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# **Introduction**

## **Mission Statement:**

We, the students and mentors hereby declare to abide by all safety rules enforced by Boneyard Robotics and those stated in the official FRC Safety Manual, while at the shop, competitions, and all other FRC events. Not only will we abide by the safety rules, but, we will also stay aware of others, ensuring that they are carrying out their work safely, and will adhere to Boneyard's safety culture. We vow to be safe.

## **Purpose:**

The purpose of Boneyard Robotics' safety program is to ensure a strong culture of safety. All members have the same goals, attitudes, and values towards promoting the safety and health of the team individually and as a whole. The safety program accomplishes this by applying and teaching progressive and "real world" practices, with concentrated focus on preventative methods.

## **Goals:**

- Promote a safety culture throughout the team.
- Provide safety information on a variety of relevant topics in the form of talks and videos.
- Ensure that all team members are fully aware of and respect the safety rules.
- Preventing incidents from occurring.
- Help team members feel confident in distributing First Aid or CPR in case of emergency.
- Involve the entire team in safety and make it fun!

# **Boneyard Robotics' 2019 Safety Contract**



By signing this contract, I hereby declare to abide by all safety rules enforced by Boneyard Robotics and those stated in the official FRC Safety Manual, while at the shop, competitions, and all other FRC events. Not only will I abide by the safety rules, but, I will also stay aware of others, ensuring that they are carrying out their work safely, and will adhere to Boneyard's safety culture. I vow to be safe.

## Our Safety Culture

The following is a list of everything that our team does to create a culture of safety:

- We hold a safety briefing each day when we meet (which includes competitions). In this safety briefing we write down on the whiteboard:
  - Who will perform CPR in case of a serious emergency.
  - Who will call 9-1-1.
  - Who will do role call in case of evacuation.
  - Who will grab the fire extinguisher and first aid kit.
  - We also write the address down on the board.
- We give a daily safety talk during the build season about a multitude of different topics with visuals often included.
- There is a weekly safety quiz during build season based off of the safety talks presented.
- Thorough safety inspections are filled out at least once a week in our shop.
- We created safety posters about shop safety and placed them in our shop.
- We created safety posters for competitions to raise awareness on various safety topics.
- We have a designated safety station in our shop that everybody is made aware of. The following can be found in our safety station:
  - SDS Folder
  - First Aid Kit
  - Chemical Spill Kit
  - Body Fluid Kit
  - Diabetic Kit
  - Bleeding Control Kit
  - Cut-Resistant Gloves
  - Fire Extinguisher
  - Approved Safety Glasses

- Safety Catches and Incident Reports
  - Hand Tool Guide
- We make safety kits for every team at competitions and make it known that all of our safety supplies are available to them if needed.
- Compromised an SOP (Standard Operating Procedures) manual for a multitude of tools and PPE (Personal Protection Equipment) in the shop.
- We went to Vidant Health Hospital to learn about their safety protocols.
- We adapted a system from Vidant Health Hospital to prevent incidents from happening by reporting things that happen that could have resulted in an injury. We call these reports “Safety Catches”.
- With the data from all the Safety Catches we looked at problems that have been repeated and find a permanent solution to prevent it from happening. We did this by filling out an RCA (Root Cause Analysis).
- We spread our safety culture outside of our shop and competitions.
  - We handed out safety kits at the Farmville Middle School FTC Qualifier and also set up a Stop the Bleed information table.
  - At our practice field (located separately from our workshop) we enforce the same safety rules.
  - We assisted in training the Pitt Pirates for Stop the Bleed.
- We made it possible for all of our members to become CPR and First Aid certified. They are also received Stop the Bleed training.
- We made it mandatory for someone to be tested by a mentor on their ability to use power tools before they use them. We keep a tool training checklist to keep up with who is certified to work with each tool.
- We make all of our resources available to the public through our website.
- After a rookie team asked us for safety advice, we decided to hand out rookie start-up folders full of helpful resources to all of the rookie teams.
- We held a practice fire drill to test our evacuation plan.

# **Stop the Bleed**

## **What Is Stop the Bleed?**

**Stop the Bleed** is a national awareness campaign and call-to-action. **Stop the Bleed** is intended to cultivate grassroots efforts that encourage bystanders to become trained, equipped, and empowered to help in a bleeding emergency before professional help arrives. It is a maximum 90-minute course including a formal presentation and hands-on practice of direct pressure application, wound packing, and use of a tourniquet. The course was developed for a nonmedical audience to address the needs of the immediate responder to control life-threatening bleeding until help arrives

## **Why Should I Be Trained?**

No matter how rapid the arrival of professional emergency responders, bystanders will always be first on the scene. A person who is bleeding can die from blood loss within five minutes, therefore it is important to quickly stop the blood loss. Those nearest to someone with life threatening injuries are best positioned to provide first care.

