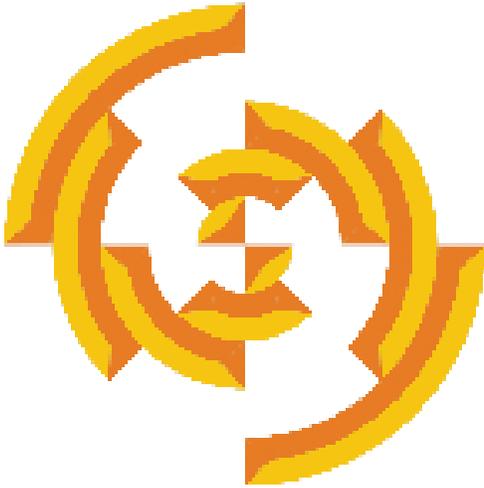


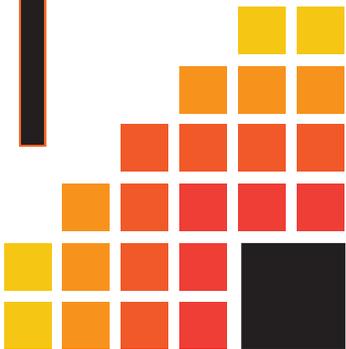


School District of Waukesha Robotics Team

C.O.R.E. 2062



Safety Manual



2016 Season

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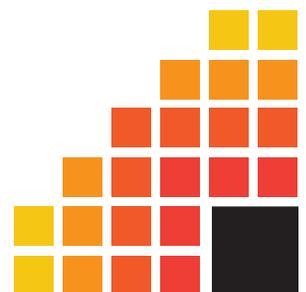
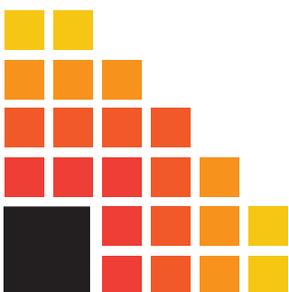
The state of being safe; freedom from the occurrence or risk of injury, danger, or loss. (via dictionary.com)



A Year of Safety on C.O.R.E. 2062

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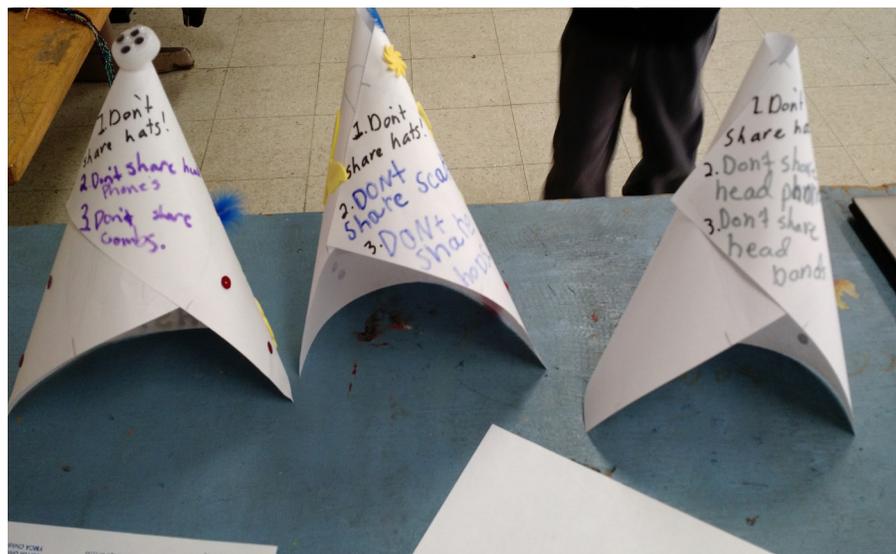
PRESEASON - Outreach

Middle School Robotics

C.O.R.E. safety practices not only start before build season, but before high school! C.O.R.E. hosts league nights where middle school robotics teams can meet up and work on their bots. At these meetings, C.O.R.E. members monitor the middle schoolers and incentivize good safety practices. During competitions hosted by C.O.R.E., safety practices such as wearing safety glasses are mandatory for everyone: mentors, students, and even parents.

