# Safety Plan

**2014-2015**

*Center Grove High School*

*Red Alert Robotics*

***FIRST®** Team 1741*


*Center Grove High School*

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# INTRODUCTION

First Team 1741 Red Alert Robotics made significant progress this year to make safety a FIRST priority on the team.

- All students must be trained on each piece of equipment before they may use it
- Center Grove High School's shop equipment was refurbished to ensure proper and safe working condition
- All students were required to take a basic safety quiz
- All students are encouraged to call out safety issues as they see them, such as use of safety goggles, wearing closed-toed shoes, and proper lifting
- We are very fortunate to have a master machinist mentor students on the proper and safe use of equipment
- The safety captain creates a spreadsheet of all students showing whether they have taken a safety quiz and their skill levels on each piece of equipment. This test is retaken by everyone each year that they are on the team.
- The team kept track of all injuries and rated them according to whether they were a minor band-aid injury or more severe.

The following rules and drills are intended to ensure the safe of students and to ensure the continued existence of the team at Center Grove High School.

# Safety Rules

## First Aid

There are 3 first aid safety bags. 2 are black bags that are located on the shelves in the Nenga room and 1 is a green toolbox that is located on the 2nd shelf on the right once you enter the build room closet. Notify a safety team member and a mentor in case of an emergency once an injury has occurred.

## General Shop Safety

1. Horseplay will not be tolerated in the shop area.
2. Always walk in the work area, never run.
3. Know fire drill activities.
4. Know fire classification and proper extinguishing methods.
5. Keep production scraps off of the floor.
6. Wipe up spills immediately.
7. Always seek a second opinion before turning on an electric device you have constructed.
8. Courtesy and consideration for others is required for a safe working environment. Respect your teammates.
9. In case of an accident, regardless of how small, report it immediately to the safety captain, or a mentor.
10. If you are unclear about a procedure or skill, ask the safety captain. If in doubt, never proceed before you have a full understanding of your given task.
11. Store materials in racks or on the floor.
12. Do not lean materials against counters or walls
13. Keep all flammable solvents, cleaners, lubricants, and other fuel sources in the fire proof cabinets provided.
14. Never attempt to use a machine or other device until you have been instructed in its proper use, and have been trained to safely operate the device.
15. Whenever possible, secure work in a vise or clamp it to a bench. Close the vise when it is not in use.
16. Maintain good ventilation in shop area when strong solvents are in the vicinity.

## Body Care

1. Lift all objects with your legs, not your back. If the object is too heavy, ask for help.
2. Test sharpness of tools on wood or paper, not your body.
3. Use safety glasses whenever performing any task involving exposure to power tools, dust, smoke, etc.
4. Always wash hands after using kerosene, thinners, alcohol, acid, WD40, or any other powerful solvent that may cause harm to the skin.

## Clothing

1. Dress properly for work in the shop.
    a. Long pants (no people shorts will be permitted entrance to the build room/pits unless otherwise specified)
    b. Hair must be out of the eyes, or tied-back back
2. No open-toe shoes are to be worn.
    a. Hard sole shoes only
    b. Tie all shoe laces before entering the build room
    c. All shoes must have either shoes laces, buckles, or Velcro. No other latches (i.e. duct tape).
3. Always tuck in any belts and/or loose strands of clothing (i.e. sweatshirt hoodie tassels)
4. Necklaces, rings, and bracelets should never be worn around machinery.
    a. Low voltage circuits may not affect your skin to the touch but can easily short across metal jewelry and cause serious burns.
    b. Jewelry can also be easily caught in machines such as a drill press.
    c. Watches must be removed before entering the build room.
5. Long sleeves should be buttoned or rolled up above the elbow.
6. Avoid ragged holes and frayed edges on clothing. Loose threads can become caught in machines and unravel or put you in danger.
7. No ties or scarves.

## Goggles

Wear eye protection when:

1. Entering any room that a power tool is being used or possible safety hazard is located.
2. Operating, assisting in operating, or observing any power-operated machine or tool.
3. Using compressed air for cleaning purposes or similar activity.
4. Scraping materials such as slag from welds, paint, and old hardened glue.
5. Grinding or power sanding.
6. Remind all people who enter the build room to wear eye googles no matter how longer they are in the room.
7. No shaded safety glasses of any kind.

If common sense dictates that you should be using eye protection, wear eye protection.

## Hand Tool Safety

1. Tools should be arranged neatly on the workbench, their cutting edges away from the body.
2. Tools should not rub against each other.
3. Do not let tools hang over the edges of workspaces; tools that are not lying flat or are not secured may fall and injure someone.
4. All tools should be in proper working condition.
5. Handles should be securely fastened to the tool.
6. Do not carry sharp or pointed tools in your pockets. Carry tool at your side, business end down.
7. Use tools for their intended purpose. Do not pry with a file, screw driver, or chisel.