## **How Do I Set Up A Training?**

If you would like to take a **Stop the Bleed** course to prepare yourself to assist injured people following a traumatic event, contact your local public health department, hospitals and clinics, emergency medical services, or fire and police departments to see if they offer any training. You can also look for local classes on the Bleeding Control, Community Emergency Response Teams, and Medical Reserve Corps websites.

*Credit:*

<https://www.bleedingcontrol.org/about-bc/faq>

<https://www.dhs.gov/stopthebleed>

## **Safety Topics**

Every day during the 6 week build season, we give a safety talk on a safety topic. We do this to keep people informed and aware.

### **Topics Covered**

- Personal Protective Equipment (PPE)
- Proper Apparel
- Safety Catches and Injury Reports
- Emergencies
- Fires
- Bullying
- Internet Safety
- Tool Safety
- Housekeeping
- Horseplay & Respect
- GHS Symbols
- Battery Safety
- Chemical Safety
- Health
- Driving
- Electrical Energy
- Competition Safety
- Pit Safety
- Handling the Robot

## **PPE:**

PPE stands for personal protective equipment. Examples include gloves, hard hats, vests, ear protection, and safety glasses. Before you enter the shop, be sure to wear your safety glasses. You are not required to wear ear protection, but it is available to you if things are too loud. Put on cut-resistant gloves before handling any sharp items or when lifting the robot.

## **Proper Apparel:**

When you are at robotics you must abide by a certain dress code. Wearing any loose items while working on tools can be dangerous. Take off long dangly jewelry and tuck in objects such as hoodie strings and lanyards. You must keep your shoes tied at all times. Speaking of shoes, you can only wear close toed shoes while in the shop. Tie your hair back when working with tools and rotary objects.

## **Safety Catches vs. Injury Reports:**

So what is the difference between a Safety Catch and an Incident Report? A Injury Report is written when an injury occurs and a Safety Catch is written when a person could have gotten injured. For example, if someone trips and scrapes their knee, someone would write an Injury Report. However, if someone walks in the shop without safety glasses, someone would politely report it and write a Safety Catch.

## **Emergencies:**

If someone happens to get hurt, ensure they are safe and check the surroundings before taking action. We don't want anymore injuries to occur. If you are injured while in the shop, have someone alert a mentor or safety team member immediately. The following resources are located in the safety station:

- First aid kit
- Chemical Spill Kit
- Body fluid kit
- Bleeding control kit
- Splints
- Eyedrops
- And Rubber gloves

If someone is bleeding out and you forget your Stop The Bleed training, we have easy to read instructions hanging in the safety station as well. Do not forget to fill out an incident report after the situation has been handled.

## **Fires:**

If we need to evacuate the shop, head to the tree out front labeled with a yellow triangle. Do not drive away, wait til we do the head count to ensure everyone's safety. Remember, no chaos, no jokes, and no messing around. Sometimes we can feel panicked or confused when put under high amounts of pressure. One way that we reduce that confusion and panic is by doing daily safety briefings. In the safety briefing we take a couple of minutes at the beginning of each meeting to deal out certain responsibilities such as who will call 911 in case of emergency or who will perform CPR if necessary. We write all of this information down on the board as well as the address of our shop. To prevent fires, be sure to sweep daily. Wood shavings are not the best thing to leave on the floor.

## **Bullying/Internet Safety:**

Boneyard is a bully free zone. We welcome and accept all. It is unacceptable to make fun of or bully ANYONE on or off the team. Bystanders are guilty too. If you see something, do something. Avoid gossip and rumors. When you are on the internet stay aware of the information you put out there. Be careful of what you download. Choose strong passwords. Be careful of what you choose to post as well.

## **Tool Safety:**

The most common injuries from working with hand and power tools are electric shock, flash burns, falling, hand and eye injuries, hearing loss, crushing, cuts, or losing a body part. Inspect your tools before use, use the right tool for the job, and wear proper PPE. Use tools for their intended purpose and if you do not know what you are doing, ask for help. When cutting things, use safety gloves, cut downward, and if it falls just let it go. Remember that a sharp blade is safer than a dull blade. When you use a power tool, make sure it is not enabled when starting to use it, be aware of the power cords that connect the power tools so that you will not trip over them, and once you are ready to cut or drill and object, then you can turn on the power tool. Turn off power tool after use.

