



**School of Theater and Dance**  
***Health and Safety Manual***

*This manual was adopted in Spring of 2022.*

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*School of Theater and Dance Director: Mark Varns*

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## **I. The Written Health & Safety Program**

*The Program has been written to comply with the Occupational Safety and Health Act of 1970, the Right to Know Laws of State of Illinois, and combines written programs concerning: 1.) emergency procedures, 2.) accident and illness prevention, 3.) personal protective equipment, 4.) the hazard communication standards, and 5.) respiratory protection. This Program was revised by the Southern Illinois University Center for Environmental Health and Safety.*

### **A. Policy Statement**

- 1) The purposes of this program are:
  - 1) to explain SIUC School of Theater and Dance Emergency Procedures
  - b) to explain how SIUC School of Theater and Dance meets Federal and State requirements regarding the prevention of accidents and illness in the workplace, including SIUC School of Theater and Dance policies regarding the use of Personal Protective Equipment (PPE)
  - c) to comply with the Code of Federal Regulations 29CFR 1910.59.1200 and all requirements of the Hazard Communication Standards, including rules on informing employees of the possible hazards of chemicals in the workplace, and
  - d) how SIUC School of Theater and Dance meets Federal and State requirements regarding Respiratory Protection.
  
- 2) SIUC School of Theater and Dance is committed to:
  - a) maintaining a safe workplace
  - b) the thorough training of its employees in:
    - 1) emergency procedures
    - 2) methods of preventing work-related accidents and illnesses
    - 3) safe handling, use, and disposal of hazardous materials
    - 4) personal protective equipment
    - 5) fall prevention and protection procedures
  - c) the complete reporting and investigating of workplace accidents, near- accidents and work-related illnesses
  - d) correcting the circumstances which have led to workplace accidents and illness
  
- 3) You are strongly encouraged to work with your colleagues and management to prevent accidents and illness. You may discuss your safety and health concerns with management at any time and should take every opportunity to discuss the safety of your workplace with colleagues.
  
- 4) Information regarding the various requirements of the Occupational Health and Safety Act of 1970 may be obtained from the Faculty Technical Director, the School of Theater and Dance website, or directly from the U.S. Department of Labor, Occupational Safety and Health Administration Region V Fairview Heights District Office at 11 Executive Drive, Suite 11, Fairview Heights, IL 62208, telephone (618) 632-8612; or on-line at [www.osha.gov](http://www.osha.gov).

### **B. Implementation and Responsibility**

- 1) This program will be implemented for all personnel at the SIUC School of Theater and Dance. The original program is kept on file in the Faculty Technical Director's office. The Technical Director is responsible for ensuring that the program is current, that it is reviewed triennially before the start of the semester and that it is enforced. As of Fall 2020, the Technical Director is Thomas Fagerholm. His office is Communications Building Room 2234, phone: (618) 453-5747. Email: [tfagerholm@siu.edu](mailto:tfagerholm@siu.edu)
  
- 2) During the initial days of the Fall Semester (or the first initial weeks of their employment at SIUC), SIUC School of Theater and Dance *Health & Safety Manual*

each Faculty, student, and staff will be trained in:

- a) emergency procedures
  - b) methods of preventing work-related accidents and illnesses
  - c) personal protective equipment
  - d) reporting workplace accidents, near-accidents and work-related illnesses
  - e) the Hazard Communications Standard and the safe use of hazardous chemicals
  - f) fall prevention and fall protection procedures
- 3) Throughout the season, before starting any task involving a new procedure, material or chemical, the employee will be properly instructed by the shop or area head. When appropriate, instruction on protection from any potentially hazardous materials or Safety Data Sheets will also be provided.
- 4) 368

### **C. Policy Communication**

- 1) SIUC School of Theater and Dance falls under both the General Industry and Construction Industry categories of OSHA. As such, it is required to, and will:
  - a) distribute to each employee a copy of this Program at the beginning of the employment or academic period.
  - b) provide additional copies to any employee upon request throughout the season.
  - c) conduct appropriate orientation and training sessions for each employee at the beginning of the employment period and, as necessary, throughout the period of employment

### **D. Compliance Enforcement**

- 1) It is always in your best interest to protect your health and that of your colleagues. For that reason, SIUC School of Theater and Dance anticipates that you will abide by the various rules and procedures that have been implemented to protect your health, and that you will conduct yourself in ways that prevent injury to you and your colleagues.
- 2) Shop and area heads will explain to their respective staff, and strictly enforce all health and safety rules and procedures that have been set forth in the program. Shop and area heads are responsible for unsafe behavior or situations that their staff may create.

1)

### **E. Training**

During the initial days of employment, each employee will be instructed and trained in the following operational and safety procedures for each facility in which the employee works:

- a) Emergency procedures, including:
  - 1) the location and proper use of fire extinguishers.
  - 2) the location of fire exits.
  - 3) fire, severe weather, and other emergency evacuation procedures, including evacuation meeting area(s).
  - 4) procedures for summoning fire and rescue assistance.
  - 5) an explanation of the area's overlapping fire and rescue jurisdictions.
  - 6) the location of emergency medical information of personnel.
  - 7) the location of first aid kits.

- b) Accident and injury prevention, including:
  - 1) the identification of the potential physical hazards of their facilities, equipment, and tools.
  - 2) specific training on the proper care and use of those facilities, equipment, and tools.
  - 3) the procedures for disabling defective equipment and reporting these and all other hazards to the appropriate supervisor.
- c) Personal Protective Equipment (PPE), including identification of and specific training in the proper care and use of the various PPEs required for the safe operation of their equipment.
- d) Accident report forms, including the proper use and completion of these forms for all injuries, accidents, and all illnesses that are or may be work-related.
- e) The Hazard communication program, including:
  - 1) the location of the master file containing the written hazard communication program and the SDS library.
  - 2) how to read and use the SDS, interpret label terms and precautions for specific materials.
  - 3) steps taken by SIUC School of Theater and Dance to lessen or prevent exposure to the chemicals, including both updated training when new processes or chemical products are introduced to the workplace during the season, and program monitoring by area heads and shop supervisors throughout the season, when appropriate, instruction on how to lessen or prevent exposure to hazardous chemicals through appropriate work procedures and the proper use of personal protective equipment, and emergency procedures to follow if exposed to any chemicals.
- f) Employees whose regular work requires respiratory protection, including particulate (dust) masks will also receive training in the use and maintenance of the equipment. No other employees will be permitted to participate in tasks that require respirator use.
- g) Fall Protection and Prevention, including:
  - 1) fall risk assessment.
  - 2) use of fall prevention and fall protection systems.
  - 3) proper fitting and use of harnesses.
- 2) 4) fall rescue plans in case of a fall in the theater.

Whenever possible, authorized representatives, industry specialists, and CEHS personnel will be engaged for specific equipment and procedural training. However, all SIUC School of Theater and Dance area heads are authorized to instruct their respective staff in the proper care and use of the tools

- a) and equipment necessary for the completion of their assigned duties.

