

# Shop Safety

General safety, hazards, emergencies and what to do when equipment breaks.

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# Safety Basics

Rules and habits that apply everywhere in the shop.

# General Safety Guidelines

These are the habits that apply everywhere in the shop, no matter which area you are working in. They are covered at New Member Orientation; this page is the written version.

## Before you use any tool

- **Get trained first.** All corded tools require training before use. Even experienced makers must complete training, because our tools may not match the ones you know. See **Training and Certification: How Certification Works.**
- **Inspect before every use.** We are hackers at heart and equipment here may have been modified beyond its factory state. Always assume a tool has been altered and look it over before you start. See **Training and Certification: Pre-Use Inspection.**
- **Wear the right PPE.** See **Shop Safety: Personal Protective Equipment.**
- **Do not use power tools if you are impaired.** That includes after drinking alcohol, when you are drowsy, or when anything else is affecting your judgment.

## While you work

- Keep your head in the game. If you are unsure how to do something, stop and ask a board member or an experienced member, or ask on Discord.
- Stay aware of the people around you and avoid creating unsafe distractions for others.
- Keep walkways and shared workspaces clear. Only store items in designated areas or on carts, and put large projects on wheels so others can move them.
- Never block fire lanes, electrical panels, sprinkler heads or fire extinguishers.

## Speak up for safety

- If you see something unsafe, say something.
- Approach others with kindness and a helpful attitude. Everyone is learning, and we are all here to keep each other safe.
- Report accidents, injuries and near-misses. See **Shop Safety: Incident and Near-Miss Reporting.**

# Guests and minors

- Guests are welcome to tour the space but may not use any equipment under any circumstances. Only active members who have completed the proper training may operate tools and machines.
- Minors are not permitted in hazardous work areas. See **Shop Safety: Minors in the Shop**.

# When you are done

- Clean up after yourself and leave the area as good as, or better than, you found it.
- If a tool is broken or not working right, do not leave it for the next person to discover. See **Shop Safety: Tagging a Tool Out of Service and Reporting It**.

# Personal Protective Equipment

Personal protective equipment (PPE) is required in the shop. Use the PPE that fits the tool and the job every time, even for "just one quick cut".

To be confirmed: what PPE the shop provides, where it is kept, and what members are expected to bring themselves.

## The basics

- **Eye protection.** Wear safety glasses or goggles whenever you run a power tool or do anything that can throw chips, dust or sparks.
- **Hearing protection.** Saws, routers, planers, grinders and dust collectors are loud enough to damage hearing over time. Wear earplugs or earmuffs.
- **Respiratory protection.** Wear a suitable mask or respirator for fine dust, finishing products and fumes. See **Shop Safety: Air Quality**.
- **Clothing.** Tie back long hair, and avoid loose sleeves, dangling jewelry and lanyards around rotating tools.

## By area

- **Metal Shop:** PPE is required for welding and grinding. Welding needs a proper welding helmet, gloves and flame-resistant clothing; grinding needs eye and face protection.
- **Wood Shop:** eye and hearing protection at a minimum. The **Wood Shop: Radial Arm Saw** page calls out goggles and hearing protection specifically.
- **Paint and spray work (Flex Space):** respiratory protection suited to the product you are spraying. Check the product label.

Equipment SOP pages list any extra PPE a specific tool needs. If you are not sure what a tool needs, ask before you start.

# Working Alone

You are allowed to work alone at the makerspace. Many memberships include 24/7 access, so there will be times when you are the only person in the building.

If you are doing something that could be dangerous, we strongly encourage you to:

- **Let someone know you are in the space.** Post in **#general** on Discord when you arrive and when you leave.
- **Ask someone to check in on you** occasionally while you work.
- **Keep your phone with you** so you can call 911 if you need to. The address for emergency services is on **Shop Safety: Emergency Information**.

Working alone is also a good reason to slow down. Nobody is there to notice a problem, hit a stop switch or help you, so stick to tasks you are trained and comfortable with, and save the unfamiliar or risky jobs for when someone else is around.

# Minors in the Shop

On 2026-07-21 the Board of Directors adopted the **Minor Safety Policy (Minors in Hazardous Work Areas)**. This page is a short summary. The policy itself is the official text; see **Policies: Minor Safety Policy**.

