

# Safety Manual

for the department of  
Theater, Art, Graphic and Animation Design



This document is maintained by Longwood University Environmental Health & Safety (EH&S)

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## **EMERGENCY RESPONSE PROCEDURES**

For any life safety or security emergency, immediately contact the Longwood University Police Department or Farmville Police.

### **EMERGENCY CONTACT INFORMATION**

	Cell Phone	Longwood Phone
Farmville Police:	911	7-911
Longwood Police:	(434)395-2091	2091
Longwood EH&S:	(434)395-2940	2940
Longwood Emergency Management:	(434)395-5457	5457
Blue Ridge Poison Control:	(800)222-1222	7-1-800-222-1222

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## 1.0 INTRODUCTION

Much of what we do in art brings us in contact with hazardous equipment and materials that require proper safety procedures. This safety guide provides basic information on the primary hazards associated with different artistic mediums along with the safe use of tools and equipment.

This information in this manual is meant to make you a wiser and healthier artist. All you have to do is:

- Read the information;
- Know what you are dealing with before you start working in an area where hazardous equipment or materials are used, and;
- Follow the recommended precautions.

Improper use of equipment, poor work practices, inappropriate handling, storage, and improper disposal of hazardous materials can have dire consequences on your health and safety and can also lead to regulatory fines.

**Remember: If you have any questions or concerns about safety contact the Art Safety Technician or EH&S. They are here to help you.**

## 2.0 RESPONSIBILITIES

EH&S at Longwood serves the University community by providing technical support & information, training, consultations, and periodic audits of environmental health and safety practices. EH&S also serves the University as an in-house agency to ensure institutional compliance with applicable government regulations.

The Art Safety Technician within the Theater, Art, Graphic and Animation Design Department works at the direction of the Department Chair. The Art Safety Technician serves (1) as a liaison between EH&S and the department, and (2) as a primary point of contact for the department's faculty, staff, and students for environmental, health, and safety issues.

Department faculty and staff are responsible for:

- Ensuring that students are trained on and understand appropriate safety practices and hazard control outlined in this Art Safety Guide
- Establishing a safe working environment
- Identifying and communicating the presence of all hazards in their workspace
- Implement EH&S and EM policy and procedures in their workspace
- Conducting self-audits of their workspace and fixing or reporting any hazardous situations
- Wearing appropriate personal protective equipment for the task being performed

- Requiring for students mandatory use of appropriate personal protective equipment for the task being performed
- Knowing and performing their role in an emergency
- Reporting all accidents and injuries to EH&S or Human Resources
- Reporting unsafe acts to department chair, the Art Safety Technician, or EH&S
- Knowing how to access to Safety Data Sheets (SDSs) for chemicals present in their workplace

Student artist are responsible for:

- following University, Department and Course specific safety rules
- wearing appropriate personal protective equipment for the task being performed.
- Reporting any art related injuries, hazardous material spills, unsafe condition or work practices to their course instructor.
- Cleaning up after themselves

### **3.0 GENERAL HAZARD INFORMATION**

General information about potential hazards in the department's classrooms, studios, and theaters are provided below. Other important health and safety information is provided in the studio safety section of this guide. Be sure to review both the general information as well as applicable studio information.

#### **3.1 Building Hazards**

Modern buildings contain complex systems that enable our high tech activities. Some of these systems are designed to address hazards inherent to buildings: Fire detection and suppression, security,.... Some hazards can't be addressed by building systems: spills and leaks that create slick surfaces, blind corners, low doorways,....

A short list of hazards that might be present:

- Electrical short circuits
- Cluttered hallways
- Combustible materials
- Water on the floor

#### **3.2 Chemical Hazards & Safety Data Sheets**

During your career in the arts, you will be using materials and processes particular to your field each and every day, so it is extremely important to develop safe habits to avoid potential health problems now and in the future.