#### **F. Inspections, Investigations and Hazard Corrections**

- 1) The Technical Director and area heads will inspect each facility at the beginning of the school year to:
  - identify and remove current hazards.
  - a) establish maintenance procedures that prevent hazards.
- 2) Every time an accident or near-accident occurs, or an employee reports a work-related illness, the Technical Director and the appropriate area head(s) will investigate the cause(s) and establish or revise those procedures necessary to prevent the recurrence of the problem.

#### **G. Documentation**

After attending the training sessions, each employee will sign a form verifying:  
their attendance  
their receipt of a copy of this written program  
their understanding of the contents of this program

The following documentation will also be maintained in the personnel file of each employee:  
certification of a fire extinguisher training (optional by CEHS)

- 1) a) in-house documentation of specific equipment and tool use training
- b) accident and illness reports
- c)
- 2) All accident and illness records are also kept by the office manager for workers compensation and insurance claims purposes.
  - a)
  - b)
  - c)
- 3) The complete Safety Data Sheet (SDS) library, including an SDS for every potentially hazardous chemical currently or formerly in use, alphabetically indexed by the common or brand name on the SDS, is maintained by the Technical Director and is reviewed annually for accuracy and completeness.
- 4) An SDS is obtained before a new chemical is opened or used, and the chemical is also added to the Master Inventory. Area heads are responsible for reviewing new SDS for significant health and/or safety information, and for communicating that information to their staff. The SDS library is maintained digitally and is accessible via QR codes. These are posted in the various shops, DOT classrooms, and theater spaces.

## II. School of Theater and Dance Production Health and Safety Policies

### A. Offensive Behavior:

**Verbal, physical and sexual harassment or abuse of any kind will not be tolerated in the workplace.**

**Please refer to the SIU Office of Equity and Compliance for training and information.**

[www.equity.siu.edu](http://www.equity.siu.edu)

**Please refer to the SIU Student Code of Conduct for lab students.**

- 1) <https://srr.siu.edu/student-conduct-code/>

- 2) Only you can determine how you feel about the verbal bantering or physical interaction involved in any crew experience. If you think that someone's actions have crossed the line and become objectionable or threatening, first talk to the individual. If that does not resolve the issue seek guidance from your supervisor or area head.

- 3) When talking to the individual, remember that the other person may not be aware that you find their behavior objectionable, just as you may not be aware that some habit of yours is offensive to someone else. Also keep in mind that the person may be receptive and be willing to stop doing whatever it is that offends you, if you inform them of your objections in a polite, assertive, and private fashion. In other words, give your colleague the benefit of the doubt and treat them with respect.

Unfortunately, you may not always be able to solve these problems but *ignoring the situation will not make it go away*. A festering situation can ruin your stay at SIUC and infect the entire crew, often to the detriment of the productions. Hence, if you can't deal with the person privately, go to the head of your area or to the Director of the School of Theater and Dance, who will take appropriate steps to

resolve the situation as quickly and confidentially as possible.

#### **B. Dangerous behavior:**

**Dangerous or unsafe behavior must be stopped immediately, regardless of the circumstances.**

Take whatever steps you deem necessary to immediately stop unsafe behavior. You will never be reprimanded for doing so, even if you misunderstood the situation. It is better to be wrong and embarrassed than to let someone get hurt. Once the situation is secure, inform a direct supervisor of the situation so they can take appropriate action.

#### **C. Illness:**

**Please do not report for work if you are sick or if you are taking prescription or over-the-counter medications that might impair your ability to function safely.**

Your supervisor must send you home if your presence poses a health or safety risk to you or the staff. Besides, you will just prolong your illness and possibly infect your colleagues.

- 1) If you are unable to report for work, please inform your supervisor immediately.
- 2) Lack of sleep or any adverse physical disposition from activities engaged in while off work are not acceptable excuses for missing work. However, they may be grounds for your being sent home and if so, class and/or employment status may be adversely affected.
- 3)

#### **D. Work-related Illness:**

**Please notify the Technical Director if you believe that an illness or injury is work-related.**

- 1) Each shop office has appropriate reporting forms for work-related accidents and illnesses. The Technical Director and shop heads will investigate the cause(s) and institute appropriate preventive measures, but only if they know that a work-related illness or injury has occurred.

### **III. Drug & Alcohol Policy**

#### **A. The Alcohol Policy of Southern Illinois University at Carbondale states:**

*The use, including sale, delivery, possession, and consumption of alcoholic beverages in or on property owned or controlled by the university or as part of any university activity is strictly prohibited except as otherwise provided in the "Alcoholic Beverages: Regulations" at SIU. Where permitted under these regulations, the use of alcoholic beverages on university premises shall be considered a privilege and may be allowed only if consistent with state laws and university regulations and only when it will not interfere with the decorum and academic atmosphere of the campus.*

- 2) <https://policies.siu.edu/personnel-policies/chapter4/ch4-all/drugcond.php>

The School of Theater and Dance has been permitted to dispense alcohol at certain events. In such cases the school (Faculty, Students, and Staff) will adhere to Federal Law, State Law, and University policy when these events are taking place.

Any personnel of age that is participating in the current production will not be allowed to consume alcohol during the permitted event.

Marijuana is prohibited on SIU's Campus. While recreational use of marijuana is legal in the state of Illinois, it remains illegal under federal law. Because SIU receives federal funding, it must abide by federal law.

**B. The Federal Drug Free Workplace Act, 1988:**

*It is unlawful to manufacture, distribute, dispense, possess, or use any controlled substance in this workplace.*

You may not use or be under the influence of alcohol or controlled substances while at work. You may be immediately dismissed from your position if you are under the influence of alcohol or controlled substances while at work.

**1) C. You may not knowingly allow a colleague to work under the influence of alcohol or controlled substances.**

Preventing a colleague from working while under the influence of drugs or alcohol falls in the category of preventing or stopping dangerous behavior ([Section 2B Dangerous Behavior](#)). Since common sense dictates that anyone under the influence *poses a threat to safety*, it is then your obligation, as well as in your best interest to remove that person from your workplace.

- 1) You also have the option of letting your supervisor handle the situation. Remember that *you* are not putting your colleague's job at risk by reporting them. Your colleague *already* did that by their disregard of this very straightforward safety policy.
- 2)

## **IV. Job Obligation**

**D. Your first obligation is to maintain a safe workplace.**

- 1) You need to know our specific procedures covering health emergencies, hazardous material use and maintenance of your facilities, tools, and equipment. Regardless of your position, you should also
- 2) encourage your colleagues to follow our workplace rules and procedures and must report chronically unsafe behavior to your supervisor.
- 3) Every Production staff member is expected to be courteous and respectful towards other members of the company. Part of this respect involves maintaining high production standards, diligent work habits, and attention to the artistic goals for each production.
- 1) Area heads and assistants have a specific obligation to conserve and protect the School of Theater and Dance property and equipment. However, this is a general obligation that applies to all staff members.

**E. Additional Obligations**

By and large, the School provides all tools and equipment required for your work. Exceptions are such items as running crew black clothing and all footwear. PPEs (Personal Protective Equipment) provided in the shops are the property of SIUC and must be returned to the area of origin.



You have an obligation to inform the company of any pre-existing medical or physical conditions that may impair your ability to do your job. For instance, a fear of heights will impede the work of an electrician, while bad knees will affect someone who moves scenery or costumes.