To be confirmed: the full adopted policy text is not yet published. This summary covers only what the board minutes record as adopted. It will be expanded once the final text is filed.

## What the policy says

- A **minor** is anyone under 18.
- **Minors are not permitted in hazardous work areas** of the shop.
- **The Board of Directors has the final say** on all cases the policy applies to, including approving exceptions case by case.

## What this means for members

- Do not bring anyone under 18 into the shop areas. The orientation materials put it this way: no guests under 18 in the shop, except during special events or with board approval.
- If you have a group or a situation you think deserves an exception (for example, an organized educational visit), ask the board **before** the visit. Email [info@waukeshamakers.com](mailto:info@waukeshamakers.com).
- For general guest rules, see **New Member Guide: Guests, Family Members and Pets**.

# Hazards

Fire, chemicals, air quality and electrical hazards.

# Fire Safety and Hot Work

A makerspace has plenty of fuel (sawdust, wood, rags, finishes) and plenty of heat (welders, grinders, lasers, soldering irons, 3D printer hotends). This page covers the habits that keep those two apart.

## Fire extinguishers

- Fire extinguisher locations are pointed out during the New Member Orientation tour. Know where the nearest one is before you start work.
- **Never block an extinguisher**, a fire lane, an electrical panel or a sprinkler head.
- A **class ABC** extinguisher works on ordinary combustibles (wood, paper, cloth), flammable liquids and electrical fires. Use it with the PASS method: **P**ull the pin, **A**im at the base of the fire, **S**queeze the handle, **S**weep side to side.
- Only fight a fire that is small and contained, and only if you have a clear way out behind you. Otherwise get out and call 911. See **Shop Safety: Emergency Information**.
- If you use an extinguisher, even briefly, report it so it can be recharged or replaced. See **Shop Safety: Incident and Near-Miss Reporting**.

To be confirmed: a list or floor plan of extinguisher locations, and which extinguisher types are in which areas.

## Flammable liquids and finishes

- Keep solvents, paints, stains and other flammable liquids closed when not in use, and store them in the flammables cabinet.
- Do not use or store flammable liquids near welding, grinding or other sources of sparks or flame.

To be confirmed: where the flammables cabinet is and what may be stored in it.

## Oily rags

Rags soaked with oil-based stains, linseed oil, tung oil and similar finishes can **heat up and catch fire on their own** as they dry. Never wad them up and toss them in the trash. Lay them out flat to dry outdoors or away from anything flammable, or put them in a closed metal container filled with water, before disposal. See **Facility Operations: Trash, Recycling and Hazardous Waste**.

## Hot work: welding, cutting, plasma and grinding

- Clear combustibles (sawdust, wood scraps, cardboard, rags) away from the work area before you strike an arc or start grinding. Sparks travel farther than you expect.
- Watch the area for a while after you finish; smoldering material can flare up later.
- Wear the PPE for the job. See **Shop Safety: Personal Protective Equipment**.
- Hot work belongs in the Metal Shop. See **Metal Shop: Metal Shop Overview**.

## Lasers and 3D printers

- **Never leave the laser unattended while it is running.** This is posted on the machine. See **Digital Fabrication: Laser Cutter**.
- Only cut materials that are safe for the laser. See **Digital Fabrication: Laser-Safe and Prohibited Materials**.

## Electrical fire prevention

Overloaded cords and improvised plug adapters are a common cause of shop fires. See **Shop Safety: Electrical Safety and Lockout/Tagout**.

# Chemical Safety and Safety Data Sheets

This page will cover how to handle the finishes, resins, solvents, gases and adhesives used in the shop, and where to find the Safety Data Sheet (SDS) for each product: what is in it, the PPE it needs, how to store it, and what to do after a spill or exposure.

This page is being written. WMI does not have an SDS binder yet. Collecting safety data sheets for every finish, resin, solvent, gas and adhesive in the shop is owned by the Area Champions or the Space Improvement Committee. Until then, read the label on any product before you use it, and in an emergency call 911.

# Air Quality

Fine dust and fumes are the hazards you cannot always see. Several areas of the shop produce them, and they drift into the rest of the building if they are not controlled at the source.