Elementary School Safety Demonstrations

This year C.O.R.E. members began visiting a local elementary school to help spread safety to our greater community. We have connected with the before school program at Whittier Elementary - a high diversity school. During a series of many different meetings starting in the fall and going all the way to build season, topics such as internet safety, lice, and eating healthy were discussed, introduced with video, acted out, and even expressed through art.





Training

Training Procedure

Safety training begins the fall before kick off. Every team member spends a meeting receiving training on each power tool at our facility, in addition to general work shop safety procedures. Members split up into small, rotating groups that visit different areas and tools, each lead by a mentor. Since groups are small, members have the opportunity to ask questions and get clarification. Two different training days are held to ensure everyone is in attendance.

Testing

Testing on work shop procedures are put into two different levels. The level II test goes into details about machine and general workshop safety. All rookies are required to take this test, in addition to any veteran members that operate on the robot. Veteran members that do not work on the robot can take the level I test, which outlines general workshop safety. Everyone must pass their desired test with 100% accuracy. This year C.O.R.E. put all of their tests online, making it easy for everyone to have a copy, take a test where they are comfortable, and help out the environment.



Members may begin to use power tools once they pass their level II test. The 3:1 student to mentor ratio allows every student the opportunity to have one on one guidance when they first begin using power tools.





BUILD SEASON

A Typical Week

During build season, C.O.R.E. meets 3 days a week - Tuesday, Thursday, and Saturday. Every meeting the safety captain provides the entire team with some sort of safety knowledge, which we call the "daily dose of safety". The dosages are as follows:

Tuesdays and Thursdays

What was the first mention of earplugs?

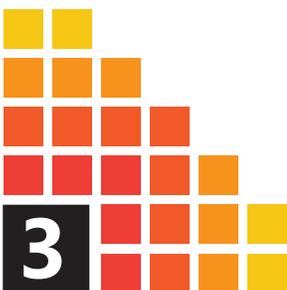
What does OSHA stand for?

What is a "class D" fire extinguisher used for?

On Tuesdays and Thursdays, the entire team is challenged with a safety bonus question. Each question is followed up with a brief explanation about the topic.

Saturdays

All team members gather after lunch to get a demonstration lead by the safety captain. These demos go in depth on a wide range of one of the many safety practices of C.O.R.E. Some of the topics discussed can be seen in pages 4-8 of this booklet.





Personal Protective Equipment

Personal Protection Equipment or PPE, is vital to ensure the safety of every team member. PPE includes a wide range of materials worn for protection. The following are some rules our team enforces regarding PPE:

Gloves:

- Use gloves when handling the robot and crate
- Use rubber gloves when handling chemicals (i.e. battery spill)
- Do not wear gloves with rotating machinery

Safety Glasses:

- Eye protection is required in the work shop, pit area, practice field, and competition field
- Safety glasses protect the eyes from flying and sharp objects, chemicals, and other hazardous materials

Shoes:

- Closed toe-closed heel shoes are required in the work shop, pit area, practice field, and competition field

Clothes:

- Baggy and loose clothes are not permitted in the pit and work shop
- Remove hanging jewelry, necklaces, ties, hoodie strings, etc.
- Long hair must be tied back

Earplugs:

- Use ear plugs when there is a possibility of damage to hearing
- If you feel you need to raise your voice to talk to someone next to you, you should probably be wearing hearing protection





MSDS / SDS

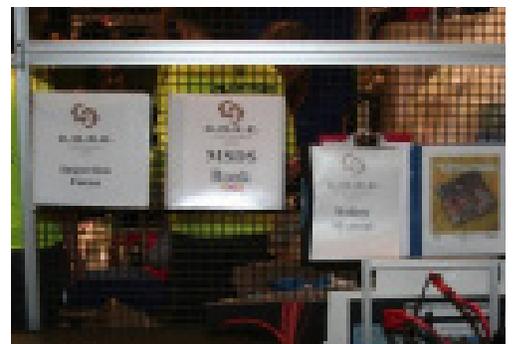
Safety Data Sheets (SDS) are necessary for all teams. A proper SDS lists all materials used by your team with safety information on these products. They tell ingredients, allergy information, how to treat if a reaction occurs, what to do if ingested, splashed in eyes, immersed in a cut, etc. Our team keeps brand specific sheets as different brands use different materials in their products. All companies are required to create an SDS for their product and they are readily available online.