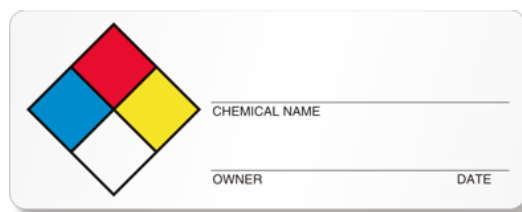
- Given a choice you want to use the safest materials available that meet your need.
- The three main routes of exposure to hazardous materials are: Inhalation of vapors or dusts, absorption through the skin, and ingestion (most frequently via transfer from unwashed hands).
- Health effects from exposures to hazardous materials depend upon many factors. In the event that exposure(s) cause an observable effect it may be immediate or delayed by days, weeks, years, or in some cases decades. This will depend on the particular material, the duration and frequency of exposure, whether or not appropriate personal protection equipment and good hygiene was used, and the exposed individual's susceptibility to that particular hazardous material.

The two best sources of information on chemical hazards are the product's label and its Safety Data Sheet (SDS)

### 3.2.1 Labels

The container label, at a minimum, will identify the product, the manufacturer, and any immediate health hazards.

If chemicals are transferred from the original manufacturer's container to a secondary container, the secondary container must be labeled with the material's identity and the appropriate hazard warning. An example of a secondary container label is below.



Never transfer chemicals into old food or beverage containers unless the food label is removed or completely obscured. Similarly, containers that have been used for chemicals should not be reused for food storage.

### 3.2.2 Safety Data Sheets (SDS or prior to 2015 MSDS)

The SDS will provide information about the material's special handling procedures, recommended personal protective equipment, and first aid instructions.

SDS's provide more detailed information on a specific product. For example, various solvents are commonly used in art studios. In selecting which product to use, consideration must be given to its toxicity, volatility, flashpoint, and waste disposal options. This information can be



obtained from the SDS. Toxicity can be determined by looking at the exposure limit; the lower the exposure limit, the more toxic the substance.

It is the responsibility of the each faculty member to ensure that all hazardous products and chemicals to be used have an SDS readily available (i.e. <5 minute access time). This responsibility includes assuring that every chemical product used in the studio is included in Longwood's chemical inventory and that we have the proper SDS. The SDS database is maintained by MSDS Online under contract to EH&S.

<https://msdsmanagement.msdsonline.com/6a8fd3e4-a326-4a21-82b6-2ed345798984/dashboard/>

### **3.3 Physical Hazards**

Exposure to physical hazards of acoustic, electromagnetic, and thermal nature can cause adverse health effects. Physical hazards in art studios may include high noise (woodworking and metal operations), optical radiation (infrared and ultraviolet light in welding and laser cutting), and thermal burns (welding and metal casting).. Slips, trips and falls.

### **3.4 Powered Mechanical Equipment**

Use of power equipment (band saws, grinders, belt sanders, clay mixers, etc.) can present a wide range of physical hazards: wiring/electrical hazards, moving parts, high noise, cuts, amputations and pinch points with the added danger of electric shock. Secure your work: Use clamps or vise to hold work, especially on drill press.

- Disconnect tools: When not in use; before servicing; when changing blades, bits, cutters.
- Proper grounding: The tool should be grounded while in use to protect operator from electric shock. All plugs should have three prongs.

Only use equipment if you are:

1. Authorized to do so
2. Have been trained
3. Certain about what to do

### **3.5 Hand Tools – Non Powered**

Examples of non-powered hand tools that artist may use include utility knives, chisels, snips, punches, hammers, etc. Hand tool accidents are often related to improper use or maintenance of the tool. Some ways to avoid injuries include:

- Inspect tools before each use to make sure that they are in good condition. Worn or defective tools should be repaired or discarded.
- Use the correct tool for the job. Also use the correct size tool for the job.
- When using a knife, cut away from the body and keep hands and body clear of the knife stroke.
- Dispose of razor blades and utility knife blades in a puncture resistant sharps container.
- Store tools safely. Sharp edges or blades should be protected or enclosed to prevent accidental contact.
- Keep tool cutting edges sharp so the tool will move smoothly without binding.
- Maintain a good grip and stand in a balanced position to avoid sudden slips. Avoid awkward postures (bending, twisting, reaching, etc.).
- Do not force a tool: It will do the job better and safer at the job for which it was designed.
- Use the right tool: Do not force small tool or attachment to do the job of a heavy-duty tool.
- Use safety glasses: Use safety glasses with most tools.
- Consider using ergonomically designed tools that fit the hand well.