## Wood dust

- The Wood Shop has dust collection. Turn it on and connect it whenever the tool you are using is set up for it.
- Fine wood dust irritates the lungs and some species are sensitizers. Wear a dust mask or respirator for sanding and other dusty work, even with dust collection running.
- Sweep or vacuum up dust when you are done. Dust piles are also a fire hazard.

To be confirmed: which Wood Shop tools are connected to dust collection and how to turn the collector on.

## Laser fumes

- Laser cutting and engraving produces smoke and fumes. Make sure the laser's exhaust or filtration is running before you start a job.
- Some materials produce toxic or corrosive gases when lasered. Never cut PVC or vinyl, which release chlorine gas. See **Digital Fabrication: Laser-Safe and Prohibited Materials**.

To be confirmed: how the laser is ventilated or filtered, and how to check that it is working.

## 3D printing

- Printing some plastics, ABS and ASA in particular, gives off fumes and fine particles. The Bambu Lab X1C has an activated carbon filter that is replaced as part of its maintenance; see **Digital Fabrication: Bambu Lab X1C and AMS Maintenance**.

# Welding and cutting fumes

- Welding and plasma cutting produce metal fumes. Work with ventilation, keep your head out of the plume, and wear a respirator rated for welding fumes when needed.
- Welding coated or galvanized metal produces especially harmful fumes. Remove the coating first or do not weld it.

To be confirmed: what ventilation or fume extraction the Metal Shop has.

# Paint and finishing

- The paint and spray booth in the Flex Space is the ventilated area for finishing. Use it for spray work so overspray and fumes are contained.
- See **Flex Space: Spray Booth** for the booth procedure.

# Soldering

- Solder flux smoke irritates the eyes and lungs. Work with ventilation or a fume extractor in the Electronics Lab and keep your face out of the smoke.

# Electrical Safety and Lockout/Tagout

## Electrical safety

The City of Waukesha Fire Department inspects the space every year. These are the everyday rules that keep us safe and in line with the fire code.

- **No multi-plug adapters.** Plug-in adapters that turn one outlet into several (cube taps, splitters) are not allowed in commercial buildings. Plug a power strip directly into the wall outlet, then plug tools into the power strip.
- **Do not daisy-chain** power strips or extension cords into each other.
- **Use the cord that is there.** Do not stretch extension cords across walkways or work areas. If a tool does not reach power safely, ask instead of improvising.
- **Keep electrical panels clear.** Never block a panel; someone may need to reach a breaker fast.
- **Damaged is out of service.** Do not use a tool, cord or power strip with cracked insulation, exposed wire, a missing ground pin or signs of scorching. Tag it and report it. See **Shop Safety: Tagging a Tool Out of Service and Reporting It.**
- **Exit signs must stay lit.** If you notice an exit sign that is dark, report it.

For where the panels are and how breakers are labeled, see **Facility Operations: Building Systems.**

## Lockout/Tagout for maintenance

Lockout/tagout means making sure a machine **cannot start** while someone is working on it, and making it obvious to everyone else that it is being worked on.

Before you change a blade or bit, clear a jam, adjust anything inside a guard, or do maintenance:

1. **Turn the tool off** and wait for it to stop completely.
2. **Disconnect the energy.** Unplug it, or for hardwired machines switch off and lock the disconnect. On tools with a safety key, remove the key (the **Wood Shop: Radial Arm**

**Saw** works this way).

3. **Tag it.** Leave a clear note on the tool saying it is being worked on and by whom, so nobody plugs it back in.
4. **Check it.** Try the switch to confirm it will not start.
5. When you are done, replace all guards, remove your tag, and only then reconnect power.

Several maintenance checklists in this knowledge base start with "power off and unplug". That step is not optional.

To be confirmed: whether WMI provides lockout locks and tags, where they are kept, and which machines are hardwired.

# Emergencies

Emergency information, severe weather and incident reporting.

# Emergency Information

## In an emergency, call 911

Dial **911** for any fire, serious injury or other emergency. Do not wait to ask permission or to reach a board member first.

