

**Cleveland Institute of Art**  
**Fabrication Studios**  
**Policy Manual**

2019

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## **IN CASE OF AN EMERGENCY**

Call 9-1-1

**Address:** 11610 Euclid Ave. West Entrance

**Call-back Phone Number:** CIA Security 216-421-7330

Stay with the victim

Send someone to the security desk to help direct emergency personnel. Technical specialists and student victims should file an incident report with security. CIA employees who are involved should file incident reports with security and human resources.

## **PURPOSE**

This policy manual is intended to provide a comprehensive guide to the rules and regulations for the use of the CIA Fabrication Studios, including all materials, equipment, and resources.

Here you'll find out how to

- protect against hazards in the studios
- observe correct cleaning and maintenance protocols
- navigate the training required for specific equipment

All students, faculty, sub-contractors (i.e. visiting artists), and staff who intend to use the Fabrication Studios should have access to this manual and be familiar with its contents. The Fabrication Studios are routinely used by employees and students and have the potential to result in serious injury. It is the goal of the Cleveland Institute of Art to provide a safe working environment within all of the studio environments.

These policies and procedures are expected to be followed by everyone while they're in the studios. Please remember that studios access is a privilege, not a right.

## **RESPONSIBILITIES**

List of Fabrication Studios staff positions and their designated responsibilities:

### **Director of Fabrication Studios**

- Provide training to Fabrication Studios technical specialists on topics such as Right-to-Know/ Hazard Communication
- Provides the resources necessary to meet the expectations of the metal shop, wood shop, plastic shop, plaster/stone room, machine shop, oil clay room, spray paint booth, and spray mount room
- Perform shop inspections
- Coordinate meetings among Fabrication Studios technical specialists to communicate regulatory changes, provide training, and discuss ideas with the staff

### **Fabrication Studios Technical Specialist**

- Performs room, shop, and equipment inspections during the semester to ensure that the requirements of this policy are being met
- Maintains and make the owner's manuals or instructions available for each piece of equipment used in those respective spaces
- Provides training to Fabrication Studios users regarding topics such as emergency response, appropriate attire, and personal protective equipment (PPE), Fabrication Studios-specific safety rules, review of machine specific operating methods and safety features

## **ACCESS**

The Fabrication Studios are a shared-shop academic resource. Spaces designated as Shops, such as the Metal Shop, require a member of the Fabrication Studios staff, a faculty member, or another designated staff member to supervise the spaces. Spaces in the Fabrication Studios designated as Rooms are open during building open hours and do not require a member of the Fabrication Studios staff to be present for users to have access to those spaces (see 2<sup>nd</sup> floor plan in appendix).

**Anyone who has not received training and approval is prohibited from using Fabrication Studios resources.**

Use of Fabrication Studios resources depends on the following:

- The user must be a properly trained; **current** student, staff member, faculty member, sub-contractor or visiting artist, or receive written permission from the director of the Fabrication Studios.
- All students must attend the Fabrication Studios safety labs, pass the safety labs test, and sign a safety labs authorization sheet.
- A fully trained Fabrication Studios technical specialist must be in the Fabrication Studios when the shops are in use by faculty or staff members for class instruction or research.
- A Fabrication Studios technical specialist must be in any space designated as a shop for student when faculty are not present. Faculty may request assistance from a Fabrication Studios technical specialist with their class to help supervise the use of tools and equipment. Access to some equipment may require a Fabrication Studios technical specialist to be present in the space when being used by the faculty for assistance and safe use.
- Technical specialists provide instructional support in fabrication for curricular programming; they therefore are expected to teach the proper health and safety procedures for use of the Fabrication Studios' equipment. Please note, however, that they are neither contracted nor expected to provide instruction that is a part of regular curricular programming. Technical specialists do not teach any of the course assignment contents or any skills necessary to the completion of the assignment. The Fabrication Studios director and staff members provide instructional support only.
- CIA faculty and CIA staff must have written permission from the director of Fabrication Studios and may need to sign the CIA waiver release to work on personal projects not related to a class or job description to access the Fabrication Studios.

#### **TYPICAL HOURS OF OPERATION (SUBJECT TO CHANGE)**

Monday through Friday 8am—11pm

Saturday 9am—8pm

Sunday noon—10pm

**For closings or schedule changes, visit the Fabrication Studios pages on [my.cia.edu](http://my.cia.edu)**

**Students found to be in the Fabrication Studios during closed hours may lose their access privileges to the Fabrication Studios.**

The doors to the Fabrication Studios are not to be propped open, nor should the latches be tampered with to prevent engaging the locking mechanism during Fabrication Studios closed times. If there is a need to move materials into or out of the Fabrication Studios, please contact a Fabrication Studios technical specialist (216-421-7471) during open hours or CIA facilities (216-421-7950) after hours. Someone will assist you with unlocking the door.

## **PROPER USE OF THE FABRICATION STUDIOS**

Appropriate attire and personal protective equipment (PPE) are required when working in the Fabrication Studios.

### **Appropriate Attire Requirements**

- Long pants or shorts that extend to at least the knee are required (long pants are preferred)
- No skirts, dresses, or kilts
- No scarves, dangling ties, or hooded sweatshirts or jackets permitted  
No open-toed shoes, flip-flops, slip-ons, or shoes with heels more than 1" high permitted
- Shoes must be slip-resistant
- No dangling jewelry permitted (earrings or necklaces)
- No hand, finger, or wrist jewelry permitted
- Long hair must be tied back; no extra hair ties permitted on wrists

### **Personal Protective Equipment (PPE)**

Anyone using the Fabrication Studios must wear Personal Protection Equipment (PPE). PPE includes safety glasses, hearing protection up to 23dB, and a minimum N95 mask or respirator. See signs in the studios for notification of changes, exceptions, or additional requirements.