MSDS vs. SDS

Previously, the standard for SDS was MSDS (Material Safety Data Sheets). SDS differs from MSDS in that SDS sheets are fully standardized. All companies were required by OSHA to standardize their MSDS into SDS by June 1st, 2015, although they were still allowed to ship materials with the old MSDS formatting until December 1st, 2015. C.O.R.E. has been working hard to update their MSDS library to be up to the SDS standard, although not all companies have made their new files easy to access online. Therefore, our SDS list is currently incomplete. MSDS sheets are used to fill in for the items that are not yet SDS.

Binder

All team members on C.O.R.E. are trained on how to read the sheets as well as where the binder is located. When at competitions, the SDS binder is always visible - not sitting at the bottom of a box!





SIC (Safety In A Corner)

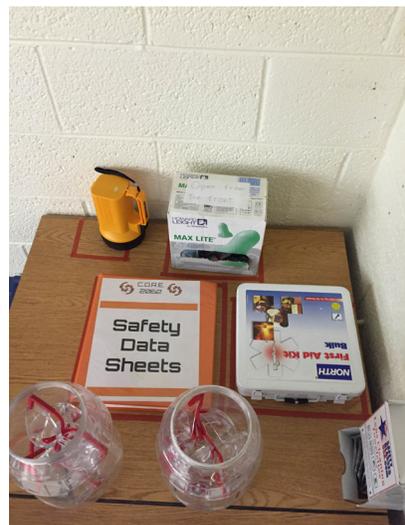
Safety in a corner is used to ensure that everyone on the team has equal access to proper PPE as well as other safety materials.

Contents

- First Aid Kit
- SDS
- Earplugs
- Safety Glasses
- Flashlight
- Binder
- Lens Cleaner

Set-up

The SIC is located by the front of the mechanical area and has everything layed out on the table in order for easy access. The large “Safety is No Accident” draws attention to the station and makes sure that everyone notices and respects the rules. SIC makes it easy for everyone to access and practice safety.





5S Principles

The 5S principles are a standard used throughout industries to keep workspaces safe and efficient. In the space constraint for a 10' by 10' pit, maximizing space, being efficient, and improving safety are all important aspects achieved through the 5S's.

Sort

Decide on what things are needed and not needed in the pit and shop.

example: We sort nuts and bolts in a container with drawers.

Straighten

A place for everything and keep everything in its place.

example: We straighten everything by putting it in its proper taped off section of our pit.

Shine

Keep things looking clean.

example: We shine by sweeping our pit almost every time the robot leaves.

Standardize

Create a list of standards.

example: We standardize our pit by using inspection forms to keep our pit organized

Sustain

Keep it going.

example: We sustain the 5S principles by teaching them to everyone on the team.





Mind's Eye

Mind's Eye is the ability to visualize an event before it happens and foresee all possible incidents that may occur.

“think before you act”

C.O.R.E. 2062 adopts the Mind's Eye principle from a local factory. Before using machinery, everyone at this factory must fill out a bookmark-sized paper stating: what they are doing, what could go wrong, and what PPE must be used for the job.

Though we don't require a bookmark, C.O.R.E. strives to ensure that everyone takes at least 30 seconds to think before completing a potentially hazardous task.

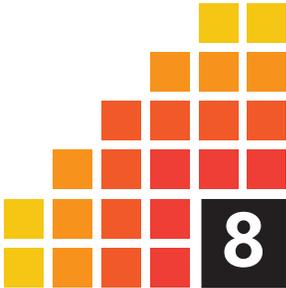
Examples

Check for scraps before using machinery

Make sure you have the proper drill bit

Ensure no one is goofing off near your work area

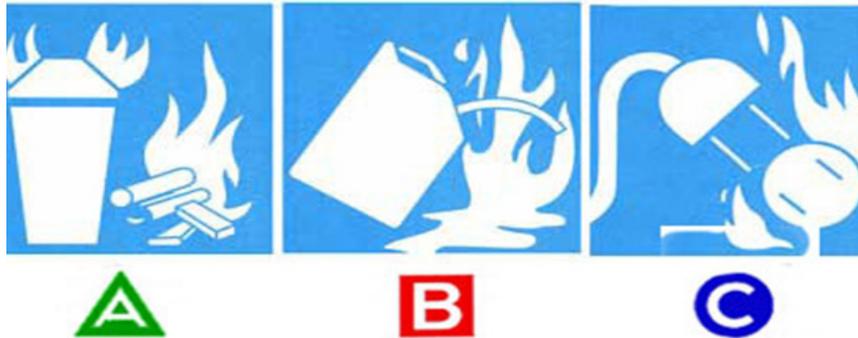
Make sure no one could get jabbed by a long piece once it is lifted, in position to get cut, etc.