### **3.6 Fire Hazards**

Combustible Materials such as solvents or cardboard can catch on fire easily. Work with flame, or sparks must be conducted at least 35 feet away from combustible materials.

Fires may be caused by overloaded circuits, extension cords, or damaged wiring.

### **3.7 Electrical and Shock Hazards**

- Electrical shock may be caused by overloaded circuits, extension cords, or damaged wiring.
- Report any obvious electrical problems the Building Coordinator or place a work order to have the piece of equipment repaired.
- Do not use damaged equipment, tag it with a warning label and remove the damaged equipment from service.
- Do not use electrical equipment in wet or damp locations.
- Make sure electrical outlets in wet areas are equipped with ground fault circuit interrupters (GFI's).
- Do not abuse a power cord: Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.

### **3.8 Dangerous Environments**

- Use of power tools in damp or wet locations such as in the rain.
- Dusty environments pose a respiratory hazard and, for very fine dusts, an explosion risk.
- Acid vapors or mist is an irritant to the nose, eyes, throat, and skin. High concentrations of acid vapors may cause severe burns, permanent damage to your eyes and lungs, produce skin burns and ulcers.
- Compressed gas releases can be dangerous because many compressed gases are toxic or very toxic. They could cause various health problems depending on the specific gas, its concentration, the length of exposure and the route of exposure (inhalation, eye or skin contact). Contact between the skin or eye and liquefied gases in liquid form can freeze the tissue and result in a burn-like injury.

### **3.9 Ergonomic Hazards**

Back injuries may occur from lifting heavy or awkward objects such as sculptures or lithography stones. Use mechanical aids such as hoists whenever possible to move heavy objects. If an object weighs more than one quarter of your body weight get help to lift it. Use proper lifting techniques:

- Keep your back straight.
- Hold the load close to your body.
- Flex your knees and lift with your legs.
- Never lift and twist at the same time.

The work of many artists involves repetitive motion. Repetitive motion, particularly hands, wrist, and arms, can lead to painful inflammation of the muscles, tendons and nerves over time and cause the eventual deterioration of those tissues. Awkward positions and postures can also lead to musculoskeletal injuries. To prevent these injuries, select appropriate tools and try to use more neutral postures (for example, a straight wrist instead of a flexed wrist while performing tasks).

### **3.10 Compressed Gas Cylinders**

In addition to any hazards posed by the chemical composition of the gas, compressed gas and liquefied gas containers pose multiple hazards including: asphyxiation through displacement of oxygen in the air you breath, vessel rupture (especially with liquefied gasses), and freezing at the regulator if gas is released quickly. Some safety precautions for gas cylinders are listed below:

- Cylinders must be properly secured in an upright position at all times by means of an appropriate stand, chain, or strap. This includes empty cylinders.

- The protective valve cap should remain in place until the regulator is attached.
- When moving cylinders, keep them in an upright position and use a cylinder cart or hand truck. Cylinders must be properly secured with a chain or strap, and have the protective valve cap in place while being moved. Do not roll or drag cylinders. Avoid dropping cylinders or allowing them to strike one another.
- Always use proper valve connections. Regulators and valve threads are intentionally different for different gases to minimize the risk of accidents. Do not use oxygen fittings, valves, or regulators for other types of gasses.
- Cylinders containing flammable gasses such as hydrogen or acetylene must be stored separately from oxidizers (oxygen) by either a 20 foot distance or by a non-combustible 5 foot high barrier. The only exception to this is an oxy-acetylene welding cart.

#### **4.0 GROUPS WITH HIGHER SUSCEPTIBILITY TO HAZARDS**

An individual's life style might affect his or her susceptibility to chemicals

##### **4.1 Pregnant and Breast-feeding Women**

Chemicals and other factors which are thought to cross the placental barrier and possibly cause damage and birth defects, include:

- Lead, cadmium, mercury, copper, carbon monoxide
- Dyes, noise, vibration
- And many organic solvents

The amount of material necessary to damage the fetus or embryo is much smaller than the amount which can injure the adult. The most sensitive time for chemical interference with normal development is from the 18th to the 60th day after conception. Other hazards include materials that can affect the respiratory and circulatory systems. Examples include:

- Solvents
- Dyes, metals
- Toxic dusts and gases
- As well as strenuous activity and other stresses

Many chemicals, especially heavy metals and solvents, can be found in a woman's milk several hours after exposure and can affect the infant. **AVOID USE OF SOLVENTS AND AEROSOLS.**

## **4.2 Smokers and Heavy Drinkers**

These individuals are at a higher risk of damage to their lungs and liver respectively. Nicotine and/or alcohol mixed with toxic chemicals in art materials can cause synergistic and multiplicative reactions.