Finally, the School recognizes that proper rest and relaxation are important ingredients in a safe and productive workplace. Hence, your hours will be reasonable. The hours of work will parallel the hours that have been agreed upon by the School.

2)

### 3) **V. Emergency Procedures**

#### **A. Fire Extinguishers:**

**Know the location & proper use of extinguishers before you need one.**

Only use a fire extinguisher to put out a fire if it is safe to do so, you have the correct extinguisher for the type of fire, and you have been trained in its usage and safe firefighting procedures.

1) Fire extinguishers, located in all the buildings at the Theater as required by local fire codes, are serviced, and certified by the SIUC Physical Plant.

2)

Fire extinguisher orientation and hands-on training workshops will be conducted at the beginning of the school year.

3)

#### **B. Fire Containment**

1) It is always preferable to attempt to contain a small fire with a fire extinguisher instead of letting it burn while waiting for the fire department to arrive.

2)

If a fire has consumed more than 2 square feet of space, has the potential to threaten people or flammable chemicals, or if it cannot be extinguished with the use of 1 fire extinguisher, alert all people in the building to begin evacuation immediately.

3)

If it is possible to close doors to help contain the fire to one room, do so when evacuating.

1)

#### **C. Summoning the Fire Department**

2) ***For the Carbondale Fire Department call 911.*** This, along with a list of other Emergency Procedures, will be posted by the first aid kit in the scene shop, in the light shop, and the costume shop. Make the call to the fire department from another building or outside and remember that three people calling is better than everyone assuming someone else has done it.

3)

Calmly and clearly inform the dispatcher to have the response vehicles report to the Mcleod Theater in the Communication Building on SIUC Campus.

Have someone proceed to the exterior of the building and direct the vehicles to the location of the fire. Stay on the line until the dispatcher releases you.

#### **D. Fire Lanes & Exits:**

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***Fire lanes and exits may not be blocked at any time.***

Fire lanes are open pathways in each room to allow evacuation. Fire exits are marked with lighted fluorescent EXIT signs. *It is against federal law to tamper with, dim the illumination of, cover or otherwise obscure an Exit sign.* Blocking lanes and exits, *even briefly*, eliminates a means of escape.

**E. Fire Evacuation**

- 1) ***Meeting places*** - For evacuation in the event of a fire, please meet by area at the following places.  
Area South of Box Office - The main office and box office.  
Parking lot outside of dock - Scene shop, Lab Theater, McLeod Theater  
End of ramp down to costume shop - Costume shop
- 1)
  - a) ***During Work Calls*** - Know where your colleagues are working and alert them to evacuate. Exit the
  - b) building as quickly and calmly as possible and call the fire department. Go to your designated meeting
  - c) place, report to your area head, and confirm that all your colleagues are there. If someone is missing,
- 2) alert the fire department upon their arrival, and tell them where your missing person(s) was working last. *Never re-enter a burning building.*

***During a Performance*** - Performance emergency planning will be explained by the Technical director during orientation.

3)

**F. Accidents & Injuries**

- 1) ***Know the location of all first aid kits in your workspace(s).*** First Aid Kits are restocked by Cintas Services once a month.
- 2) ***If an injury looks serious, call the ambulance first.*** First aid kits are only for the immediate treatment of minor cuts, bruises and similar “first aid” type injuries. If a serious injury or illness occurs, only administer first aid of which you are certain, and only *after* calling for an ambulance or designating someone else to do so. Even if you are certified in CPR and first aid, there is no substitute for professional Emergency Medical Technicians and rapid transportation to Carbondale Medical.
- 3)

***Do not ignore an injury.*** Take care of it immediately and report to your supervisor if it requires an accident report.

1)

**G. Blood Borne Pathogens**

- 2) ***Protect yourself against contact with blood and bodily fluids of others***  
You must also protect others from coming into contact with your blood and bodily fluids, as they may contain HIV, hepatitis or other blood borne pathogens.

***Blood borne Pathogens Protection Packs***

Kits that must be used for the safe clean-up of large amounts of blood and bodily fluids are located in each large first aid kit. These kits contain an eye/face mask, a control gown, latex gloves, antiseptic towelettes and a Bio-Hazard/Medical Waste disposal bag. This is available in the shop above the large first aid kit by the paint sink.

### ***Cleaning contaminated tools***

Tools and equipment such as sewing machine needles, screwdrivers and saw blades that have been contaminated with any amount of blood or bodily fluids must be disinfected by washing in hot, soapy water followed by a thorough rinsing with a disinfectant. See your area head for proper containers to do this cleaning.

### **H. Ambulances - Carbondale Fire Department dial 911**

3) *Call 911. This will be posted in the Safety Instructions posted in all three shops.*

*Calmly inform the dispatcher to have the response vehicle(s) report to the McLeod Theater in the Communications Building on SIUC Campus.*

- 1) *Have someone stand on the exterior of the building to direct the vehicles to the proper location.*
- 2) *Immediately inform the Technical Director that an emergency vehicle has been summoned.*

### **I. Accident Reports - Report every accident**

4) *SIUC Theater Accident Report Forms are available from your supervisor, the faculty Technical Director, Stage Management, or the Main Office.*

- 1) *A small cut may seem insignificant now, but its subsequent infection may be very dangerous while a minor back strain may develop into something far more serious later. If the company is not aware of the initial incident, Workers' Compensation may not cover the secondary problem.*
- 2) *Splinters & needle sticks are an everyday reality and do not need to be reported on an accident form. Instead, there is a Minor Injury Log located in each shop. This log tracks Name, Date, and Description of each minor incident.*
- 3) *Serious cuts and other accidents must be reported on the appropriate in-house and/or OSHA accident report forms, which may be obtained from your supervisor, the Technical Director, stage management, or the Main Office. Please have your area head fill out the form with you. *Please report every accident to your supervisor.**
- 4)
  - a)
  - b) *A copy of an accident report should be given to*

*The office manager to be filed.*

*The Center for Environmental Health & Safety (CEHS).*

- 1) *1) Send to Tatiana Sherrill ([tasherrill@cehs.siu.edu](mailto:tasherrill@cehs.siu.edu))*
- 2)

### **J. Accident or Illness During a Performance**

***Performance emergency planning will be coordinated and administered by house management.***

The Stage Manager or the House Manager may stop a performance in progress or delay its start if an injury or illness is severe enough or will disrupt the performance. This determination is at the discretion of the House Manager and/or the Stage Manager. The performance will resume if and when the House Manager and the Stage Manager determine that it is possible and safe to do so.



## VI. Hazardous Materials

*This Chapter must be studied and understood by all employees whose work includes using hazardous materials and using tools or equipment that require respirators.*

### A. Purpose and Implementation

The following information is in compliance with 29CFR 1910.59.1200, the Occupational Safety and Health Act of 1970, all requirements of the Hazard Communication Standards and Right to Know Laws of this state and will be explained to all production personnel at SIUC School of Theater and Dance whose work at SIUC includes using hazardous materials and using tools or equipment that require respirators.