## Machine Operation

1. Always wear goggles when using any machine or tool.
2. Make sure others are not in the operator's safety zone.
3. Inform an adult immediately if a machine or tool appears to be in need of adjustment or repair.
1. Always clear the machine of scraps, tools or loose parts before turning on the power.
2. Clean machine with a brush, clean rag, or shop-vac when operation is complete.
3. When you are creating a special setup for a machine, have an adult check your procedure.
4. Only one person can safely operate, adjust, or setup a machine.
5. Only the operator should start and stop the machine.
6. Only limited types of machines have guards.
    a. *Contact with a cutting edge will result in major injury.*
    b. Maintain proper working distances and follow safe operating procedures when using power tools.
    c. Keep fingers at least three inches away from a rotating cutter.
7. All machine adjustments must be made before turning on the power. Check to be sure adjustments are tight.
8. Stand clear of a machine when someone is operating it. Never stand in a direct line with a turning object or cutter.
9. Leave machines in the condition you found them. Remove special setups or tooling for the next person.
10. Never distract a person when he or she is using a machine.
11. Think about the job when operating a machine. It is dangerous to talk or look around while using power equipment.
12. Equipment must not be used if there is no adult in the shop area.
13. Notify an adult if breakage or damage to a tool occurs.
14. All power machines must be turned off when not in use.
15. Keep the floor area around the machine clear of debris.
16. No food or drink is allowed anywhere near equipment or in the immediate work area.

## CHEMICAL SAFETY

1. An MSDS (material safety data sheet) is located in the build closet with all chemicals. There is also a list of all MSDS's in the Safety Documentation Binder.
2. Read all labels before using a chemical.
3. Use all chemicals in a well-ventilated area.

## ENERGY SAFETY

1. Forms of energy:
    a. Kinetic
    b. Potential
    c. Thermal
    d. Chemical
    e. Electrical
    f. Magnetic
    g. Elastic

   h. Gravitational (Mainly the force due to gravity)
   i. Pneumatic
2. Beware of energy transfers while loading/unloading equipment from the field or the trailer.
   a. Vent all pneumatic energy before you attempt to pick up a robot.
   b. Release all elastic energy,
   c. Watch out for any electrical/magnetic issues (i.e. shock from exposed/damaged wires, possible hand damage from metal smashing together because of magnets, etc.).
   d. Disconnect the battery before moving the robot.
3. Beware of inertia. Carts can roll and trying to use excessive force to move something can cause it to slip out of your grasp and accelerate away from you.

## Pit Safety

1. All previous safety rules must be followed in the pits.
2. No food or drinks in the pits.
3. Only drawstring bags and single sling bags are permitted in the pits unless you are a mentor.
4. Reminder: No shaded safety glasses!
5. Only 8 students and 2-4 mentor in the pit at one time.
6. Do not crowd the surrounding pit areas.
7. Non-essential personnel can visit the pit only during designated times.

***Safety FIRST!!!***

# DRILLS

## EVACUATION AWAY FROM HOME

### BEFORE

- When traveling away from home, all members of the safety team are required to locate all nearby exits in case of an emergency
    - All team members (including mentors) will be alerted by the safety captain about which exits and meeting places to travel to during a disaster
    - All head mentors have final say on any exit plans and meeting locations
- Pick a buddy as soon as you arrive at the event (i.e. regionals, outreach, etc.) so that when a disaster occurs, you can locate and safety evacuate with your buddy to the designated location

### DURING

- Either announce of listen for an announcement to vacate the area
- Find your partner and calmly walk towards the egress at a brisk pace
    - Avoid elevators
    - Avoid travelling through the pits
    - Remain as calm and a quiet as possible
    - Watch out for any possible hazards along the way (exposed wires, fires, fall hazards, etc.)
    - If any events cause an exit to be blocked (fire, collapse), then head back to where you came and go around to another exit. Do NOT take any shortcuts that are unfamiliar because you may get lost. Remember, panicking and anxiety can make a familiar place appear unfamiliar.
- Check in with a mentor once both you and your partner arrive at the meeting location
- Wait at the designated area until further instructions are given

### AFTER

- Wait at the designated area until further instructions are given

## Earthquake Drill

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Teach how to Stop, Drop, and Cover,
    - This includes dropping to the floor (to prevent falling)
    - Making yourself as small a target as possible,
    - Protect head, neck and chest by taking cover under a sturdy desk or table or near an interior wall, covering the head with hands and arms

### During

- Announce that the earthquake drill has begun and to Stop, Drop, and Cover
- Suggest that while dropping under a sturdy desk or table, students and teachers look around at what would be falling on them in a real earthquake; these items should be secured or moved after the drill
- After at least two minutes, announce that the shaking is over
- When the shaking has stopped (or when the all clear bell rings) IMMEDIATELY, and before you exit the room
    - Take ten seconds to look around
    - Make a mental note of damage and dangers
    - Check to see if anyone is injured
    - If the environment is safe enough,
        - give immediate help to those with injuries, to stop serious bleeding, or put out a small fire
        - Ask responsible students to assist the lightly injured.
        - Persons with non-serious injuries should be reassured and told to wait for treatment where they are, unless it is more dangerous to remain
    - Take attendance list and your first aid kit
    - Make sure the students stay with the mentors or adults around
- Use the suggested routes on your evacuation map or alternate route if yours is blocked or unsafe
- Select two responsible students to lead, carefully checking that the evacuation route is clear
- When students return, everyone is to stay together and to quickly and quietly evacuate following the evacuation routes
- Move directly away from the building when exiting. Students and mentors should cover their heads with their bag or a book.
- Do NOT use elevators.