## **4.3 Individuals on Medications**

Medications also create a greater risk. Consult your physician to ensure that any medication will not interact with substances in art materials to cause illness. Also if the medication restricts operating dangerous equipment do not use the equipment.

# **5.0 HAZARD CONTROL MEASURES**

The established hierarchy for controlling hazards in descending order of preference is:

1. Remove the hazard
2. Engineering controls to keep hazard away from workers
3. Behavioral changes-also called administrative controls
4. Use of personal protective equipment

## **5.1 Hazard Removal**

Remove the hazard from the process or substitute the hazardous material or machines with less hazardous ones. An example is replace leaded glazes, paints and pigments with versions that do not contain lead.

## **5.2 Engineering Methods of Control**

Engineering control methods generally do not affect the potential for exposure; rather they direct the toxicant away from the personnel by some method. They are usually considered to be indirect methods of control. For this reason, they are not the first choice for control. Engineering methods of control include general laboratory ventilation, local ventilation such as fume hoods, glove boxes and canopies and equipment and work area modifications. Used in conjunction with good laboratory work procedures, properly designed and operated exhaust ventilation is effective in minimizing employee air contaminant exposures.

## **5.3 Behavioral Changes / Administrative Controls**

Administrative controls for minimizing inhalation and physical contact exposures include:

- Working in smaller batches to use of a smaller amount of the chemical, thereby reducing exposure.

- Rotating personnel using the chemical to reduce exposure time.
- General laboratory safety and health procedures.
- Self-audits and walk-throughs conducted by laboratory personnel to identify and evaluate potential health hazards.
- Health and safety orientation and training sessions to inform employees about the ways they can minimize their exposure to hazards.
- Chemical use authorization controls to assure that prospective chemical users have the knowledge and protective equipment available to them for adequate control of their chemical exposures.

#### **5.4 Personal Protective Equipment**

Personal protective equipment (PPE) is the least preferable method of control. PPE includes use of respirators, hearing and protection, eye protection, hand protection, face protection, head protection, and hearing protection. Technically PPE does not include clothing such as long pants, long-sleeved shirts, or closed toed shoes but such apparel can provide an additional level of protection.

Some clothing can actually be hazardous. For example, synthetic fabrics should not be work around hot processes (i.e., glassmaking, welding, and furnaces) because they can catch fire, melt and cause serious burn injuries. Loose clothing (sleeves, neckties, scarves, etc.) and jewelry (rings, watches etc.) can become caught in machinery; these items should be removed before working with power tools.

SDS's provide information on recommended PPE.

PPE protects only the person wearing it but the hazard still exists and may harm unprotected personnel. Problems such as incorrect fit, use of the wrong PPE for the job, use of damaged or poorly maintained PPE can result in less than adequate protection. In order for PPE to be effective, the user must

- Know when PPE is necessary
- Know what kind of PPE is necessary
- Know how to use PPE properly
- Understand the limitations of PPE (what it can and cannot do)
- Know how to wear and properly maintain PPE

### 5.4.1 Hand Protection

Gloves are used to protect us from cuts, punctures, burns, chemical absorption, or extreme temperatures. It is important that the correct type of glove is used since the wrong glove may not provide the necessary protection. This is a particular problem with chemical absorption where the wrong glove may allow certain chemicals to reach your skin and you may not realize it. Glove selection begins with knowledge of the chemical composition of your art materials and this can be found on the SDS. Glove manufactures provide chemical resistant ratings for various types of gloves and chemicals. Glove thickness corresponds to the overall protection value. Thin disposable gloves offer much less protection than the thicker reusable gloves.