- 1) The purpose of this chapter is to explain how SIUC School of Theater and Dance meets the requirements of federal, state, and local laws on informing employees of and protecting them from the possible hazards of chemicals in the workplace.
- 2) When new chemicals or hazards are introduced into the working environment, the appropriate shop Manager will check that a Safety Data Sheet (SDS) has been obtained. The Manager will also maintain a complete, up-to-date SDS Master file. The Technical Director maintains a master file of all original SDS. The master file is reviewed annually for accuracy and completeness.
- 3) SDS Sheets can be accessed online using the QR Codes located in the scene shop, light shop, costume shop, and DOT classrooms. If a material is relocated from one room to another, this change must be updated in the files. See the Production Manager for assistance.
- 4) Before starting any task involving a new chemical, the employee will be instructed by the shop or area head in the correct use of, protection from, and the disposal of the chemical. The SDS will be reviewed,
  - a) especially regarding:
    - b) the potential physical and health effects of the chemical
    - c) the methods and observation techniques used to determine the presence or release of the hazardous chemical in the workplace
    - d) how to lessen or prevent exposure to the hazardous chemical through appropriate work procedures and the proper use of personal protective equipment,
  - 1) the emergency procedures to follow if exposed to the chemical

### B. Definition of a Hazardous Chemical

- 2) A hazardous chemical is defined as any element, chemical compound or mixture of elements and/or compounds, which can produce adverse effects on humans. These include both physical and health hazards.
- 3) Physical hazards are defined as any physical phenomena that will cause damage to the body's exterior components. Physical hazards include combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophores, unstable or water reactive compounds, noise, vibration, radiation, and repetitive tasks that may cause overuse injuries.

A Chemical is defined as any substance or mixture of substances. A chemical is deemed to be a health

hazard if there is significant statistical evidence that acute or chronic health effects may occur in exposed employees. The term health hazard includes chemicals that are toxic or highly toxic agents, reproductive toxins, irritants, carcinogens, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic systems, and agents that damage the lungs, skin, eyes or mucous membranes.

With these definitions of a hazardous substance, almost everything from solvents and resins to detergents and markers contains a hazardous substance.

### C. Detection of Work-Related Illness

- 4) It is often difficult to determine the cause of a work-related disease or illness. Some reasons for this difficulty include:
  - the hazardous chemical cannot be seen or smelled.
  - symptoms may be confused with other common illnesses or ignored by the employee. Dizziness, nausea and headaches may be associated with a cold or exhaustion but are also symptoms of work-related illness.
- 1)
  - a) the symptoms or illness may not appear until several years following exposure.
  - b) There are two ends of the illness spectrum, and there are many stages in between.
    - 2) Short-Term/Acute Effects- Acute or short-term effects are the simplest and easiest to diagnose. Their causes and effects can easily be linked and the symptoms usually occur during or shortly after exposure. The outcome can vary depending on the exposure. Depending on the individual, it may be full recovery, partial recovery or even death. For example, acute exposure to solvents can cause effects ranging from mild narcosis (headache, nausea, loss of coordination) to unconsciousness and death.
    - b) Long-Term/Chronic Effects- Long-term or chronic effects are the result of repeated, low dosage exposure. Symptoms may not appear until after permanent damage has been sustained. They may appear slowly, varying with each individual, and may mimic other illnesses. Examples include chronic damage to the liver or kidney.
- 3)

***Any adverse health effects which might have been caused by hazardous chemical use should be reported immediately.*** This will enable a faster diagnosis and allow for better treatment.

- 1) **D. Basic Concepts**
- 2)
  - a) Dose - A toxic substance is characterized by a quantity (dose) that exceeds the body's ability to handle it without harm. Each chemical produces harm at a different dose.
  - b) Rate at which chemicals exit your body:
    - 3) Noncumulative toxins - like alcohol and solvents are eliminated fairly rapidly. Although medical tests can only detect their presence for a short time, the damage these toxins leave behind in your body is usually permanent.
    - Cumulative toxins - like lead, are removed slowly. Repeated exposure raises the level of these toxins in your body, which rids itself slowly of these poisons. The greater your exposure, the longer it takes to eliminate and the greater your risk of substantial permanent damage.

Total Body Burden- the total amount of a chemical present in the body from all sources. For example, if you work with lead solder, your body burden of lead would be the sum of the lead from work plus

lead from contaminated air, water and food.

*Multiple Exposures*- We are carrying body burdens of many chemicals and are often exposed to more than one chemical at a time. The chemicals can interact with your body in different ways.

*Additive* means that one chemical contributes to the effects of another. This occurs when chemicals affect your body in similar ways. An example is inhaling vapors while working with paint thinner (a solvent) and then drinking alcohol (another solvent called ethanol).

- Synergistic* accumulation happens when two chemicals, combining within your body, produce effects greater than the effects of each alone. Alcohol and carbon tetrachloride (a spot remover) or smoking and any inhaled particulate are examples. Asbestos and smoking is particularly synergistic.
- a) If you're an asbestos worker, your chance of contracting lung cancer increases about six times; if you smoke, your chances increase about six times; but if you're an asbestos worker who *also* smokes, you are not twelve (which would be additive), but about NINETY times as likely to get lung cancer.
  - b)

## E. Carcinogens & Sensitizers

*Carcinogens* are substances that cause cancer. There is no safe exposure limit to carcinogens. ***One molecule can cause cancer if it is in the right place at the right time.*** However, the greater the exposure, the greater the risk of cancer will be. SDS information must include any materials considered carcinogenic by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), or OSHA. These groups use the following systems to rate carcinogens.

- 1) NTP
  - a) 1 – known to be carcinogenic, with evidence from human studies.
  - 2 – reasonably anticipated to be carcinogenic, with limited evidence in humans or sufficient evidence in experimental animals.
- b) IARC
  - 1 – carcinogenic to humans; sufficient evidence of carcinogenicity
  - 2a – probably carcinogenic to humans; limited human evidence; sufficient evidence in experimental animals
  - 2b – possibly carcinogenic to humans; limited human evidence in the absence of sufficient evidence in experimental animals
- c) 3 – not classifiable as to carcinogenicity in humans
- 2) OSHA
  - x.- carcinogen defined with no further categorization.

The lists of chemicals known by these organizations to be hazardous represents only a small percentage of known chemicals. Manufacturers often include statements on labels such as “This chemical is not considered to be a carcinogen by OSHA, NTP, or IARC”, which make it appear that these agencies have found the chemical to be safe. More likely, the substance is currently untested by any agency. Treat these substances as hazards, too, and protect yourself from them.

- 4) ***The basic rule of thumb is that your body is meant to breathe oxygen.*** If a substance you are working with gives off fumes or you can taste or see airborne particles, you should wear a respirator. Similarly, if a chemical alters the surface of a material when applied to it, your skin should also be protected from contact with that chemical.

A *Sensitizer* is a chemical that will produce an allergy in a significant number of those exposed to it. An allergy is a failure of the immune system and can take the form of skin rashes, respiratory problems, sinus conditions, or other neurological conditions. Once an overreaction has developed, a person will

likely have allergic reactions to similar chemicals.