Some PPE is available for purchase from the vending machine on the south end of the second floor (see 2<sup>nd</sup> floor plan in appendix). If the inventory is low in the vending machine, contact the director of Fabrication Studios. Shared face shields and hearing protectors are available in the entrance to the Fabrication Studios wood shop and metal shop.

### **Vision Protection**

Safety glasses with a minimum Z87+ impact rating must be worn in the Fabrication Studios as specified by signage posted on the doors to the rooms and shops. Certain equipment is specified and required to be operated with the use of a face shield (provided). Operators using equipment such as grinders, lathes, or milling machines must follow this specified face shield requirement.

Prescription eyewear must meet the minimum Z87+ impact rating or the wearer must use the OTG (over the glasses) safety glasses with the Z87+ impact rating. If you need safety glasses or a face shield for a particular task, please see a Fabrication Studios technical specialist.

Eyewash stations are available in the metal shop in room 213 and the wood shop in room 218. Notify a Fabrication Studios technical specialist anytime the eyewash station is used.

### **Hearing Protection**

In ear or over the ear hearing protection is required in areas where noise-producing power tools, machinery, or dust collection systems are used in the Fabrication Studios.

No headphones, earphones, earbuds, or other in-ear or over ear personal audio devices or noise cancelling headphones are permitted for use in the Fabrication Studios. These headphones do not provide the necessary hearing protection and may inhibit communication in the shop. In a shared shop environment communication can be paramount for safety, which is especially true in the event of an emergency.

## **Gloves**

Gloves are NOT to be worn while using machinery, as they can pose entanglement hazards. There is no universal glove suitable for all applications. Use the appropriate glove type as specified by the material safety data sheets.

## **Respirators and Nuisance Masks**

Any respiratory protection being used by anyone working in the Fabrication Studios must meet the specifications listed on the PPE sheets posted at the work spaces within the Fabrication Studios. Respirators should be cleaned after each use and kept in an airtight plastic container.

## **First Aid Stations, Fire Extinguishers, and Eyewash Stations**

A first aid station is located in the Fabrication Studios wood shop room 218 and metal shop room 213. An eyewash station is located on the right side of the sink in the Fabrication Studios wood shop, and the right side of the sink in the Fabrication Studios metal shop. There is one fire blanket in the metals shop to the left of the sink. There is at least one fire extinguisher each in each of the shops. First aid kits and fire extinguishers are not to be blocked; all materials should be at least 3 feet from the front of the kit or fire extinguisher. If a first aid kit is missing items, contact the director of Fabrication Studios immediately. If the fire extinguisher is discharged for any reason, notify the director of Fabrication Studios or the director of facilities immediately.

## **HAZARD CONTROL**

### **Safety Data Sheets**

Any product that may pose a hazard must have a Safety Data Sheet (SDS). SDSs provide important information on particular products and must be kept in the SDS binder at the entrance of the Fabrication Studios wood Shop (room 218) and in the hall near the entrance of the Fabrication Studios metal shop (room 213). If the product/ material does not come with a paper copy of the SDS, go online and search for the SDS to download (ex. Google> acetone SDS). New chemicals brought into the Fabrication Studios must be checked with a Fabrication Studios technical specialist, and the SDS for the chemical must be added to the SDS binder.

### **For emergency chemical information**

Safety data sheets (SDS) contain chemical emergency information. Become familiar with the SDS to understand chemical hazards in the Fabrication Studios. Know where the location of the nearest eyewash stations, fire extinguisher, the fire blanket, and first aid supplies are before using Fabrication Studios tools and equipment.

### **Safety Data Sheet (SDS) Management Procedure**

The purpose of this procedure is to assist and standardize the process of collecting information and making it available for faculty, staff, students and contractors. A consistent and orderly process will help to make all inquiries more efficient. All new materials and chemicals must have its manufacturer's safety data sheet added to the SDS binders and digital database. Fabrication Studios maintains two SDS binders; one location is at the entrance of the Fabrication Studios wood shop (room 218). The second location, which is accessible whenever the school is open, in the hallway outside of the metal shop (room 213). Technical specialists from across CIA are

compiling an SDS database on the Fabrication Studios web portal at my.cia.edu ([https://my.cia.edu/ICS/Fab\\_Studios/Bookmarks.jnz](https://my.cia.edu/ICS/Fab_Studios/Bookmarks.jnz)). This database is accessible to faculty, staff, and students.

Anyone bringing new materials or chemicals into the Fabrication Studios must have two double sided 8 ½" x 11" sets of SDS sheets to be inserted in the binders. SDS sheets are available on manufacturers' websites. The product webpage may have a link to the SDS sheet (some may be labeled as the MSDS. Note: The manufacturer is required by law to provide the SDS.

Another route is to search Google for the item name and its manufacturer's number, then add "SDS." The first listing is usually the latest version; check the revision date. The SDS sheets must be presented to a Fabrication Studios staff member. Fabrication Studios staff must highlight the common title name and add the SDS sheets to the binders.

The SDS sheets are organized by its commonly used name in alphabetical order. Examples are: Adhesives, Paints, Cleaners, Lubricants

There are exceptions to this rule, but only in the interest of simplifying the search.