## **Housekeeping:**

Keep your work area clean. Before you leave the shop sweep and unplug everything. Tuck cords away in their proper place and throw away or recycle trash. Respect the building. We do not own the building we work in and need to return it cleaner than we received it.

## **Horseplay and Respect:**

ABSOLUTELY NO HORSEPLAY is allowed. This includes but is not limited to:

- Wrestling
- Punching
- Tag
- Rough housing
- Slapping
- Pushing
- Throwing

## **Battery and Chemical Safety:**

Batteries contain acid. This substance, H<sub>2</sub>SO<sub>4</sub>, is a corrosive, colorless liquid that will burn your eyes, skin, and clothing. It looks like water but burns.

You can find emergency handling and first aid procedures on the SDS, along with proper protection for handling cracked or damaged batteries, and information on disposal of the battery. (Point to the sds folder)

Any battery that is visibly damaged in any way is dangerous and unusable. Do not take a chance- don't use it!

Set aside a damaged battery and handle accordingly:

- Immediately flush any contacted skin with a large quantity of water.
- Seek medical treatment.
- Periodically inspect your batteries for any signs of damage or leaking electrolyte.
- Remember that a dropped battery may be cracked, but the crack may not be visible and might eventually leak electrolyte.
- Treat it as a hazardous material and process it in accordance with the battery's SDS.

- FIRST recommends that teams keep the following items readily available whenever working with

batteries:

1. A box of sodium bicarbonate (baking soda) to neutralize any exposed acid electrolyte.
2. A pair of acid-resistant rubber or plastic leak-proof gloves to wear when handling a leaking battery.
3. A suitable non-metallic leak-proof container in which to place the defective battery.

When an electrolyte leak occurs:

- Neutralize it by pouring the sodium bicarbonate on all wetted surfaces. The bicarbonate of soda itself is not dangerous, and will react with the acid in the electrolyte leaving a safe residue that can be disposed of in a conventional manner such as rinsing with water.
- Follow emergency handling instructions of the SDS and notify mentor.
- Put on gloves before handling the battery.
- Place the battery in a leak-proof container for removal.
- Be sure to neutralize any acid on the gloves before removing and storing them.
- Seek medical attention if skin came into contact with any chemicals.
- Properly dispose of the battery, which is now a hazardous material.

## **Health:**

If you are sick, stay home! You can talk to a trusted mentor if you feel stressed, excessively tired, bullied, or depressed. Drink plenty of water and stay hydrated and well fed. There are some snacks at robotics but you should never rely on them to replace a meal. Get the proper amount of sleep.

## **Driving:**

When driving to robotics do not go over the speed limit, run a red light, or text. If you do not have your after nines, be sure to get home in time. Basically, DO NOT BREAK THE LAWS.

## **Electrical Energy:**

Proper use and respect for electricity is paramount. The following are general guidelines for ensuring basic electrical safety requirements are met:

- Inspect your equipment cords and extension cords routinely to ensure they are in good condition.
- DO NOT “daisy chain” – plug a power strip into another power strip. This could cause the potential for fire or electric shock due to overloading of the circuit.
- Avoid the following electrical power supply setups to prevent overloading:
  - Extension cord plugged into another extension cord.
  - Extension cord plugged into a power strip.
  - Multi-device receptacle plugged into a power strip or extension cord.

## **Competition Safety:**

You must use the buddy system. Do not walk alone. If you want to step outside the main building inform our lead mentors. For example, there is a Chick-fil-a at Campbell University. Do not just leave, tell someone.

No skateboards, hoverboards, or drones are allowed. No climbing on objects (including railings). Be polite, if any adult asks you to stop doing something stop. Bring your own safety glasses and do not save seats. Never go under ropes and barriers to cross into the field area. It is highly disrespectful. Never throw anything and use your common sense.

If you see another team being unsafe politely inform them. We do not want them getting hurt.

## **Pit Safety:**

No running in the pits (or anywhere). Safety glasses must be worn in the pits and on the field. When working on the robot, use a stable surface. Never block the aisles. Stay in your designated pit area. Properly use power strips.

Refrain from wearing dangling jewelry or loose, baggy clothing near the robots. Tie back long hair so that it will not get caught in the robot or other machinery. Wear gloves to protect hands and fingers when handling the robot or the robot crate. Finger injuries are one of the most common injuries at events.