- 1) Sensitizers common in production work include *epoxy resins* and their curing agents, *turpentine*, *isocyanates* (used in urethane casting and foaming chemicals), *chrome compounds* (in cosmetics), *latex* (in gloves and paint), *nickel* (in welding fumes), *formaldehyde* (used in carpets and as a preservative), *fiber reactive dyes*, and *California redwoods* and other woods.

## F. Labeling of Hazardous Materials

“For Professional Use Only” or “For Industrial Use Only” indicates that the manufacturer expects the product to be used by people who know all the relevant information and in an appropriately controlled environment.

- 1) Non-Toxic is a consumer product label term that is often misunderstood. Under the Federal Hazardous Substance Act (FHSA), toxicity is determined by acute animal tests that administer ingestion tests. The chemical is administered at a rate of five grams per kilogram of body weight. If, two weeks later, half
- 2) of the rats are dead, the chemical must be labeled toxic. If less than half of the rats die, the chemical can be labeled non-toxic.

***One rat may be the difference between toxic and non-toxic.*** These tests miss **all** chronic hazards. Under this law even asbestos can be labeled “non-toxic.”

- 3) Art Materials have a special labeling law that requires that products with chronically hazardous chemicals be labeled with warnings. Chemicals whose hazards are unknown or untested can still be labeled “non-toxic.”

## G. Physical Forms of Chemicals

Hazardous chemicals may be present as solids, liquids, dusts, mists, fumes, gases and vapors. If you do not understand the difference between these chemical states, you cannot properly protect yourself.

Understanding chemical forms will allow you to properly protect yourself by knowing how each chemical can get into your body, understanding what effect(s) each may have on you, working in a properly

- 1) ventilated space, and choosing the correct respirator.
- 2) A Solid is made up of molecules that move slowly and tend to hold their structure. Gloves and protective clothing usually provide an adequate barrier.
- 3) The molecules in a liquid move freely and more rapidly than those of a solid. Depending on the liquid,
- 4) gloves and protective clothing provide a satisfactory barrier.

Particles in the air are dust, whether they settle on a surface or remain suspended. Dust contains larger particles than fumes. Particulate masks or respirators with dust filters prevent the inhalation of dust.

A mist is the fog or cloudy material that is seen during an activity like spray painting. It is composed of liquid droplets and may also contain solids. Oil spray paint mist may contain solvents and an oil vehicle (both liquids) and pigment (solid). Mist begins suspended in the air but, in time, settles, dries out and converts to other forms. Ventilation and respirators can protect you from mists. However, respirator cartridges must be carefully chosen. There are different cartridges for mists with solvents and for those containing water.



Fumes are created when a solid material is heated to its melting point. The solid particles become suspended in the air. These particles may be filtered out with a very fine respirator filter.

- Molecules in a gas move more rapidly than in a liquid. Gases mix with air and expand indefinitely to completely fill the space. Opening a door enlarges the space and allows the gas to expand further. Gas molecules are so small that it is not possible to filter them. Ventilation is the best method of removing vapors from an enclosed space. Some gases can be trapped by a chemical respirator cartridge that will absorb or react with the chemical.
- 5)
- 6) Vapors form as liquids or some solids are heated and evaporate. Vapors, like gases, expand completely in a contained space. The only difference between a gas and a vapor is that high concentrations of the vapor would re-condense to a solid or liquid at room temperature. Ventilation and certain respirator cartridges can help protect you from vapors.

7)

## H. Routes of Entry

In order to properly protect yourself and those working near you, it is important to understand the methods by which chemicals can gain access to your body.

- 1) Inhalation: Inhaled substances can cause direct damage to the respiratory system at any location. Once substances have reached the lungs, the toxic chemicals are carried to the rest of the body via the blood stream. For example, damage to the kidneys and brain can occur from lead inhaled in solder fumes. Ventilation and/or respirators must be used any time you are working with materials, which produce respirable particles.
- 2) Surface Contact: Solvents, acids and caustics can dissolve the skin's barrier of waxes, oils and dead cells causing direct damage to the skin. Chemicals are then transferred via the blood to other organs in the body. Cuts, burns, rashes and abrasions also allow chemicals to enter the body. However, certain chemicals, such as wood alcohol and benzene, are capable of being absorbed through undamaged skin and entering the bloodstream that way. These types of chemicals are called skin absorbers. Chemicals also gain access to the body through our eyes. Protect your skin and eyes any time you are working
- 3) with hazardous substances.

- 1) Ingestion: Chemicals can enter the body if you eat, drink, or smoke while working. Touching dirty hands to your face or mouth, biting your nails, holding objects between your teeth, and similar habits allow chemicals to enter the body as well. Dust trapped in the lung mucous is removed by transport to the esophagus where it is swallowed. By this passage, harmful particles are transported to the stomach and then throughout the body. Chemicals poured into paper cups, glasses or soda cans can also cause accidental ingestion.

## I. Understanding and Using the Safety Data Sheet

- 2) The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) for each hazardous chemical to downstream users to communicate information on these hazards. SDSs are required to be presented in a consistent user-friendly, 16-section format.

The SDS includes information such as the properties of each chemical; the physical, health, and

environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200

SDS provide information on a product's hazards and the protection required for safe use in the workplace. Safety Data Sheets are filled out by the product's manufacturer. The Hazard Communication Standard and right to know laws require that the SDS are made available to all workers using or exposed to potentially hazardous chemicals in their workplace.

- 3) Safety Data Sheets are kept in the School master file with the technical director as well as on the school's website. All files are open to employees at any time and copies of the information will be provided upon request within 24 hours. The current master SDS inventory is alphabetically indexed by the common or brand name on the SDS.
  - 4) As a central part of its compliance with the Hazard Communication standard, SIUC School of Theater and Dance charges its shop supervisors and area heads with the responsibility of obtaining an SDS for every potentially hazardous chemical currently in use in their shops. The managers are also responsible
  - 5) for reviewing new data sheets for significant health and/or safety information and for communicating that information to their staff.
- Safety Data Sheets are obtained through the manufacturer, distributor or importer of the chemical.
- 6) Products for which there is no sheet available should be replaced with products for which better information is provided.

## **J. Understanding the Sections of the SDS**

### **Section 1- Identification**

1. This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:
  - a. Product identifier used on the label and any other common names or synonyms by which the substance is known.
  - b. Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
  - c. Recommended use of the chemical (e.g., a brief description of its purpose, such as flame retardant) and any restrictions on use (including recommendations given by the supplier)

### **Section 2- Hazard(s) Identification**

1. This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:
  - a. The hazard classification of the chemical (e.g., flammable liquid, category 1)
  - b. Signal word
  - c. Hazard statement(s)
  - d. Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame)
  - e. Precautionary statement(s)
  - f. Description of any hazards not otherwise classified
  - g. For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing

how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

### **Section 3- Composition/ Information on Ingredients**

1. This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:
  - a. Substances
    - i. Chemical name
    - ii. Common name and synonyms
    - iii. Chemical Abstracts Service (CAS) number and other unique identifiers
    - iv. Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical
  - b. Mixtures
    - i. Same information required for substances
    - ii. The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
      1. Present above their cutoff/concentration limits or
      2. Present a health risk below the cutoff/concentration limits
    - iii. The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
      1. A trade secret claim is made,
        - a. *Trade Secret Exemption:* The identity of hazardous ingredients can be withheld by the manufacturer if they are trade secrets or proprietary information. The SDS should say what state department holds the authority to withhold the information. Trade secret products should be avoided whenever possible since it is very difficult and time consuming for medical personnel to get this information if there is an accident or illness.
      2. There is batch-to-batch variation, or
      3. The SDS is used for a group of substantially similar mixtures.
  - c. Chemicals where a trade secret is claimed
    - i. A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required

### **Section 4- First Aid Measures**

1. This section describes the initial care that should be given by untrained responders to an individual who has been exposed to a chemical. The required information consists of:
  - a. Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
  - b. Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
  - c. Recommendations for immediate medical care and special treatment needed, when necessary.