Examples are:

Grouping items always used together

Product Brand name, (ex. Windex)

Fabrication Studios will send out an annual notification to all students, faculty, and staff that the flammables cabinets in the spray paint booth and the spray mount room must be purged within two weeks after the close of the academic year. Fabrication Studios staff members will review and update both Fabrication Studios SDS binders, leaving SDS for materials used by Fabrication Studios and the SDS for the materials that are commonly used during the academic year. This is part of the Fabrication Studios effort to manage the chemical storage in those spaces and the hazard communication in the Fabrication Studios.

Acids or caustics are required to be stored in a corrosives cabinet, and Fabrication Studios is not equipped to do this.

#### **HOUSEKEEPING AND MATERIALS STORAGE**

The Fabrication Studios are to be kept clean at all times. Debris is to be swept up and disposed of properly and any spills are to be cleaned off of the floor immediately to prevent a slipping hazard. Waste materials should be disposed of in the dumpster located in the loading dock. Aisles and walkways must be kept free of debris and obstructions; and a clear path must be maintained to the exit. The entrances and exits of the Fabrication Studios, first aid kits, fire extinguishers, and eyewash stations must have unobstructed access at all times. Materials are to be stored in designated areas.

All student-owned flammable substances, such as paint, solvents, or adhesives, must be stored in the flammable materials cabinet located in the spray paint booth (room 217 for paints and solvents), and spray mount room (room 216 for spray adhesives).



All CIA/Fabrication Studios-owned flammable substances must be stored in the flammable materials cabinet located in the Fabrication Studios storage room (see 2<sup>nd</sup> floor plan in appendix).

All flammable liquid waste should be disposed of in a plastic waste flammables container located in the flammable cabinet in the spray paint booth (room 217).

Store any cloth or paper rags, or other material that has been saturated with flammable or combustible liquids in a designated hazardous waste bin with a tight-fitting lid. Always remove/replace clothing that has become saturated with a flammable or combustible liquid. Flammable or combustible liquid that is on or has soaked into clothing can easily ignite if exposed to an ignition source, such as radiant heat, flame, or sparks.

Spent razor blades must not be placed in the trash. All waste blades should be placed in a yellow blade disposal container located under various work tables in the Fabrication Studios.

Hand-held power tools must be plugged into a wall outlet or cord reels. Daisy-chaining of power strips or extension cords presents a potential fire and tripping hazard and is prohibited.

If any equipment has frayed or damaged electrical cords, notify the director of Fabrication Studios.

### **Treated Lumber Policy**

Note: Current means for treating lumber - ACQ - Reference

[https://en.wikipedia.org/wiki/Alkaline\\_copper\\_quaternary](https://en.wikipedia.org/wiki/Alkaline_copper_quaternary)

Note: Before 2004 means for treating lumber - CCA – Reference

[https://en.wikipedia.org/wiki/Chromated\\_copper\\_arsenate](https://en.wikipedia.org/wiki/Chromated_copper_arsenate)

CCA treated lumber was phased out of the US market in 2004, and is prohibited in the Fabrication Studios. Consult SDS sheets regarding treated material.

ACQ-treated lumber is allowed in the Fabrication Studios with the discretion of the technical specialist on duty. The individual using ACQ-treated lumber must wear a minimum of a N95 dust mask while cutting or abrading the material. The dust collector must be on while cutting operations are being enacted on the material. Orbital sanding operations must use the HEPA rated Festool dust extractors.

Users should be advised that if they experience skin, eye, or breathing irritation, the materials may be causing this, and they should not continue to work with it.

Burning of ACQ lumber is not permitted.

The material cannot be used for patterning that will/or could be subjected to burning from welding or plasma cutting operations.

- Limit power tool usage to miter saw, bandsaw, and panel saw

- No stationary sanders
- No table saw. The saw stop will be set off by the moisture content in the wood related to the treatment process

### **Operator Actions**

The following are safeguards for use with machine or power equipment:

1. Gloves that are appropriate for the task may be worn while handling/moving materials to prevent cuts, punctures, etc., and for operations and processes such as welding and forging to prevent burns. Do NOT use gloves while using tools and equipment that pose entanglement hazards.
2. Holding/clamping tools will be useful for placing, holding and removing material to reduce point of operation hazards (i.e. pliers, clamps and/ or vises).
3. Push blocks/and push sticks can be used to feed material into cutting blades to keep hands away from point of operation.
4. Warning signs should be read before using any machine; they inform the user of the guards that are available and their proper use.
5. ON/OFF switches: Turn machinery off before leaving work area
6. Large equipment will be cleaned and maintained by the Fabrication Studios technical specialist or work-study. Fabrication Studios staff will disengage electrical power to a machine to avoid accidental starting before cleaning and will use lockout/tag-out measures as necessary.

### **VISITORS AND GUESTS**

Students are not permitted to bring any visitors into non-public CIA spaces without prior approval. The Foundation classrooms, the studio departments, the shared work spaces (for example, computer labs, and fabrication studios), and all of the student studios are spaces requiring intense and sustained concentration enabled by a relatively disruption-free atmosphere. The sole purpose of these areas is for the students to dedicate themselves fully to their work and the safe handling of potentially toxic substances and potentially dangerous machinery and tools. Permission can only be granted by faculty or staff of the respective department(s) or the director of the Fabrication Studios, in concert with the Office of Academic Affairs.

Visitors are prohibited from using equipment in the studios or assisting anyone in use of CIA equipment, regardless of their level of expertise or experience. A request must be communicated by any student wishing to bring visitors into the making spaces of CIA to the Chair or faculty of the respective department(s), or the Vice President of Academic Affairs, no later than 24 hours prior to the proposed visit. The student is solely responsible for their guest and their guest's actions.