### After

Ask for feedback from students and mentors about how the drill went.

## Fire Drill

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Have planned evacuation route clearly posted
- Ensure all persons are aware of evacuation route

### During

- With evacuation underway, have safety volunteers quickly check their assigned floor area to make certain no one is left behind
- As soon as assigned areas have been checked, complete evacuation from the building
- If the recommended evacuation route should become blocked, carefully reroute all evacuees to another available exit
- Encourage people to move at least 75 feet away from the building and away from the building entrances
- When everyone has completely moved clear of the building, have safety volunteers conduct a "head count" of the people from their areas
- Re-entry into the building is not permitted unless authorized by Fire Department personnel
- Have safety volunteers conduct reviews with all persons normally occupying rooms or areas within their evacuation floor zone to ensure all persons are accounted for

### After

Ask for feedback from students and mentors about how the drill went.

## Tornado Drill

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Have a planned route into a basement or an interior, windowless room
- Have planned evacuation route clearly posted
- Ensure all persons are aware of evacuation route
- Keep a battery-powered radio

### During

- Evacuate to the assigned safe place
- Sit against a sturdy wall or under a heavy desk
- Cover your head and neck to prevent head or spinal injury from falling objects
- Remain in the safe position until after the danger has passed
- Stay away from doors and glass windows, as they may shatter with strong winds
- If no cover is available, proceed to a lower altitude position (such as a ditch) and remain there with your head and neck covered as much as possible to avoid debris
- Stay in the safe place and position until the storm has passed
- Once the alarm has ended
    - Check to see if anyone is injured
    - If the environment is safe enough,
        - Give immediate help to those with injuries, to stop serious bleeding, or put out a small fire
        - Ask responsible students to assist the lightly injured.
        - Persons with more serious injuries should be reassured and told to wait for treatment where they are, unless it is more dangerous to remain
    - Take attendance list and your first aid kit
    - Make sure the students stay with mentors or adults
- If the building must be evacuated after the emergency, use the suggested routes on your evacuation map or alternate route if yours is blocked or unsafe
- Select two responsible students to lead, carefully checking that the evacuation route is clear
- When students return, everyone is to stay together and to quickly and quietly evacuate following the evacuation routes
- Move directly away from the building when exiting
- Make a head count to ensure everyone has evacuated safely

### After

Ask for feedback from students and mentors about how the drill went.

## Blizzard Drill

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Teach how to keep warm during a blizzard (gather in groups, wear warm clothing)
- Prepare for power outages by ensuring batteries and flashlights are available
- Prepare for blocked roads by stocking up on shovels and snow removal equipment
- Teach that traveling in a blizzard is just not a good idea
- Designate a spot to keep a bag of warm clothes
- Keep a supply of dry, packaged goods and water available, sufficient for at least one day
- Keep a battery-powered radio

### During

- Announce that there is a blizzard in affect and that the students will be locked inside
- Lock the doors and turn down the temperature on the thermostat
- Tell students that the internal temperature of the building is dropping and that they should try to keep warm
- If students are without warm clothes or are shivering, have them gather in groups and to keep their head and feet warm
- After 2 hours, announce that the drill is over, turn the temperature back up and unlock the doors

### After

Ask for feedback from students and mentors about how the drill went.

## Flood Drill

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Educate all students on the dangers of moving water stay because fast moving water can sweep away thousands of pounds without warning
- Pack emergency food and water and store as high up as possible
- Keep a battery-powered radio

### During

- Announce there is a flood drill
- Take attendance for the students before you move anywhere
- Take an attendance list and first aid kit
- Proceed out of the water
- Head for highest ground possible
- Retake attendance to make sure there are no missing students
- Stay in the high spot until help arrives

### After

Ask for feedback from students and mentors about how the drill went.

## Severe Thunderstorm

### Before

- Plan date and time of the drill
- Have students pick another student to be a buddy
- Ensure students know they must stay with their buddy
- Educate all students on the dangers of lightning and hail, for lightning teach them: “If you hear it, fear it. If you see it, flee it.”
- Prepare for power outages by ensuring batteries and flashlights are available
- Keep a battery-powered radio

### During

- Tell students to get to a safe place and stay there, this includes going inside a sturdy building if possible
- If unable to get indoors, stay in the car as it provides protect
- If you are in the open find a ditch or lower ground and stay away from trees. Trees are more likely to be hit by lightning and cause a health risk.
- Keep a battery powered radio with you at all times and stay tuned to the local weather channel

### After

Ask for feedback from students and mentors about how the drill went.