## **Handling the Robot:**

Lift the robot with your legs, not back (squat down and keep your back straight). Always wear safety glass and wear gloves when lifting. Never lift or work on robot when it is on never climb over the fields guardrails.

# Quizzes:

## Safety Quiz 1

Name: \_\_\_\_\_

1) Which shoes are appropriate? (Circle all applicable answers)

A.



B.



C.



D.



- 2) PPE stands for Personal Protective Equipment, what is an example of PPE?
- 3) You should put on \_\_\_\_\_ before handling sharp items.
- A. Cut-Resistant gloves
  - B. Loud distracting music
  - C. Slippery lotion
  - D. All of the above.
- 4) If you see someone not wearing safety glasses you should...
- A. Ignore it, someone else will point it out.
  - B. Poke them in the eye to demonstrate the importance of safety glasses.
  - C. Politely inform them of their mistake and write a safety catch.
  - D. Bully them about it.
- 5) You need to wear \_\_\_\_\_ past the green line.
- 6) You should tie your hair back if:
- A. It reaches past your ears.
  - B. It reaches your shoulders.
- 7) Where is the First Aid Kit located at in the shop?
- 8) You should \_\_\_\_\_ in the shop.
- A. Wrestle one another
  - B. Tuck in hoodie strings
  - C. Have untied shoes
  - D. Put on loose jewelry
- 9) TRUE / FALSE : You can wear ear protection whenever things get too loud for you.
- 10) Can you use a safety catch to report an injury?

### Safety Quiz 2

- 1) If we need to evacuate, where is the designated meeting spot?
  - a) There is no designated meeting spot.
  - b) Just go home
  - c) Tree labeled with a yellow triangle
  - d) Stay where you are
- 2) True or False: When you get hurt or injured, you should fix the problem on your own and move on.
  - a) True
  - b) False
- 3) True or False: Before helping an injured teammate, check and see if your surroundings are safe.
  - a) True
  - b) False
- 4) If someone is getting bullied you should....
  - a) Tell a mentor immediately
  - b) Join in
  - c) Bully the bully
  - d) Scream
- 5) When you are on the internet stay aware of the information you put out there. Be careful what you\_\_\_\_\_, choose strong\_\_\_\_\_, and be careful what you choose to\_\_\_\_\_.
  - a) Wear, exercises, sew
  - b) Wear, fashion choices, match
  - c) Blank, blank, blank
  - d) Downloads, passwords, post
- 6) How can you prevent fires?
  - a) Sweeping up wood shavings and unplugging unused tools
  - b) It is unpreventable
  - c) Carelessly using heat generating tool
  - d) Spilling your mocha on the robot
- 7) If you forget your Stop the Bleed training where can you find easy to read step by step instructions?
  - a) On the door to the workshop
  - b) Hanging in the safety station
  - c) White board
  - d) In the bathroom
- 8) Be aware of your surroundings if...
  - a) You are using a heat generating tool
  - b) You are working on the robot
  - c) If you are driving the robot
  - d) All of the above
- 9) Name one thing you can find in the safety station in case of emergencies.
- 10) True or False: Boneyard is a bully free zone. We welcome and accept all differences. It is unacceptable to make fun of or bully ANYONE on or off he team.
  - a) True
  - b) False

### Safety Quiz 3

- 1) True or False: You can use a wrench as a hammer or a screwdriver for a chisel.
  - a) True
  - b) False
  
- 2) Before using any tool you should \_\_\_\_\_ it. Insure that it is in good condition.
  - a) Break
  - b) Unplug
  - c) Paint
  - d) Inspect
  
- 3) True or False: When using knives/blades, direct your cutting strokes away from your hand and body. Be aware of those around you. Wear gloves.
  
- 4) When using a tool, place the work.....
  - a) In the palm of your hand
  - b) On the cold floor
  - c) On a bench or hard surface
  - d) Does not matter as long as you get the job done
  
- 5) If you do not know how to use a tool, you should.....
  - a) Ask a veteran or mentor for help
  - b) Cry
  - c) Do it anyway
  - d) Throw it
  
- 6) What things should you do when using a power tool?
  - a) Wear your PPE
  - b) Be aware of the power cords that connect the power tools so that you won't trip over them
  - c) Turn off power tool after use
  - d) All of the above
  
- 7) True or False: Do not touch the drill bit when it's moving.
  - a) True
  - b) False

### Safety Quiz 4

Name: \_\_\_\_\_

1) What type of chemical is used to neutralize battery acid?

2) Do you touch liquid that is leaking from a battery?