### **FABRICATION STUDIOS PURCHASING POLICY**

Faculty must make class material order requests at least two weeks before the date that the material is needed for the class.

Requesting material to be stocked for a class project with the intent for the material to be purchased by the students, the faculty member must guarantee that students will purchase at least 75 percent of the requested material. Alternatively, the faculty member can order the material through their respective department's budget via a purchase order with the vendor or a departmental transfer between the purchasing department and Fabrication Studios. Students, faculty, and staff are expected to check on availability and stock of materials in person at the Fabrication Studios before making a purchase with CIA student accounts or via the [my.cia.edu](http://my.cia.edu) online student supply store.

### **Request for Refund**

The procedure for students, faculty and staff to request a refund on purchases from the [my.cia.edu](http://my.cia.edu) online supply store is:

1. Forward the purchase confirmation to the director of Fabrication Studios with a written request for a refund.
2. Denote which/how much material for the refund request.
3. The director of Fabrication Studios will contact CIA student accounts and confirm the refund via CIA email.
4. Students will receive an email notification when the refund has been processed.

### **Fabrication Studios Calendar Scheduling Policy**

The Fab Studios calendar is intended for faculty, technical specialists and student groups to reserve spaces within the Fabrication Studios for classes and demonstrations. Keep in mind, that the spaces designated shops and rooms can only be reserved for class instruction or demonstration. The spaces cannot be reserved to work outside of class times. Student groups are able to sign out shops or rooms for group demonstrations with the director of the Fabrication Studios.

### **Reserve these spaces and tools within Fabrication Studios:**

wood shop (room 218a)  
machining shop (room 218c)  
metal shop (room 213)  
oil clay room (room 215)  
plaster/stone room (room 214)  
plastic shop (room 218b)  
spray mount room (room 216)  
spray paint booth (room 217)  
ShopBot CNC (reservations required)

Students, faculty, and staff are welcome to use the shops in Fabrications Studios at any time we are open, aside from times scheduled for safety labs. If the shops have been signed out, students, faculty, and staff must yield to the class or group that has signed out the space. If the instructor for the class or group has no issue with other projects going on during the requested time, then individual student, faculty or staff may use the space as well. Reservations must be made 24 hours in advance to prevent conflict from overlapping classes. The storage room (room

218d) cannot be reserved.

**To reserve a space, visit the Faculty/Staff Reservations section of the Fab Studios page on [my.cia.edu](http://my.cia.edu).**

**Shop and Room Reservation Availabilities Are:**

Mon: 8:30am—9:30pm

Tues: 9:30am—9:30pm

Wed: 8:30am—9:30pm

Thurs: 9:30am—9:30pm

Fri: 9:30am—9:30pm

Sat: 9:30am—7:30pm

Sun: 12:30—9:30pm

**CODE OF CONDUCT**

**The following safety rules and procedures are to be followed at all times:**

1. Reckless behavior, such as horseplay and throwing objects, is not allowed.
2. Users must follow the Fabrication Studios appropriate attire policy. Loose clothing, jewelry, neck ties, and scarves should not be worn in the Fabrication Studios. Long hair must be tied back and secured; long facial hair must be covered while using power equipment.
3. Fabrication Studios users must use the appropriate PPE. All Fabrication Studios users must wear safety glasses while working on projects in the Fabrication Studios as specified in the signage posted on the doors of the rooms and shops. Examples include: safety glasses, face shields, ear plugs, protective footwear, helmets, respirators, etc.
4. Do not leave project related items or materials in the Fabrication Studios for an extended period of time. Remove them as soon as possible. Any material stored in Fab Studios without the owners, name, phone number, dept./major, email address, and time left, will be subject to disposal.
5. No food will be allowed in the Fabrication Studios at any time. Drinks must be in spill-proof containers and cannot be set on the equipment.
6. No unauthorized persons are allowed in the Fabrication Studios. Allowing those without access into the Fab Studios could cause loss of access to the Fabrication Studios and possibly to the building.
7. Requests for tours or visitors need to be routed through the CIA Admissions Office, the Office for Institutional Advancement or the director of Fabrication Studios.
8. Hand tools may be signed out from the Fabrication Studios but are not to leave the CIA building. All other tool sign-out requests must be approved by the Fabrication Studios Director. Borrower is responsible for replacement value of the tool if damaged or missing.
9. Under no circumstances may power equipment be taken from the Fabrication Studios without permission from the director of Fabrication Studios.
10. No one who is under the influence or is otherwise impaired by medication, controlled substances(such as alcohol), illegal substances may be in the Fabrication Studios or borrow tools.

