergency, (*Craig’s office / cell phones*)
* No open flames/no smoking at any time

2) Chemical Spills/Burns – Liquids - distillation has a boiling pot of alcohols, and the CSTR/PFR uses a caustic solution. Heat exchange has steam and hot fittings which can burn, the fuel cell, methanol reformer and distillation column are also hot.

* Wear appropriate gloves, eye protection and lab coats
* Spill control, use sodium bicarbonate to neutralize acid spills, boric acid to neutralize caustic spills
* Eyewash (*at sink*)
* First Aid kit (*by sink*)
* Do not dispose of chemical waste in the sink!

3) Compressed Gasses: The fuel cell, reformer and gas membrane experiments require high pressure compressed gas cylinders. All compressed gasses can be dangerous, even those that are not flammable or toxic. Inert gasses (e.g., nitrogen) act as asphyxiates, and a ruptured cylinder or gas line can cause considerable physical damage.

* Make sure cylinders are properly chained in place and never move a cylinder with a regulator attached to it.
* Close main valve on cylinders that are not in use.
* Keep delivery pressures as low as possible to minimize leaks.

General Safety Reminders:

Phone numbers to know:

Safety Services: 368-2907 Campus Police: 368-3333

Clothing:

Do wear lab coats and safety goggles. Don’t wear open toed shoes, or shorts.

No Food or Drink in the Lab Don’t wear contact lenses