Safety Manual

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Purpose:

The purpose of this manual is to provide and document safety guidelines for Team 1595 in order to maintain a safe and productive work environment.

Responsibilities:

As a member of Team 1595, you are expected to:

- Be familiar with this manual, as well as understanding and following all safety requirements for the area you are conducting work within.
- Work in a responsible and safe manner.
- Use safeguards, PPE, and other safety equipment when appropriate.
- Report all safety concerns to an adult mentor or student safety captain.
- Encourage safe behavior in those around you.
- Follow all regulations during events and when at event venues.
- Follow all SOP's, notices, and safety placards with in the 1595 shops.

As an adult mentor of Team 1595, you are expected to:

- Lead by example.
- Encourage safe behavior
- Correct and/or remedy unsafe behavior
- Provide training for use of equipment
- Maintain SDS's
- Support student safety captain
- Help student safety implement changes to the safety program
- Reinforce programs implemented by student safety captain

As a student safety captain, you are expected to:

- Provide safety training for the team
- Develop and maintain a team safety manual
- Be able to answer safety questions posed by your team members
- Know where to find all SDS's
- Encourage all team members to wear PPE
- Know where all PPE is stored
- Be familiar with all equipment and their SOP's

Personal Protective Equipment (PPE):

Appropriate PPE is required at all times both for members of Team 1595 and visitors.

Eye Protection:

Eye protection includes safety glasses, safety goggles, and side shields for approved prescription glasses. Eye protection does not include face shields, non-rated prescription glasses, or sunglasses. All eye protection and prescription glasses must meet or exceed ANSI Z87.1 or CSA Z94.3 standards. Eye protection must not be shaded unless required for the activity being performed.

Eye protection must be worn at all times within the 1595 shop, while using power tools or equipment (See individual SOP's), in the pits and on the field at FRC competitions, while performing any activity that may create flying debris that could strike eyes, and while handling any chemicals.

Hand Protection:

Hand protection may be required when performing certain activities. The type of glove varies based on the activity. For Example, when handling spilled chemicals, including damaged/leaking batteries, chemical-resistant gloves must be utilized. Gloves should not be worn while using machines like the lathe, as gloves can be sucked in by spinning parts. See the SOP for the machine you are using to determine the proper PPE required.

Foot Protection:

Appropriate foot protection must be utilized at all times in the 1595 shop, when working on the robot, and at all FRC competitions. Shoes must be substantial and have closed toes and heels to prevent foot injuries. Flip-flops, slippers, sandals, slides, mules, etc. are not appropriate.

Hearing protection:

Hearing protection should be worn when using equipment that generates sounds over 85 decibels, if the cumulative sound in the shop is over 85 decibels, or if it is required as part of a tools SOP. Hearing protection includes earmuffs and/or earplugs. A general rule of thumb is that if you have to raise your voice to speak to someone 3 feet away, you need to be wearing hearing protection.

Other attire requirements:

While working in the shop, on the robot, or using any power tools:

- Long hair must be pinned or tied back.
- No loose hanging jewelry in the shop. Only earrings and watches are allowed.
- Loose hanging clothing is not permitted
- Strings on hoodies must be tucked in or removed

General Safety:

- Obey all safety notices, SOP's, and placards in the shop
- Always be aware of your surroundings
- Wear all PPE when applicable
- Always maintain complete control of the robot when working on and driving it
- Encourage safe behavior in those around you
- Be familiar and trained with all equipment you are using
- Know where the battery spill kit, first-aid kit, and PPE is stored within the 1595 shop
- Before working on the robot, disconnect and remove the battery
- Before working on the robot, properly discharge any loaded springs, pneumatics, and all other non-electric power sources
- Use your best judgement

Competition Safety:

When the team is at any FRC competition, all team members need to know the location of the following areas in the pits:

- The closest the fire extinguisher to their pit
- Pit Admin Station
- EMT Station

When working with the team pit:

- Follow all general safety rules
- Follow all other rules outlines in the manual
- Do not overload power strips
- Properly store unused tools and equipment
- Always wear proper PPE when applicable
- Teams carrying/transporting robots have the right of way on the walkways
- Lift the robot with your knees, not your back

Note: Children under the age of 12 must be accompanied by an adult (18+) at all times within the pits

Battery Safety:

DANGER: Batteries contain sulfuric acid which WILL burn skin on contact and cause irreversible eye damage.

Any battery that is damaged should immediately be taken out of service and disposed of properly. The batteries used by Team 1595 contains both sulfuric acid. This chemical is extremely hazardous to the body. It will burn skin and eyes on contact and cause serious damage to lungs if inhaled. While these batteries are designed not to leak acid, the following are guidelines on what to do with a damaged battery both in the shop and at competitions if leakage occurs. If a battery is damaged but does not leak, it still needs to be disposed of properly.

Note: Please familiarize yourself with the location of the battery spill kit.

If a battery breaks/spills:

1. Immediately flush any skin that contacts acid toughly with water
    a. If acid comes in contact with eyes, use emergency eyewash station
    b. If acid comes in contact with large area of skin/clothes, use emergency shower
2. Treat any injuries from the event, e.g., chemical burns or eye contamination
3. Find the nearest adult (alert pit administration if at a competition)
4. Clear the area of bystanders
5. Obtain battery spill kit
6. Put on goggles and chemical resistant gloves
7. Pour baking soda on battery until any fizzing or bubbling has stopped.
8. Place battery in plastic case to protect area from further exposure
9. Pour baking soda on any spilled acid until fizzing and bubbling stop to neutralize
10. Clean with water and baking soda using spill towels located in spill kit
11. Double bag all cleaning materials
12. Allow the adults or pit administration to dispose of battery and contaminated cleaning materials

Stored Energy:

Many forms of energy are utilized by Team 1595 both in the Team shop and on the robot. If improperly used or mismanaged, these can result in potential harm. Never work on, carry, or store robot until all energy has been properly released. Do not stand around robot before and during energy release. Always wear safety glasses while de-energizing the robots.

Electrical energy:

Disconnect and remove battery from robot when not in use. Never perform any work on the robot while the battery is connected or attached to the robot. Ensure the robot is not on when transporting. Never stored a robot with a battery connected or attached.

Pneumatic energy:

Stand clear from release valve while venting compressed air from robot. Only open release valve in an open area and ensure nothing is surrounding them. Only close valves once all gauges read 0.

Spring energy:

When spring energy is used, ensure all stored energy has been properly released before working on, transporting, or storing robot. While releasing spring energy, ensure no one is in the path of the directed force.

Lifting and Transporting the Robot:

When lifting anything in the 1595 shop or the competition pits, always lift with your knees not your back as if you were performing a squat. If the object you are lifting weighs more than 50 lbs., you must have a second student assist you. The following are guidelines for lifting and transporting the robot.

1. Ensure all energy has been properly release from the robot
2. Bring cart next to robot
3. Determine where you need to transport the robot
4. Gather 3 or more people to assist in lifting the robot
5. Have one student brace the cart
6. Have 2 students grasp the robot
7. Lift the robot with your legs, similar to performing a squat
8. Place the robot on the cart
9. Ensure the robot is stable on the cart and will not shift during transit
10. Transport the robot to wherever it needs to go
11. To set the robot on the ground repeat steps 5-8 in reverse