11. Fabrication Studios users must be alert and aware of their surroundings.
12. Keep fingers clear of the point of operation; never use a rag/cloth near moving machinery.
13. Use a shop vacuum, chip brush, or shop brush to remove metal shavings or cuttings.
14. All machines must be operated with their guards and shields in place.
15. Users must keep floor around machines clean, dry, and free from trip hazards.
16. Extension cords must be 12gauge wire (wire gauge label should be found stamped or printed on the wire insulating sheathing) or heavier; do not daisy-chain multiple cords.
17. Contact the Fabrication Studios technical specialist before storing paints, solvents, adhesives, lubricants, or other chemicals in the Fabrication Studios. Take care to ensure that incompatible chemicals are not stored together. An SDS is required for any glue, oil, chemical, or solvent used in the lab and must be stored in the SDS binder.
18. Fabrication Studios users may bring small hand tools (or supplies from outside to use in the Fabrication Studios only after obtaining written approval from Fabrication Studios director. CIA assumes no responsibility for any lost or stolen items brought into the Fabrication Studios.
19. No open flames are permitted in the Fabrication Studios except for the metal shop.
20. Any item brought into Fabrication Studios which has a heating element (heat gun, hot plate) must be approved by the director of Fabrication Studios. The approved item must be plugged directly into a wall outlet (not an extension cord). The item must never be left on or plugged in and unattended.
21. Users must immediately report all accidents/incidents/or injury to the Fabrication Studios staff.
22. Fabrication Studios users must put away cutting tools and hand tools before cleaning an area. Users must also take out drill bits and lower saw blades or guards completely before cleaning to reduce the chance of injury.
23. Users must return tools and unused supplies to their original locations in the Fabrication Studios before leaving the space.
24. Users are responsible for cleaning their work area in Fabrication Studios. Surfaces and floors must be cleaned if their work has generated debris. Brooms, dust pans, and shop-vacuums are provided for clean-up.
25. Users must report missing, broken, or damaged tools to a Fabrication Studios technical specialist. Notify the director of Fabrication Studios or a technical specialist of any frayed or damaged cords.

**FABRICATION STUDIOS**  
**Sample Student Infraction Form**

Student Name: print Email: print  
Major: print

<b>Infraction</b>			
Date	0-00-00	Time	00:00 am/pm
Location			
<b>Description</b>			

- Print
- Write in third Person
- Be very specific and factual
- Example: *On March 3, 2019 at 2:10pm, technical specialist Sandee Smith noticed student John Jones using prohibited materials and an open flame. Smith approached Jones and asked him leave. ...*
- Leave notice of specific students involved and students of peripheral
- Omit editorializing or opinion statements
- Maintain confidentiality

Fabrication

Studios

Employee: print Date: 0-00-00

Email: print

## APPENDIX

### Fabrication Studios Potential Hazards

Hazard evaluation is a dynamic process that needs to be repeated in response to any number of factors that could influence the hazards, e.g., changes in equipment use or design, operator experience, workspace configuration or design.

### Assessment of Initial Risk

Once the hazards and potential receptors are identified, it is important to assess the degree of relative risk in terms of the severity of harm and the probability of occurrence. Once this has been determined, appropriate risk reduction strategies can be selected to minimize the severity of harm or likelihood of an adverse event. The goal is to implement controls that come as close to achieving a remote likelihood of incident to a feasible extent.

Consider how quickly the hazard presents itself and the operator's reaction time, the duration and frequency of exposure to the hazard, reliability of controls and safety devices, experience of the operator, machine history, number of persons exposed to the hazard, etc.

### Risk Reduction

There are a number of possible options for risk reduction strategies. The following are machine hazard risk reduction strategies. Best practices must be selected and implemented when operating machinery and using tools.

1. Elimination or substitution through inherently safer design. Examples include: automated material handling, substitution of less hazardous chemicals/fluids, reduced mechanical force/energy, elimination of pinch points by adjusting clearances.
2. Guards or safeguarding devices. Examples include: barriers, interlocks, presence sensing devices, two-handed controls.
3. Awareness devices. Examples include: lights, beacons, strobes, computer warnings, signs, labels, beepers, horns, sirens, fences/barrier tape.
4. Training and safe work practices/procedures. Examples include: written operating, maintenance and repair procedures, employee training, employee demonstration of competency, on-going evaluation of employee operating performance.
5. Layout and egress. Aisles and walkways will be kept free of debris and obstructions and a clear path will be maintained to the exit. All exits shall be properly identified with signage. Machinery will be placed so that a clear and safe operating area is maintained for each machine.

#### **Potential Types of Injury**

1. Bruising
2. Abrasions
3. Cuts
4. Scalping (due to hair getting caught in moving machinery)
5. Cuts
6. Burns
7. Amputations
8. Lacerations
9. Eye Injuries
10. Punctures

#### **Hazardous Areas for Physical Contact Around Equipment and Tools**

1. Nip Points – Parts on parallel axis that rotate in opposite directions or against stationary objects (most common).
2. Shear Points – Cutting blades move past a stationary point.
3. Pinch Points – Body parts can be caught between moving and/or stationary parts.
4. Point of Operation – Area on a machine where work is being done.
5. Power Transmission Equipment – All parts that transmit energy and motion.

#### **Point-of-Operation Hazards**

Points of operation hazards occur where material and machine meet, and where work is being done on a part or component. Cutting (mechanical motion), punching (blanking, drawing, stamping), shearing (slide or knife), and bending have multiple point-of-operation



hazards. Injuries due to point-of-operation hazards happen most often when the operator is not paying attention. For example, hair and clothing can easily become entangled in machinery with moving parts.

These injuries can be prevented by proper use of guards, proper operation of the machinery, and with an attentive attitude.

### **Mechanical Motion Hazards**

Rotating machine motion (circular motion) can cause scalping, amputation, and choking. Reciprocating machine motion (back/forth or up/down motion) can cause amputation or other injuries. Transverse machine motion (straight, continuous line motion) can result in impact injuries.

### **Lifting Hazards**

Improper lifting can result in a permanent back injury. Back injuries can be avoided if you lift properly at all times. If you must lift a large or heavy object, get some assistance or employ the use of a lifting devices such as pallet jack or a forklift.

### **Slip and Trip Hazards**

A slip and/or trip hazard can be caused by obstacles, dust and debris, and/or liquids on the floor.