Inspect gloves for tears, punctures, pinhole leaks or signs of degradation before each use. Remove gloves prior to leaving the studio. Care should be taken when removing gloves. Peel the glove off the hand starting at the wrist and working toward the fingers. Keep the working surface of the glove from contacting the skin during removal.

The following is a guide for selecting gloves.

ACTIVITY	POTENTIAL HAZARD	MINIMUM HAND PROTECTION
Hand Grinding, NOT Bench Grinding	Impact, flying particles	<ul style="list-style-type: none"> <li>Leather or welding gloves</li> </ul>
Chemical handling, pouring	Chemical splash	<ul style="list-style-type: none"> <li>Latex: Provides light protection from irritants, but maybe an allergen</li> <li>Natural Rubber: Protects against light corrosive material</li> <li>Neoprene: For working with solvents, oils, or corrosive materials</li> <li>Nitrile: For working with most solvents, oils, or corrosive materials</li> </ul>
Kiln or furnace operations, casting glass or molten metal	Glare, heat, optical radiation	<ul style="list-style-type: none"> <li>Terry Cloth Flame Resistant Gauntlet: For handling hot materials under 450°F</li> <li>Heat Resistant Glove with a Thermobest Back: For materials over 450°F</li> </ul>
Welding (electric arc)	Optical radiation, sparks	<ul style="list-style-type: none"> <li>Thick leather welding glove</li> </ul>
Welding (gas)	Optical radiation, sparks	<ul style="list-style-type: none"> <li>A medium weight welding glove</li> </ul>

If you have any question regarding the proper glove to use contact EH&S at (434)395-2940.

### **5.4.2 Hearing Protection**

As a general rule of thumb, if noise levels require you to raise your voice to speak with someone at a distance of about three feet, use of hearing protection is recommended. Some operations associated with studio and theater activities (particularly mechanical equipment in wood and metal shops) can produce high noise levels. Artists with frequent or prolonged exposures to high noise levels are strongly urged to use hearing protection in the form of ear plugs or ear muffs to prevent noise induced hearing loss.

### **5.4.3 Respiratory Protection (Dust Mask and N-95 Mask)**

Air contaminants (particles, vapors, fumes, etc.) can usually be effectively controlled with ventilation and good work practices such as minimizing the use of solvents and keeping solvent containers closed. In some instances, artists may elect to use respirators and an extra measure of protection. The use of dust masks or N-95 disposable respirators is recommended for some studio art procedures where excessive levels of airborne dust levels may be produced.

One fundamental and important issue regarding respirators is the need for a good seal between the respirator and the user's face. A good facial seal cannot be obtained when the respirator comes into contact with facial hair.

Respirators can be reused as long as they perform adequately and do not become contaminated. Keep your respirator in a sealed plastic bag when not in use and replace it as necessary.

Respirator selection, handling, and usage issues are surprisingly complex. If you have concerns, about exposure to chemicals or toxic dust, contact the EH&S Office for more specific information.



#### 5.4.4 Eye and Face Protection

It is important to realize that face protection and eye protection are not the same thing. Use of a face shield alone does not provide adequate eye protection; eye protection is always required whenever a face shield is used. Specific information on eye protection is summarized in the following table:

ACTIVITY	POTENTIAL HAZARD	MINIMUM EYE PROTECTION
Sanding, grinding, chipping, woodworking	Impact, flying particles	<ul style="list-style-type: none"> <li>• Safety glasses with side shields or</li> <li>• Goggles (direct vent)</li> </ul>
Chemical handling, pouring	Chemical splash	<ul style="list-style-type: none"> <li>• Goggles (indirect vent)</li> <li>• If severe exposure, also wear face shield</li> </ul>
Kiln or furnace operations, casting glass or molten metal	Glare, heat, optical radiation	<ul style="list-style-type: none"> <li>• Shaded goggles or glasses</li> <li>• If desired, also wear face shield to reduce heat and provide face protection</li> </ul>
Welding (electric arc)	Optical radiation, sparks	Welding helmet or welding shield (filter shade 10-14)
Welding (gas)	Optical radiation, sparks	Welding goggles or hand shield (filter shade 4-5)
Cutting, brazing, soldering	Optical radiation, sparks	Welding goggles or hand shield: <ul style="list-style-type: none"> <li>• Cutting (filter shade 3-6)</li> <li>• Brazing (filter shade 3-4)</li> <li>• Soldering (filter shade 1.5-3)</li> </ul>

#### 5.5 WORKING ALONE/UNSUPERVISED

Building security is in place to protect you. Don't jeopardize the building security or your personal safety by propping windows and doors open. Longwood Police, (434)395-2091, should be notified of your presence in the building after between 10PM and 8AM. Students are reminded that they should not work in shop areas alone (i.e., wood shop, metal shop, glass area, foundry, and kiln room), and without supervision until they have experience and training to do so; typically first year students are not authorized to work without supervision.

