

**AguaClara**

2016-2017 SAFETY PLAN

*Safety Officers*

SUBHANI KATUGAMPALA, sfk48

## **Table of Contents**

I. General Safety and Training .....	3
II. Safety for Specialized Tasks .....	4
III. Communication of the Safety Plan .....	5
IV. Enforcement of Safety Protocol .....	5
V. Travel Guidelines for Events/Competitions .....	6
VI. Chemical List and Safety Data Sheets.....	7

## **I. General Safety and Training**

All project team members will attend the general College of Engineering safety program training. Additionally, all fabrication-based teams must attend tools training provided by the manager of the CEE Shop, Tim Brock. Failure to do so will result in mandatory attendance of makeup sessions.

- a. General Office Safety
  - i. Power cords should be placed out of the way to prevent risk of falling.
  - ii. All drawers should be kept closed.
  - iii. Chairs will be pushed in and benches will be kept clean.
  - iv. No liquids should be placed near computers or power strips.
- b. General Lab Safety
  - i. Eye protection will be worn when there are potentials of hazards from flying objects or particles, chemicals, arcing, glare, or dust. As a precaution, everyone working in the AguaClara lab (Hollister B60) will be required to wear protective eye wear, regardless of whether or not they are operating tools.
  - ii. Protective footwear shall be worn to protect from falling objects, chemicals, or stepping on sharp objects. Open-toed shoes shall not be worn.
  - iii. Protective gloves or clothing shall be worn when required to protect against a hazard. This is especially true for use of the PVC welder.
  - iv. If any part of your body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately.
  - v. Do not distract the attention of fellow members. Do not engage in any act which would endanger another person.
  - vi. Do not use power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them.
  - vii. Absolutely no food or drink is allowed in the general lab area.
  - viii. Know what emergency procedures have been established for the lab (location of emergency phone, first aid kit, fire extinguisher locations, evacuation plan, etc.). In the case of emergency, contact Cornell police at (607) 255-1111
- c. General Housekeeping
  - i. All stools should be kept under workstations and keyboards should be collapsed and not protruding into the aisles.
  - ii. Tools and materials should be returned to the proper locations after use. Workstations should be kept clear.

- iii. Any PVC or wood shavings should be cleared off workbenches and disposed in the trash.

## **II. Safety for Specialized Tasks**

1. In order to receive access to the specialized tools in the AguaClara lab and complete access to the CEE workshop, all students must undergo training by Tim Brock. These training sessions will show safe procedures to follow when operating the machinery.
2. For the tools in the AguaClara lab, there will be a Safety Operating Procedure manual associated with each tool and can be found near the tool. To ensure that these procedures are properly followed, all students must work in pairs when operating the tools. Both students should be properly trained and uphold the guidelines in the manual.

### **PVC Welder**

1. Students must work in groups of at least 2 people to operate the PVC welder.
2. Protective eyewear and gloves must be worn by everyone participating.
3. Welding should only occur in the designated location. The welding surface should be clear of paper and other extraneous material.
4. The PVC welder should not be allowed to sit on any surface during any point of operation.
5. No other wires should be plugged into the same power strip as the PVC welder.
6. After used, the PVC welder should be allowed to cool down before putting it away.
7. Once cooled down, the PVC welder should be placed back inside the box. Under no circumstances should any individual leave the PVC welder on the table.
8. In case of emergency, the lab monitor should be immediately contacted. The lab monitor should direct the affected individual(s) to the proper protocol. The lab monitor should address the situation and make sure both the faculty advisor and Rebecca Macdonald are immediately contacted and aware.

### **Chemicals**

1. All chemicals should be properly labeled with
  - a. Name of chemical
  - b. Name of person responsible
  - c. Contact information of person responsible
2. Chemicals should be placed in closed containers.
3. Chemicals safety hazards and associated precautions are listed in the SDS in the chemical drawer.
4. In case of emergency, a student should immediately consult the proper SDS and proceed with the safety measures listed. If using any chemicals that could cause burns or rashes, wear gloves. If

any body part comes into contact with a harmful chemical, use the nearest water supply and apply the appropriate medical solution immediately.

5. Chemicals should be disposed of properly. If the chemical is nontoxic and has no potential hazards in water, the chemical can be poured into the sink. If the chemical is hazardous, dispose the chemical into a closed container labeled hazardous waste. This container will be picked up by the appropriate representative to ensure proper disposal.