### **Impact Hazards**

An impact hazard is caused by flying debris or by reciprocating high speed machinery.

### **Entanglement Hazards**

Most machines in the Fabrication Studios use rotating motion. Rotating parts can instantaneously catch loose clothing, hair, and jewelry.

### **Sharp Object Hazards**

Blades and drill bits have sharp edges. The proper handling of bits and blades is necessary. Carefully follow directions on the equipment while installing new blades. Use proper size cutting tools for the equipment to avoid injuries.

### **Energy Hazards and Potential or Stored Energy Hazards**

Energy hazards can come from the power sources that energize tools and equipment. These power sources must be neutralized, isolated, or switched off when they are identified as a hazard. Potential, or stored, energy is dangerous because the impending motions are sudden and are not expected. Carefully examine lockout/tag-out procedures to prevent injuries from accidental start-up or unexpected energizing.

1. Unexpected start-up of machinery – Example: Computer Numeric Control (CNC) processes.
2. Hydraulic/pneumatic and electrical energy release – Examples: hydraulic presses, grinders, band saws.

3. Springs, Wires or cables under high tension – Example: pulleys.

### **Machine Guarding Devices**

Equipment guards are designed to keep the user safe during machine operation and should not be positioned in a way that they do not protect the user. Guards are never to be removed any time the machine is running. Adjusting guards away from their protective position or removing them while a machine is in operation will result in loss of Fabrication Studios access. Some typical machine guards and their uses are listed below:

1. Fixed or enclosed – These guards are a permanent part of the machine, contain no moving parts, and prevent everything but the work piece from reaching the point of operation.
2. Interlocked – These guards prevent operation of the machine unless the guards are in place.
3. Adjustable – These guards are moveable by the operator to allow various sizes of material to be used on a single machine. These are the most common and include machinery such as band saws and grinders.
4. Self-Adjusting – These guards open as a work piece is advanced through the machine, keeping the point of operation only large enough to accommodate contacted material.
5. Lockout/Tag-out – Ensuring that all hazardous energy sources of a machine have been de-energized and secured in a positive manner.

### **Fabrication Studios Lockout/Tagout Procedure**

The Lockout/Tagout Procedure identifies energy-related hazards relevant to repairs and maintenance of tools and equipment. As noted above in Energy Hazards and Potential or Stored Energy Hazards, a hazard evaluation is a process that needs to be repeated in response to any number of factors that could create hazards. Lockout/Tagout procedures communicate that the equipment is under repair and cannot be operated. Locking out the sources of energy and blocking the sources of stored energy to equipment prevents the use of the equipment while under repair or maintenance prevent the operation of the equipment and protect the personnel while servicing the equipment.

The planned control helps to prevent accidental or unintentional activation or release of energy from tools and equipment while they are being repaired, cleaned, or serviced.

The procedure:

- Establishes a safe means for de-energizing tools equipment
- Prevents unauthorized persons or automated systems from activating tools and equipment
- Provide secondary control (tagout) to communicate the reason and time frame for the lockout
- Establishes responsibility for who is appropriate to implement lockout/tagout

procedures

- Identifies and ensures that only approved locks and standardized tags are that are provided by the company will be appropriately used

### **Assessment of Energy Hazards**

Those conducting repairs and maintenance must be aware of the potential hazards from different energy sources that power tools and equipment. Some examples of energy hazards are: electricity, compressed air, hydraulic, gas, and steam. Potential or stored energy can also be potential hazards that need to be addressed. Some examples of stored energy are: raised loads (gravity), charged capacitors (electricity), stretched or compressed springs (mechanical).

### **Tagout**

A tagout or lockout tag is a mechanic device that is applied to a mechanism that delivers energy to a tool or piece of equipment. A tagout indicates the equipment that is being serviced, the department that is servicing the equipment, the name of the personnel that is conducting the service, the time and date that the tagout is applied.

### **Lockout**

A lockout is a device or mechanism that renders an energy source such as a switch, valve, raised load or spring load neutralized. Some examples of a lockout are locking an electrical panel switch off, a block to prevent load from falling, or a cover that is placed over a switch or valve and then locked to prevent access.

### **Lockout/Tagout Personnel**

Personnel responsible for lockout/tagout are specified by the Fabrication Studios. They include but are not limited to:

- Director of the Fabrication Studios
- Fabrication Studios technical specialists
- Fabrication Studios work study students and lab monitors

Note: Blade changes and equipment maintenance is to be done by Fabrication Studios staff, workstudy, or lab monitors.

### **Fab Studios Lockout/Tagout Energy Hazards**

- Electrical panels that are dedicated to specific equipment energized with electricity
- Pneumatic lines to specific equipment (vacuum former, widebelt sander, sand blaster)
- Natural gas (forge)

Once the hazards related to the maintenance and repair of equipment are identified, it is important to assess what types of lockouts are required and where to place them. After this has been determined, the lead Fabrications Studios staff member (in some cases the equipment repair or maintenance contractor) of the maintenance or repair must legibly fill out the lockout tag and communicate by institutional email to the rest of the Fabrication Studios staff that the

equipment is under maintenance or repair and that it is under lockout/tagout.

The lockout tag must list the equipment to be serviced, the time that the equipment is locked out, and the date that the equipment is locked out. Tags must be durable and applied securely to the lockout mechanism. The tags must only be removed by the personnel that initiated the lockout after the repair or maintenance is completed and tested to ensure proper operation. Once proper operation of the serviced equipment is confirmed by the staff member leading the maintenance or repair, that staff member must communicate by institutional email to the rest of the Fabrication Studios staff that the service is complete and the equipment is back in operation. The staff member leading the service must enter a brief description regarding the maintenance/repair and the date that it was completed into the Fab Studios equipment log for records.