Give the dispatcher this address:

**Waukesha Makerspace 2111 S West Ave, Unit 58 Waukesha, WI 53189**

## Evacuate when in doubt

**Leave the building** for a fire, a chemical spill, or any other hazardous condition. Help others out if you can do so safely, and do not go back in for tools or projects.

To be confirmed: the outdoor meeting point after an evacuation.

## Exits

The building has a **front door** and a **rear door**. Emergency exits are pointed out during the New Member Orientation tour. Know the nearest exit to wherever you are working, and keep every exit and the path to it clear.

## Fire extinguishers

Extinguisher locations are also shown on the orientation tour. Never block one. For how to use an extinguisher and when not to, see **Shop Safety: Fire Safety and Hot Work**.

# First aid kit

The first aid kit is near the restroom. If you use supplies from it, report what you used so it can be restocked.

## AED

To be confirmed: whether the space has an AED (automated external defibrillator), and where it is kept.

## After an emergency

Once everyone is safe, report what happened, including injuries, near-misses and any extinguisher or first aid use. See **Shop Safety: Incident and Near-Miss Reporting**.

For severe weather, see **Shop Safety: Severe Weather and Tornado Shelter**.

# Severe Weather and Tornado Shelter

This page will cover what to do when a tornado warning or other severe weather is issued while you are at the makerspace: where to shelter inside the building, how to shut down equipment safely, and when it is safe to leave.

This page is being written. No tornado shelter location has been designated yet. Choosing the safest interior spot and posting signage is owned by the Board, with input from the landlord.

# Incident and Near-Miss Reporting

Please report every accident, injury and near-miss, however small. Reports are not about blame. They tell us which tools, habits or setups need attention before someone gets hurt.

## What to report

- **Accidents and injuries**, from a cut that needed a bandage to anything that needed medical care.
- **Near-misses**: something that could have hurt someone but did not, such as kickback, a workpiece thrown by a tool, a small fire, or a tool that started unexpectedly.
- **Damage** to equipment or the building, including anything you broke yourself. It happens; just tell us.
- **Use of safety equipment**, such as a fire extinguisher or first aid supplies, so they can be replaced.

## How to report

If anyone is hurt or in danger, **call 911 first**. See **Shop Safety: Emergency Information**.

Then report it by either:

- **Email**: [info@waukeshamakers.com](mailto:info@waukeshamakers.com)
- **Discord**: message a board member in **#general**

Helpful details to include: what happened, when, where in the shop, which tool or material was involved, whether anyone was hurt, and anything you think contributed.

If a tool was involved and is unsafe to use, also take it out of service. See **Shop Safety: Tagging a Tool Out of Service and Reporting It**.

# Security cameras

The space has security cameras for the safety of members and property. Footage is reviewed only when necessary, for security or to look into a reported incident.

# Broken Equipment

Tagging a tool out of service and reporting it.

# Tagging a Tool Out of Service and Reporting It

Tools break, especially well-loved shared ones. What matters is that the next person does not find out the hard way.

## When to take a tool out of service

Stop using a tool and take it out of service if it:

- is damaged (cracked guard, frayed or cut cord, missing parts, bent blade)
- behaves strangely (unusual noise, vibration, smell, smoke, sparking, or it will not stop)
- is missing a safety feature, such as a guard, a key or an emergency stop
- failed your pre-use inspection (see **Training and Certification: Pre-Use Inspection**)

## What to do

1. **Make it safe.** Turn it off and unplug it.
2. **Tag it.** Put a clear "Out of service" note on the tool, on the switch or plug where the next person will see it. Write what is wrong, the date, and your name.
3. **Report it.** Email [info@waukeshamakers.com](mailto:info@waukeshamakers.com) or post in **#general** on Discord with the tool, what happened and what you noticed. If someone was hurt or nearly hurt, also see **Shop Safety: Incident and Near-Miss Reporting**.
4. **Leave the tag on** until the tool has been repaired and checked.

To be confirmed: whether the shop keeps printed out-of-service tags and where; whether to contact the area's Area Champion directly; and who may remove a tag and repair a tool.

## Finding the tool's record

Shop equipment is listed in Atlas at <https://atlas.waukeshamakers.com>. Include the tool's name as it appears in Atlas in your report, so it is clear which machine you mean.

If you have the skills and want to help with the repair, say so in your report.