### **Section 5- Fire Fighting Measures**

1. This section provides recommendations for fighting a fire caused by a chemical. The required information consists of:
  - a. Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.

- b. Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- c. Recommendations on special protective equipment or precautions for firefighters.

### Section 6- Accidental Release Measures

1. This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:
  - a. Use of personal precautions (such as the removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
  - b. Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
  - c. Methods and materials used for containment (e.g., covering the drains and capping procedures).
  - d. Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; absorbent materials; and/or equipment required for containment/clean up)

### Section 7- Handling and Storage

1. This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:
  - a. Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
  - b. Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements)

### Section 8- Exposure Controls/Personal Protection

1. This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:
  - a. OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
    - i. *Permissible Exposure Limits (PEL)* are exposure limits regulated by OSHA for hazardous workplace chemicals. The eight-hour time weight average (PEL-TWA) should be listed. This is the amount of the substance in the air to which most healthy adult workers may be exposed each workday without adverse effects. In general, the smaller the PEL, the more toxic the substance.
    - ii. *Threshold Limit Values (TLV)* are airborne substance standards set by the American Conference of Governmental Industrial Hygienists (ACGIH).
    - iii. *Time weighted average (TWA)* is the maximum total amount of the product a worker can be safely exposed to over an eight-hour day. They are meant to protect workers with a normal eight-hour day and forty-hour work week.
    - iv. **NOTE:** Only about 700 chemicals have TLVs. Experts estimate there are over 70,000 chemicals used in the workplace. Chemicals without TLVs should never be considered safe. Is a TLV a safe limit? We can see from the definition that exposure limits are for “almost all healthy adult workers.” This means TLVs do not apply to some healthy

- adults, people with certain health problems, especially respiratory diseases and allergies, children or fetuses.
- b. Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- c. Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPEs) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- d. Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

### **Section 9- Physical and Chemical Properties**

1. This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:
  - a. Appearance (physical state, color, etc.)
  - b. Upper/lower flammability or explosive limits
  - c. Odor
  - d. Vapor pressure
  - e. Odor threshold
  - f. Vapor density
  - g. pH
  - h. Relative density
  - i. Melting point/freezing point
  - j. Solubility(ies)
  - k. Initial boiling point and boiling range
  - l. Flash point
  - m. Evaporation rate
  - n. Flammability (solid, gas)
  - o. Partition coefficient: n-octanol/water
  - p. Auto-ignition temperature
  - q. Decomposition temperature
  - r. Viscosity
2. The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (KSt) for combustible dust, used to evaluate a dust's explosive potential

### **Section 10- Stability and Reactivity**

1. This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:
  - a. **Reactivity**
    - i. Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.
  - b. **Chemical stability**
    - i. Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
    - ii. Description of any stabilizers that may be needed to maintain chemical stability.
    - iii. Indication of any safety issues that may arise should the product change in physical

appearance.

c. **Other**

- i. Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- ii. List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- iii. List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- iv. List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Firefighting Measures) of the SDS.)

### **Section 11- Toxicological Information**

1. This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:
  - a. Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
  - b. Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
  - c. The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in **A SINGLE** dose.
  - d. Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
  - e. Indication of whether the chemical is listed in the National Toxicology program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

### **Section 12- Ecological Information (non-mandatory)**

1. This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:
  - a. Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
  - b. Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
  - c. Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), where available.
  - d. The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
  - e. Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

### **Section 13- Disposal Considerations (non-mandatory)**

1. This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal protection) of the SDS. The

information may include:

- a. Description of appropriate disposal containers to use.
- b. Recommendations of appropriate disposal methods to employ.
- c. Description of the physical and chemical properties that may affect disposal activities.
- d. Language discouraging sewage disposal.
- e. Any special precautions for landfills or incineration activities

#### **Section 14- Transport Information (non-mandatory)**

1. This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:
  - a. UN number (i.e., four-figure identification number of the substance).
  - b. UN proper shipping name.
  - c. Transport hazard class (es).
  - d. Packing group number, if applicable, based on the degree of hazard.
  - e. Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
  - f. Guidance on transport in bulk (according to Annex II of MARPOL 73/783 and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
  - g. Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

#### **Section 15- Regulatory Information (non-mandatory)**

1. This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:
  - a. Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental protection Agency, or Consumer Product Safety Commission regulations)

#### **Section 16- Other**

1. This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

#### **Container Labeling**

1. Primary Containers: Shop and area heads are responsible for monitoring all containers of hazardous chemicals in their workplace. They ensure that all chemical containers are properly, legibly, and prominently labeled with the following information:
  - a.) The identity of the product or hazardous chemical(s) as they are listed on the MSDS.
  - b.) The name and address of the manufacturer, importer or other responsible party for whom information can be obtained.
  - c.) Appropriate warnings to help employees protect themselves from the hazards of the material.
2. Secondary labels can be an extra copy of the manufacturer's label or a generic label. All secondary labels must have the above information. If a chemical in a secondary container is used up in one shift, a label is not necessary provided that the secondary container is either disposed of or properly

cleaned. For help with labeling, contact your shop head.

3. Chemicals poured into paper cups, glasses, or soda cans can cause accidental ingestion. ***The use of cups, soda can, or other food containers as secondary materials containers is not allowed.*** Further, eating, drinking, and smoking are never allowed in any SIUC School of Theater and Dance Facility.

## VII. Personal Protective Equipment

### A. Using Personal Protective Equipment

SIUC School of Theater and Dance requires you to wear appropriate Personal Protective Equipment (PPE) while using tools and equipment, while working with hazardous chemicals and while engaged in many production activities. Protection is required both for those using equipment *and for those working in close proximity*. For example, anyone working in a shop while a belt sander is in use must be wearing hearing protection. In order to protect yourself from the dangers of your work environment, you must understand how each protective device works and acknowledge its place in your work routine.

- 1) wearing hearing protection. In order to protect yourself from the dangers of your work environment, you must understand how each protective device works and acknowledge its place in your work routine.

SIUC School of Theater and Dance will provide all required Personal Protective Equipment in the shops that requires it. The PPE will stay in these shops (unless disposable) for the use of students and employees. The use of personal PPE is encouraged but SIUC School of Theater and Dance will not be held responsible if personal PPE is lost or broken during work. All personal PPE must first be approved by the area supervisor before being used at work.