### **Electrical**

1. Shut off power at machine and disconnect. (note: disconnecting means must be locked or tagged).
2. Press start button to see that correct systems are locked out.
3. All controls must be returned to their safest position.

Points to remember:

- a. If a machine or piece of equipment contains capacitors, they must be drained of stored energy.
- b. Possible disconnecting means include the power cord, power panels (look for primary and secondary voltage), breakers, the operator's station, motor circuit, relays, limit switches, and electrical interlocks.
- c. Some equipment may have a motor isolating shut-off and a control isolating shut-off.
- d. If the electrical energy is disconnected by simply unplugging the power cord, the cord must be kept under the control of the authorized employee or the plug end of the cord must be locked out or tagged out.

### **Hydraulic/Pneumatic**

1. Shut off all energy sources (pumps and compressors). If the pumps and compressors supply energy to more than one piece of equipment, lockout or tagout the valve supplying energy to the piece of equipment being serviced.
2. Stored pressure from hydraulic/pneumatic lines shall be drained/bled when release of stored energy could cause injury to employees.
3. Make sure controls are returned to their safest position (off, stop, standby, inch, jog, etc.).

### **Fluids and Gases**

1. Identify the type of fluid or gas and the necessary personal protective equipment.
2. Close valves to prevent flow, and lockout/tagout.
3. Determine the isolating device, then close and lockout/tagout.
4. Drain and bleed lines to zero energy state.
5. Some systems may have electrically controlled valves. If so, they must be shut off and locked/tagged out.

6. Check for zero energy state at the equipment.

#### **Potential or Stored Energy**

1. Block out or use die ram safety chain.
2. Lockout or tagout safety device.
3. Shut off, lockout or tagout electrical system.
4. Check for zero energy state.
5. Return controls to safest position.

#### **Release from Lockout/Tagout**

1. Inspection: Make certain the work is completed and inventory the tools and equipment that were used.
2. Clean-up: Remove all towels, rags, work-aids, etc.
3. Replace guards: Replace all guards possible. Sometimes a particular guard may have to be left off until the start sequence is over due to possible adjustments. However, all other guards should be put back into place.
4. Check controls: All controls should be in their safest position.
5. The work area shall be checked to ensure that all employees have been safely positioned or removed and notified that the lockout/tagout devices are being removed.
6. Remove locks and tags. Locks and Tags must be removed by the personnel who initiated the lockout/tagout.

#### **Service or Maintenance Involving More than One Person**

When servicing and/or maintenance is performed by more than one person, each authorized employee shall place his own lock or tag on the energy isolating source. This must be done by using a multiple lock scissors clamp if the equipment is capable of being locked out. If the equipment cannot be locked out, then each authorized employee must place his tag on the equipment.

#### **Removal of an Authorized Employee Lockout/Tagout by the Institution**

Each location must develop written emergency procedures that comply with 1910.147(e)(3) to be used at that location. Emergency procedures for removing lockout/tagout should include the following:

1. Verification by employer that the authorized employee who applied the device is not in the facility.
2. Make reasonable efforts to advise the employee that their device has been removed. (This can be done when they returns to the facility.)
3. Ensure that the authorized employee has this knowledge before they resume work at the facility.

#### **Shift or Personnel Changes**

Each facility must develop written procedures based on specific needs and capabilities. Each procedure must specify how the continuity of lockout or tagout protection will be ensured at all times. See 1910.147(f)(4).

#### **Procedures for Outside Personnel/Contractors**

Outside personnel/contractors shall be advised that the company has and enforces the use of lockout/tagout procedures. They will be informed of the use of locks and tags and notified about the prohibition of attempts to restart or re-energize machines or equipment that are locked out or tagged out.

The company will obtain information from the outside personnel/contractor about their lockout/tagout procedures and advise affected employees of this information.

The outside personnel/contractor will be required to submit a quote and be assigned a PO in contract with CIA.

### **Lockout/Tagout Training and Communication**

Each authorized employee using the lockout/tagout procedure will be trained in the recognition of applicable hazardous energy sources, type and magnitude of energy available in the work place, and the methods and means necessary for energy isolation and control.

Each affected employee (all employees other than authorized employees using the lockout/tagout procedure) shall be instructed in the purpose and use of the lockout/tagout procedure, and the prohibition of attempts to restart or re-energize machines or equipment that are locked out or tagged out.

Training will be certified using Attachment B (Authorized Personnel) or Attachment C (Affected Personnel). The certifications will be retained in the employee personnel files.

### **Security Locks Purpose and Identification**

The Fabrication Studios maintains a set of keyed alike locks which are to be used only access to storage or an equipment piece must be secured to limit access that is not related to maintenance or repair. These locks can be identified by the color blue. They may not be used for the lockout/tagout procedure. Any Fabrication Studios staff member or work study is authorized to remove the blue Fabrication Studios security locks to allow access for students and personnel of Cleveland Institute of Art to the secured item. Once access is no longer needed, the Fabrication Studios staff member or work study must replace the lock and secure the item or access.

### **Grinder Abrasive Wheel Ring Test Procedure**

A ring test must be performed before mounting an abrasive wheel. This test can help to determine if the wheel is cracked.

#### **Limitations:**

- The wheel has to be dry and free of sawdust when applying the ring test, otherwise the sound may be deadened.
- The ring test will not work with certain wheels because of their shape or size.