Fire Extinguishers

Fire Extinguishers are an essential part of each team, household and business. This year, the C.O.R.E. safety subteam introduced **new mnemonics** to the team to help everyone remember the four main classes.



Class A extinguishers are for wood, paper, and other common combustibles. **A for Ash** (wood and paper create ash when burned)

Class B extinguishers are used on grease, oil, gasoline, and other flammable liquids. **B for Barrel** (liquids are held on a barrel)

Class C is to be used on electrical fires. **C for Current** (electricity has current)

ABC is a combination of the three.

Operation of Extinguisher

When using an extinguisher, C.O.R.E. members follow the PASS method.

Pull out the safety pin.

Aim at the fire.

Squeeze the trigger.

Sweep the nozzle back and forth at the base of the fire.



LOTO

Lock Out Tag Out (LOTO) is a method used to ensure the robot is not powered up while receiving maintenance. There are many forms of energy to be cautious of, these include: electrical, pneumatic, hydraulic, and spring loaded. Because this energy can be hazardous, team members use LOTO to reduce the risk. Before doing any work on the robot, all these forms of energy must be released. After each competition, the drivers disconnect the battery cable and release any pressure in mechanical systems. When returning to the pits, all power sources are locked out before the pit team repairs or checks the robot. When it is time for the next match, the tags are removed by their owners.

A Lock Out Tag Out system consists of three parts. A box to cover the power leads, tags, and a clip. The box cover encases the power leads and is secured by the clip. The clip has a tag with the name of one team member. All team members must understand the guidelines for this system to be effective. The system works with two categories of members on the team; authorized and affected. The authorized members are chosen because of their role on the pit crew or drive team. These members carry the Lock Out Tags, used to secure the power leads on the robot. All other members of the team fall in the affected category. Affected members may never remove a tag. However, if an affected team member sees an unsafe condition on the robot he or she must report it to an authorized team member.





POST BUILD SEASON

All Saturday demos are completed at the end of build season. Since our first competition isn't until week 4, C.O.R.E. spends this time reviewing safety information.

Online Information



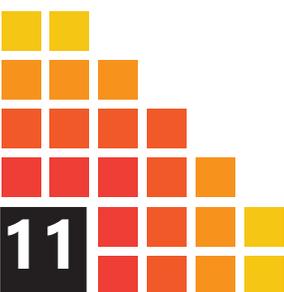
View our main review site with the QR code above.

Our online safety database is full of information that is perfect for reviewing. Website pages, Google slide presentations, and even a Quizlet (online flashcards) can be found on our website.

Since all team members sign in at every demo they attend, everyone receives an email letting them know which demos they missed so they know what to review.

With so much of our program online, it opens the door for not just review for team members, but also for anyone else looking for safety ideas!

Check out our Quizlet here! NO account needed



CORE2062.COM/SAFETY/CONTACT@CORE2062.COM



Testing

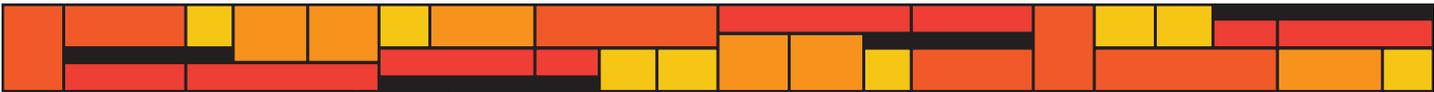
The competition test taken after build season highlights all that must be known to be safe at competition. Every member takes the same test and must pass with 100% accuracy.



After both the workshop safety test and the competition test, the safety captain meets with every student individually and goes over their test. The safety captain discusses what that person did wrong and what they can do to pass next time.



Once Saturdays are no longer used for safety demos, they are used for an interactive safety trivia game created online with Kahoot. The safety captain creates questions pertaining to safety, Kahoot projects the questions on a large screen, and everyone present is able to answer the multiple choice question on their mobile devices. Answering correctly gets points, and the quicker you answer, the more points you get! Kahoot has been a great way to make safety fun for all team members.