- 2) SIUC School of Theater and Dance will provide all required Personal Protective Equipment in the shops that requires it. The PPE will stay in these shops (unless disposable) for the use of students and employees. The use of personal PPE is encouraged but SIUC School of Theater and Dance will not be held responsible if personal PPE is lost or broken during work. All personal PPE must first be approved by the area supervisor before being used at work.
- 3) You must inspect this equipment before each use to ensure that it is in proper working order. Protective equipment must be kept clean and free from damage. Report any unusable equipment immediately and a replacement will be issued to you as soon as possible. Until a replacement has been made, you are not to perform tasks which require that particular piece of equipment

### B. Head Protection

<sup>1</sup>***Hard hats should be worn any time you are exposed to Potential injury from falling objects.***

- a) Simply put, you must wear a hard hat whenever someone is working above you. Grid, ladder, genie, and any overhead rigging work all present situations that require protective hard hats. Head protection is required not only when working directly with someone on a ladder or a lift, but also when beneath or near the person on the ladder or lift.

SIUC School of Theater and Dance has provided hard hats which are approved in both Class A and

- 2) B. They are rated as follows:
  - 1) Class A- general service, limited voltage protection.
  - 2) Class B- utility service, high voltage protection.
  - 3) Class C- special service, no voltage protection.

You must properly maintain and regularly inspect your helmet for wear to suspension and cracks in the shell. Shells should be washed only with soap and hot water since some cleaning solvents can damage the structural integrity of the construction material. Hard hats should also never be stored in direct sunlight. Cracked helmets must be replaced immediately.



Access to the stage will be restricted when overhead rigging is in progress. Those who must be on stage will be required to wear hard hats. ***However, even hard hats that meet OSHA safety standards will not protect you from injury if you are struck by an object that has fallen from grid height.***

During strike, ALL personnel on stage are required to be in hardhats. However, even hard hats that meet OSHA safety standards will not protect you from injury if you are struck by an object that has fallen from grid height.

3)

### C. Eye & Face Protection

- 4) ***Eye protection is required in the scenic studio at all times.***  
***In the costume and lighting studios: You must wear suitable protection any time there is the potential for injury to the eyes or face from flying/ suspended materials or splashing hazardous liquids.***

Safety Glasses, Safety Goggles and Face Shields- When your vision becomes impaired, you become a danger to yourself and to your colleagues. Safety glasses, goggles, and face shields will protect your eyes and face from a variety of hazards. Protection is required anytime there is a potential for injury to the eyes or face from flying particles, molten metal, liquid chemicals, a combination of these. However, your protection must be appropriate to the task or environment, and must meet the following minimum requirements:

- 1) provide adequate protection against the particular hazards for which it was designed
  - a) be reasonably comfortable when worn under the conditions for which it was designed
  - b) fit snugly without interfering with the movements or vision of the wearer
  - c) be durable
  - d) be capable of being easily cleaned and disinfected
  - e) be kept clean and in good repair
  - f)
- 2) Chemicals can destroy or scar the tissue of the eyes or face and flying particles can scratch your eyes. Damage can be severe and permanent. ***Goggles or shields must be worn any time there is a danger of getting something in your eyes or on your face.***
  - a) Safety glasses provide impact protection from the front. Side shields provide protection from objects approaching from the side. Glasses cannot protect from all particles.
  - b) Safety goggles provide front and side impact protection as well as splash protection from liquids. Goggles can be vented or non-vented depending on the degree of protection needed. Goggles fit easily over prescription glasses.
  - c) Face shields provide impact and splash protection for the entire face. Face shields should always be worn in combination with glasses or goggles.
- 3) Eye protection should be kept clean. After cleaning, the wearer should inspect the equipment for visible damage. Pitted or dirty lenses can impair vision, while deeply scratched or pitted lenses are apt to break. Slack or twisted headbands may not hold the protector in place and should be replaced. See shop head for replacements.

Welding- Welding face masks and safety glasses must be worn anytime the welder is in use. Welders must use protective equipment with filter lenses of an appropriate shade number.

Following is a list of appropriate shade numbers for various tasks performed at SIUC:

Task	Electrode Size	Arc Current (amperes)	Minimum Shade Value
MIG/GMAW Welding		< 60 amps	7
		60 - 160 amps	10-11

		160 – 250 amps	10-12
		250 - 500 amps	12-14
Metal arc welding	3/32 – 5/32	60 – 160 amps	8
	5/32 – 8/32	160 – 250 amps	10
	> 8/32	250 – 550amps	11
Gas Welding	<1/8	3.2 mm plate	4
	1/8 – 1/2	3.2 – 150 mm plate	5
	<1/2	>12.7 mm plate	6

#### D. Skin Protection

***You must properly protect your hands and other exposed skin from cuts, bruises and abrasions.***

***Hands-*** Gloves can only protect you if they are appropriate to the task. Hence, proper glove selection must consider the hazard(s) of the task to be performed. Many manufacturers provide glove guides to assist you in choosing proper protection. Each employee must be measured for proper glove size.

- 1) Abrasion Resistant Gloves (AR): These gloves protect the hands from materials, which can cut or scrape them. Leather gloves provide good protection when lifting scenery or hauling ropes. Fabric gloves are useful for light or medium duty work. Leather replacement gloves have a fabric liner that is dipped into a polymer.
  - a) Temperature Resistant Gloves (TR): Non-conductive, heat resistant gloves should be worn when working with the lighting equipment. Heat resistant gloves must also be worn for all welding, brazing and torch cutting operations.
  - b) Chemical Resistant Gloves (CR): To properly protect your hands from chemical penetration, gloves appropriate to the task at hand must be worn. Proper glove selection must consider the hazard, the task to be performed and the length of exposure. Before selecting a glove to protect your hands from solvents and dyes, for example, you must consider the type of chemical being used. No one glove is suited for all chemical exposures. For chemicals that are mixtures, choose a glove based on the chemical with the shortest breakthrough time. Three properties effect which glove works best with each chemical or mixture of chemicals.
    - 1) ***Permeation:*** The rate at which a chemical passes through the glove material
    - 2) ***Breakthrough Time:*** The elapsed time between initial contact of the chemical on the glove surface and the analytical detection of the chemical on the inside of the glove.
    - 3) ***Degradation:*** A change in one or more physical properties of a glove due to contact with a chemical. Degradation could result in swelling, softening, drying or cracking of the glove material.

Glove thickness and style must also be taken into consideration when choosing a glove.

***Arms & Legs-*** Full-length leather or canvas aprons, trousers and /or long sleeves will protect arms and legs from splashes, welding sparks, sawdust, and splinters.

1)

#### E. Noise Protection

***Damage to your hearing is permanent and untreatable. If you must raise your voice to speak to a person 2 feet from you, you should be wearing hearing protection.***

The level of noise that is permissible in the workplace varies with the length of time of exposure and with the intensity of the noise (sound pressure). However, ringing in the ears and temporary hearing loss following work are both signs of overexposure. Sound is measured in decibels (dB) and hearing protection is rated in terms of the amount of sound (in dB's) that is blocked out. For example, hearing

protection rated at 25 NRR would reduce the noise of 120dB by 25dB.

OSHA's permissible exposure limit (PEL) over an 8 hour day (TWA) is 90 decibels. Decibels are nonlinear, logarithmic functions so a doubling of noise increases the sound level by only 3dB. For example, if one table saw produces 105dB, turning on another equally noisy saw adds 3dB to bring the level to 108dB. However, the increase of 3dB doubles the sound intensity and the amount damage.