#### **Examples Include:**

- Wheels that are 4 inches in diameter and smaller
- Plugs and Cones
- Mounted Wheels
- Segmented Wheels
- Plate-Mounted Wheels
- Inserted Nut and Projecting Stud Disc Wheels

**How to conduct the test:**

1. Suspend the wheel by putting a small pin or your finger through the arbor hole in the wheel. Heavier wheels may be allowed to rest in a vertical position on a clean hard floor.
2. Tap the flat side of the wheel with a light non-metallic implement, such as the handle of a screw driver, at a point
  - 45 degrees from the vertical center line on each side of the wheel
  - 1 to 2 inches from the edge of the wheel. Large, thick wheels may be struck on the periphery rather than the side of the wheel.
3. Rotate the wheel 45 degrees and repeat the test until the entire wheel has been checked.

**How to use the results of the Ring Test:**

A crack in the wheel will normally change the sound emitted when the wheel is lightly tapped. An undamaged wheel will give a clear tone. If cracked, there will be a dead sound and not a clear ring.

Comparison of the sound with other wheels of the same lot and specification will allow rejection of any wheel with a suspiciously different ring.

## **IN CASE OF AN EMERGENCY**

Call 9-1-1

**Address:** 11610 Euclid Ave. West Entrance

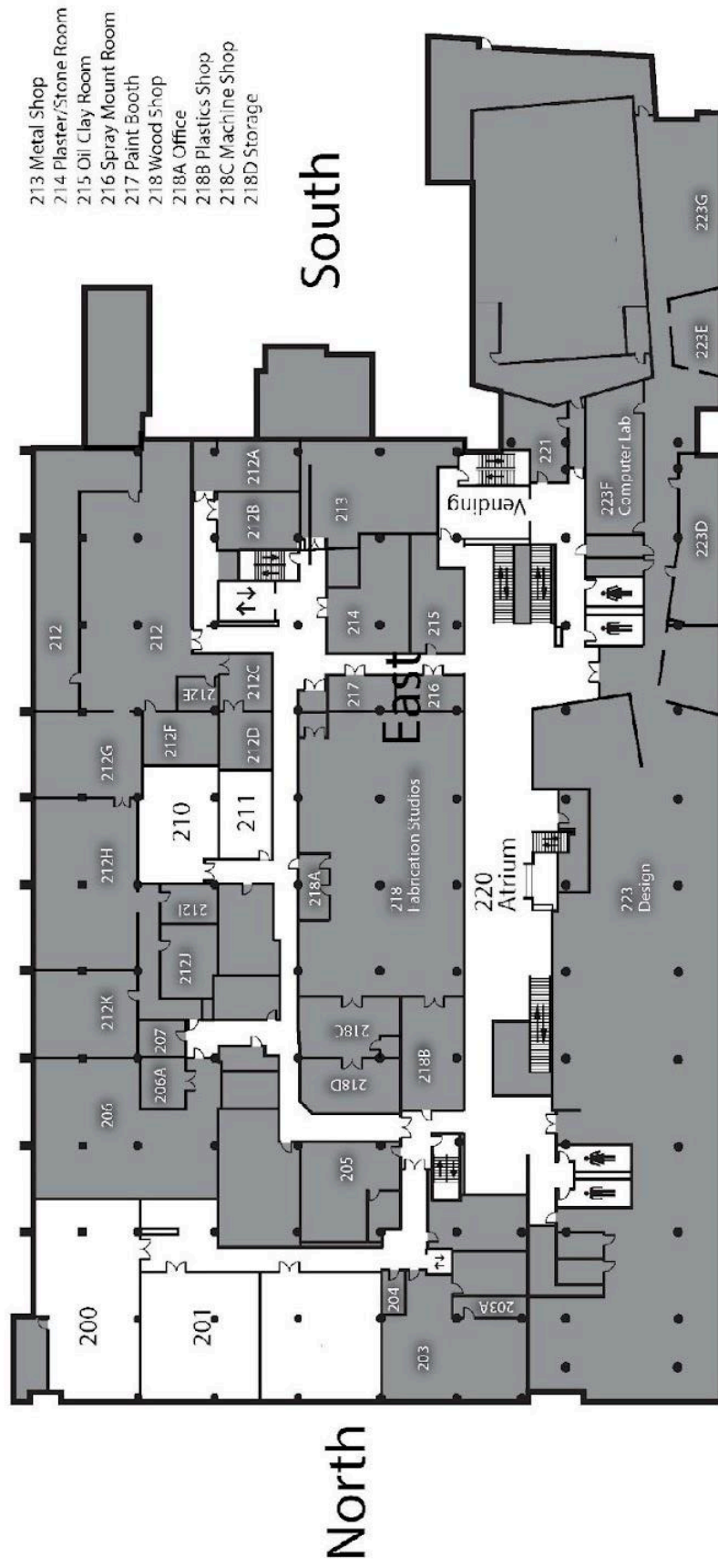
**Call-back Phone Number:** CIA Security 216-421-7330

Stay with the victim

Send someone to the security desk to help direct emergency personnel. Technical specialists and student victims should file an incident report with security. CIA employees who are involved should file incident reports with security and human resources.



East



South

East

West

CMA 2nd floor

11610 Euclid Avenue  
Cleveland OH 44106

- 213 Metal Shop
- 214 Plaster/Stone Room
- 215 Oil Clay Room
- 216 Spray Mount Room
- 217 Paint Booth
- 218 Wood Shop
- 218A Office
- 218B Plastics Shop
- 218C Machine Shop
- 218D Storage