At Competition

Safety Demos

Not only do we make sure to follow all our demonstrations, but we also give them to other teams at competition. This is the most direct way to spread our safety practices to the FRC community!

Evacuation Point

In the case of an evacuation incident, C.O.R.E. has a set evacuation meeting point. This point is decided before each competition and relayed to the entire team.



Buddy System

C.O.R.E. uses a buddy system when traveling and at competition. If someone wishes to leave the hotel or venue, they must be accompanied by at least 3 others and a mentor must know where they are going.



Our SDS binder, FIRST Safety Manual, and inspection forms are in our pit. They are always located in the same place in the pit so everyone knows where they are. Other safety reminders such as the 5S principles are also posted in the pit.

Other things located in our pit are: an eye wash station, first aid kit, fire extinguisher, earplugs, extra safety glasses, and a binder for inspection forms.

Pit Etiquette

We do our best to keep the number of team members in our pit at a maximum of about 8 people. We take the moments when the robot is not in the pit as opportunities to clean up.



Padded Floor



A padded floor provides comfort, grip, and some amount of impact absorption. Floor padding is a common sight at FIRST tournaments, but many teams fail to realize the tripping hazard they create. We solve this problem with a sloped edge along the front of pit.

SAFETY INSPECTION FOR PIT

Date & Time:

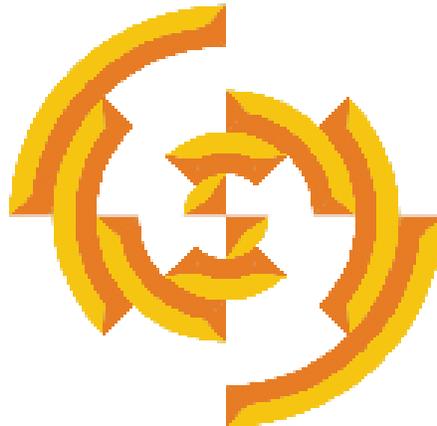
Inspector(s):

HAND & PORTABLE TOOLS		NOTES
1	Are powered tools in good condition with no evidence of damage?	
2	Are tools properly stored when not in use?	
3	Are guards and safety devices in place and operational?	
4	Are tools clean and free of oil or grease?	
5	Do tools have no tape or homemade modifications / extensions?	
CHEMICALS		NOTES
1	Is MSDS binder available to everyone and are aware of it?	
2	Is battery spill kit visible and accessible?	
ELECTRICAL		NOTES
1	Are batteries visibly fine, with non-bent terminals and no cracks in case?	
2	Are protector safety plugs in unconnected batteries?	
3	Do battery chargers have sufficient space for air circulation?	
4	Are battery chargers unplugged when not in use?	
5	Are cords and plugs in good condition with grounding connections where applicable?	
6	Are there only one power strip per outlet and not overloaded?	
THE TEAM PIT STATION HOUSEKEEPING		NOTES
1	Is team equipment within the designated spaces and the aisles clear?	
2	Is the area free of slipping and tripping hazards?	
3	Is the storage of materials orderly?	
4	Are work surfaces neat and uncluttered?	
5	Are 5S principles being followed?	
6	Is garbage can available and emptied regularly?	
7	Is the vacuum is available and properly stored?	
8	Is broom and dustpan is available and properly stored?	
EMERGENCY EQUIPMENT / EVACUATION		NOTES
1	Are evacuation meeting points displayed?	
2	Is team roster up-to-date and easily accessible in emergency?	
3	Are all aisles to exit doors and exits unblocked?	
4	Is fire extinguishers unblocked and accessible?	
5	Is eyewash available and accessible.	
PERSONAL PROTECTIVE EQUIPMENT (PPE)		NOTES
1	Is PPE available for FRC participants and their visitors?	
2	Is PPE worn by team members where required / posted?	
3	Is PPE properly maintained and stored?	
RESPECT OF STORED ENERGY DANGERS		NOTES
1	Is checklist being used after each competition?	
2	Does the team ensure no one is working on the robot while energized?	



Please Contact Us

**We would be delighted to answer any questions
or help jumpstart your safety program**



Our Website | CORE2062.COM/SAFETY/





If you can't read this,
you may need to stop by

C.O.R.E. 2062's
pit to get your
SAFETY GLASSES
CLEANED



Too loud?
Grab some ear plugs while you're there!