Work involving hazardous equipment and processes really should not be done alone-especially after hours. Use of a buddy system is strongly recommended. Due to security and safety

hazards, some areas are locked after hours to prevent unsupervised use. Also, some equipment is locked out or de-energized to prevent unauthorized usage.

## **6.0 EQUIPMENT AND FACILITIES**

Equipment and facilities are for the use of registered art students and faculty only. They are not to be used for any unrelated outside projects, i.e. car repairs, etc. Facilities and tools are not to be moved or modified to suit individuals unless authorized by the Department Chair. Unsafe use, or misuse of equipment in the Department will result in the withdrawal of privileges and / or disciplinary action. Students whose actions are considered detrimental to themselves or fellow students may be asked by any member of the Department to leave the room or stop using the equipment. Any equipment requiring repairs should be brought to the attention of the instructor or the Art Safety Technician.

## **7.0 WASTE MANAGEMENT AND DISPOSAL**

Several types of waste are generated in visual arts processes: solvents, oil-based paints, ceramic glaze, photographic processing chemicals, etc. Many of these wastes are considered hazardous waste by the U.S. Environmental Protection Agency (EPA) and require special handling. Hazardous wastes should be collected and disposed of via commercial disposal companies; they may not be poured down the drain or placed with regular trash. Hazardous waste disposal is arranged through EH&S. Detailed information on Hazardous Waste Disposal can be found in Longwood University's Hazardous Waste Plan

In order to minimize hazardous waste issues, consider the following:

- Don't purchase more of a material than you expect to use in the foreseeable future.
- Costs of disposal can exceed bulk purchase savings.
- Substitute with a less hazardous material whenever possible.
- Make sure all chemical and waste containers are properly labeled.
- Keep chemical and waste containers closed when not in use.
- Don't accept donations or gifts of potentially hazardous materials.

In general, waste from the art department can be placed into 3 categories: recyclable waste, regular waste, and hazardous waste. Some examples of art waste which fall into these categories are listed below:

- Recyclable waste: Broken glass, Aluminum

- Regular waste: Wood, water-based paints (after drying in container), glazes (after being fired)
- Hazardous waste (proper disposal through EH&S):
  - Concentrated acids and bases
  - Organic oils (linseed oil, Tung oil, turpentine, etc.) Enamel or oil-based paints
  - Solvents (mineral spirits, acetone, toluene, xylene, etc.) Solvent soaked rags and paper towels

## **8.0 RECORDKEEPING**

### **8.1 Medical Records**

Longwood University Office of Human Resources shall maintain the medical records for each employee with occupational exposure. The records shall be maintained for the duration of employment plus 30 years, in accordance with 29CFR1910.20.

### **8.2 Exposure Monitoring Records**

Longwood University Office of Human Resources shall maintain the records of any measurements taken in order to monitor employee exposures to hazardous chemicals in the laboratory. The records shall be maintained for the duration of employment plus 30 years, in accordance with 29CFR1910.20.

### **8.3 Access to Records**

Per OSHA Standard 29CFR1910.20 “Access to Exposure and Medical Records”, employees have the right to receive copies of MSDSs, exposure monitoring records and medical records associated with their jobs. Information shall be provided in accordance with the standard and with the Longwood University “Access to Employee Exposure and/or Medical Records” procedure available on the EH&S website.

### **8.4 Training Records**

All regulatory safety and health training is documented by employee name, or employee identification number, date, topic of training, length of class and instructor name. This data is maintained by EH&S.

### **8.5 Inspection Records**

All safety & regulatory inspection records are available for review from EH&S and are maintained according to the record’s retention schedule.