3) Battery acid is corrosive, what does this mean?

4) Should you notify a mentor before you handle an acid spill?

5) Where is the battery acid spill kit located?

6) True or False: You do not have to unplug a power tool before you leave the shop if you intend to use it the next day.

- a) True
- b) False



7) True or False: Before you leave the shop, you should clean up your mess.

- a) True
- b) False

Safety Quiz 5

Name: \_\_\_\_\_

- 1) What is an acceptable thing to do while driving to robotics?
  - a) Wear your seatbelt
  - b) Text
  - c) Drive over the speed limit
  - d) Run a few red lights
  
- 2) Which of the following is appropriate to do in the shop?
  - a) Play tag
  - b) Punch the person holding a drill
  - c) DO YOUR JOB
  - d) Throw drill bits
  - e) Slap your friends back
  
- 3) Scenario: Samantha is running a slight fever but feels fine. Since it was the last day of build season she went robotics. Was what she did safe?
  - a) No
  - b) Yes
  
- 4) True or False: Horseplay is okay if no one is around and you are bored.
  - a) False
  - b) True
  
- 5) It's important to stay \_\_\_\_\_, get enough rest, and eat plenty of food!
  - a) Hungry
  - b) Hydrated
  - c) Caffeinated
  - d) Unsafe
  
- 6) (FILL IN THE BLANK) Boneyard has \_\_\_\_\_ tolerance for horseplay in and around the shop or at any FIRST event.
  
- 7) Plugging a power strip into another power strip is commonly referred to as...
  - a) Safe
  - b) Okay
  - c) "Daisy Chaining"
  - d) Rose water

(Turn the page)

8) Match the GHS Symbol to its name/title.

**Corrosion**



**Exclamation Mark**



**Flame**



**Gas Cylinder**



**Skull and Crossbones**



**Exploding Bomb**



**Flame Over Circle**



**Health Hazard**



### Safety Quiz 6

Name: \_\_\_\_\_

- 1) True or False: I do not need to bring my own safety glasses to competitions, I can borrow someone else's.
  - a) True
  - b) False
- 2) Which of the following can you bring to competitions:
  - a) A drone
  - b) Safety Glasses
  - c) Skateboard
  - d) Hoverboard
- 3) If you want to leave the competition with your parents or just walk to Starbucks, who do you need to inform first?
  - a) Mrs. McClung
  - b) Nobody
  - c) Mrs. Paula OR Mr. Daniels
  - d) A friend
- 4) What is something that is okay to climb on at competitions?
  - a) Railings
  - b) Other people's pits
  - c) On your friends back
  - d) None of the above
- 5) Sally wanted to get to the other side of the field but there was a rope stopping her. Instead of walking around through the hallway, she unclipped the rope and walked through. Was this safe behavior?
  - a) Yes
  - b) No
- 6) Bryson runs into the pits in Crocs. He is not wearing safety glasses. He passes a girl who is not breathing even though he is CPR certified. She dies. As he is running, he throws a paper airplane into the air. He passes a boy whose hair is draping all over his drill and does not give him a hair tie. When he gets to his pits a mentor from RotoRaptors asks him to stop. He does not stop. Instead he turns the robot on and picks it up without gloves. List 5 things Bryson did wrong.
- 7) If you are in the pits, you should not...
  - a) Block the isles
  - b) Wear safety glasses
  - c) Laugh
  - d) Tie your hair back
- 8) When you lift the robot, you should lift with your
  - a) Legs
  - b) Back
- 9) True or False: You should never climb over guardrails.
  - a) True
  - b) False
- 10) True or False: Refrain from wearing dangling jewelry or loose, baggy clothing near the robots.
  - a) True
  - b) False

# Official Boneyard Incident Report

INFORMATION ABOUT PERSON INVOLVED IN INCIDENT		
First/Last Name:		
<input type="checkbox"/> Student	<input type="checkbox"/> Mentor	<input type="checkbox"/> Visitor

INFORMATION ABOUT THE INCIDENT		
Date of Incident:	Time:	Location:
Description of Incident (What occurred, how, where...) Be as specific as possible.		
Was medical treatment provided: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused		

REPORTER INFORMATION
Individual Submitting Report:
Signature:
Date Report Completed:

Preventative Measure Taken:



# Safety Catch in the Boneyard

A Safety Catch is defined as any event that has the potential to result in injury or damage without proper intervention

<b>Date of Catch:</b>	
<b>Catch Reported By:</b>	
<b>Catch Made By:</b>	
<b>Describe Safety Catch:</b>	

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