### **Tools and Sharps**

1. All tools have an associated Standard Operating Procedure printed on the side of the tool box and the side of the larger tools. These can also be found on the AguaClara website:  
<https://confluence.cornell.edu/display/AGUACLARA/Safety>
2. Any sharps that must be disposed should be placed in the cardboard box labeled “Sharps” located near the entrance of the lab.

### **III. Communication of the Safety Plan**

1. This safety plan and all associated safety materials will be shared with all members of the team and be available in the AguaClara lab for student reference.
2. Additionally, the safety plan will be placed on the AguaClara website along with the Safety Operating Procedures of the other tools. These can be found by visiting  
(<https://confluence.cornell.edu/display/AGUACLARA/Safety>)
3. To ensure that the safety manual is read by all team members, an online safety quiz will be administered within the first week of the program.
4. All issues must be reported to the lab monitor and the team’s Research Advisor, who will in turn contact the faculty advisor, Monroe Weber-Shirk.

In the event of an injury regardless of severity, the safety officer(s) will notify Rebecca Macdonald, the Swanson Project Team Director, immediately.

### **IV. Enforcement of the Safety Protocols**

1. The student safety monitor for AguaClara this semester is Subhani Katugampala. She will be responsible for appointing a safety monitor during each lab session who will ensure that all students are following the safety plan.
2. All team members are responsible for enforcing the safety protocol. If any infractions are cited, they should be dealt with according to the repercussions listed in item 4.

3. At all times when the lab is populated, there will be a Research Advisor hosting lab hours. The purpose of these lab hours will be to offer support to team members, but will additionally serve as safety monitors. They will tour the lab during their assigned times and make sure that all members are following proper safety procedures. In the event of infractions, the safety monitor will issue a verbal warning. If the safety monitor notices other infractions when a team isn't present in the lab, the monitor will leave a note and ask the team to address the issue immediately.
4. Repercussions of infractions are as follows.
  - a. After the first infraction, a verbal warning will be given.
  - b. After the second infraction, the member will be asked to read the safety manual and meet with the safety monitor to communicate their mistake.
  - c. After the third infraction, the member will have card access removed temporarily until they demonstrate they understand their wrongdoing and make a commitment to never doing the same infraction again.

## **V. Travel Guidelines for Team Events/Competitions**

1. For competitions and team events, most specifically the EPA competition in the Spring, in the event that transportation is provided, students with valid driver's license and approval from Cornell University will be used to transport other students. These students will need to fill out the required forms to authorize the transportation of other students. To make sure students are approved by Cornell University, fill out the appropriate forms that can be found on the Project Team blog website (<http://blogs.cornell.edu/engineeringprojectteams/google-forms/>). The vehicles that will be used are either the Project Team Fleet Van or Cornell University vans.
2. Personal vehicles will not be used. In the event that there are no Cornell University vehicles available to use, if personal vehicles are used, Cornell University is not liable for anything. If driving a personal vehicle: Driver History Questionnaire, Hold Harmless Form, and a letter identifying that they take responsibility for their vehicle and those in who choose to ride in it. They should also agree to make those in the vehicle aware that the driver is not covered by Cornell insurance.
3. For competitions and team events in which transportation is arranged, students will need to complete the required forms to ensure they will stay with the group and behave accordingly. This means that a buddy system should be enforced. No team member should stray from the group at any time. Students should keep in mind that they are representing Cornell University, and should behave accordingly.
4. All travelers must complete the Cornell University "Hold Harmless Release Agreement". Copies of the form should be left with academic department administration prior to the trip and responsible team member should take copies of the form on the trip as it includes emergency contact information.

5. In the event of rough weather conditions, travel will be limited and/or reconsidered. Final decisions will be made by Monroe Weber-Shirk and Rebecca Macdonald.

## **VI. Chemical List and Safety Data Sheets**

1. The safety monitor will be responsible for seeing that all containers coming in are properly labeled. Each shall be responsible for seeing that all portable containers used in their work areas are labeled with identity and hazard warning.

a. All labels shall be checked for:

- i. Identity
- ii. Hazard
- iii. Name and Contact Information of responsible party

2. The safety monitor will be responsible for compiling the master SDS file. It will be kept on site in the AguaClara lab.

a. Copies of SDSs for all hazardous chemicals to which employees may be exposed will be kept in the chemical drawer.