The chart gives some comparative noise levels.

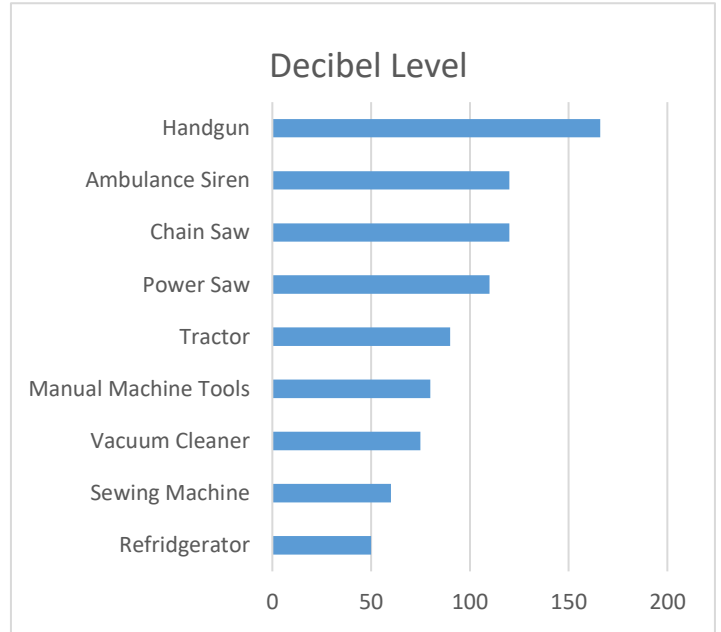
2)

Hearing protection that will diminish environmental noise by 27 dB will be provided to any staff member who needs it, in a variety of styles.

4)

Shop radio/tape/CD player policies will be set at the discretion of the appropriate shop head(s). **However, any person working in a shop may turn down or turn off any player at any time.** The player will then remain off until the end of that work period.

5)



Data from Center for Hearing and Communication

## F. Hair Protection

***Long hair, including ponytails and long braids, must be secured under caps or under shirt collars whenever power equipment is being used.*** Long hair can easily get caught in any power tool, including drills and hand saws.

## G. Foot Protection

1) ***All employees working on or around the stage, including stage managers and wardrobe staff members, are required to wear work shoes with hard toes, heels, and soles.***

The purpose is to protect you against puncture wounds and various injuries that may be caused when toes have things dropped on or rolled over them or are stepped on.

Obviously, you should wear closed-toed shoes or boots, and are encouraged to do so!

## 1)H. Lifts

***All four personnel-lift outriggers must be used when the lift is extended. The worker must always stand on the basket floor. Never climb the railings of the basket. Employees working under a personnel-lift must be in hardhats***

It is never appropriate to use people as counterweights on the genie-lift base as a substitute for the

outriggers. Nor is it ever appropriate to move the genie-lift when the basket is occupied and extended.

## VIII. Respiratory Protection

### A. Using Respiratory Protection

You are meant to breathe oxygen and inhaling anything else is a bad idea. Prolonged exposure to sawdust will eventually cause respiratory problems. However, since you may amplify the hazard and put yourself at great risk by using inappropriate protection, adequate ventilation should be the primary means of controlling potentially harmful substances in the air. When ventilation is inadequate, OSHA allows the use of respirators.

- 1) Your respiratory system consists of the upper respiratory tract (nose, throat, trachea, and bronchial tubes) and the lungs (lung cavities and the alveoli). The alveoli are the small sacs that transfer the gasses to the blood stream. Inhalation of hazardous materials can irritate the linings of the upper respiratory tract, particulates can settle in the lung cavities slowly destroying the lungs and inhaled
- 2) gasses and vapors can be transferred to the bloodstream where they can have damaging effects on all of the internal organs.

Respiratory protection varies depending on the hazards to which you are exposed, the exposure levels, and the respiratory protection equipment used.

- 3) The National Institute of Occupational Safety and Health (NIOSH) regulates respirators, filters, parts and components. Only components and respirators carrying the initials NIOSH and an approval number should be used.
- 4) Take great care to choose a form of respiratory protection that is suited to your task. ***You may amplify the hazard and put yourself at greater risk by choosing inappropriate protection.*** There are three basic types of respirators:
  - a) Supplied-Air respirators or self-contained breathing apparatus (SCBA) bring fresh air to the wearer by means of pressurized gas cylinders or air compressors. These are usually used in an oxygen-deprived atmosphere or for gasses and vapors that cannot be controlled through chemical cartridges.
  - b) Air-Purifying respirators purify the air as it is inhaled through filters or cartridges.
  - c) Powered air-purifying respirators provide air which has been pumped through a filter.

There are several types of air-purifying respirators including:

- a) disposable or single use types which look like paper dust masks and are thrown away following one use.
- 7) b) quarter face masks which cover only the mouth and nose and have replaceable cartridges and filters.
- a) c) half masks which cover the mouth, nose and chin and have replaceable cartridges and filters.
- b) d) full face masks which resemble old fashioned gas masks and have replaceable canisters.
- c)
- d)

Particulate Masks & Filters – All particulate masks and filters have a number rating based on testing against “fume-sized” particles (0.3 microns).

**N95, R95 and P95 filters** are certified as having a minimum efficiency of 95%

**N99, R99 and P99 filters** are certified as having a minimum efficiency of 99%.

**N100, R100 P100 filters** are certified as having a minimum efficiency of 99.97%

**N Series Filters** are limited to use in atmospheres containing non-oil-based particulates. For example: in a wood shop, if cutting oil is being used to machine metal, this is not the appropriate

filter. N filters have an eight-hour time use restriction.

**R&P Series Filters** are intended for filtering any non-oil or oil-containing particles. R filters have an eight-hour time use restriction.

**P Series Filters** have no time restrictions other than the normal ones associated with particulate filters (soiled, damaged, noticing increased breathing stress, etc.)

Gas & Vapor Cartridges- choose the appropriate cartridge for the chemical being used. Some

- e) chemicals do not have a cartridge and must not be used without supplied-air respirators. As we do not use supplied-air respirators, these chemicals cannot be used in our workplace. Cartridges are color  
f) coded.

a.) Acid gasses only	AG	white
8) b.) Organic vapors only	OV	black
c.) Ammonia gas	NH3	green
d.) Acid gas & organic vapors	OV/AG	yellow
e.) Formaldehyde	F	gray

## B. Pulmonary Functions and Respirator Fit Testing

Each shop or area head will identify the individuals on their staff who must perform tasks that involve hazardous materials such as welding or spray painting.

1)

**In order to wear a respirator, you must do two things:**

- 2) You must pass a Pulmonary Function Test to ensure that you can safely wear a respirator without risking any adverse health effects. This can be done by filling out a respirator medical evaluation questionnaire and reaching out to the Student Health Center for approval. You can acquire this questionnaire from CEHS or the Technical Director.

3)

Once the student health center deems you healthy enough to wear a respirator, you must receive fit-testing through the Center for Environmental Health and Safety. Because most respirators, including particulate masks, were designed for average males, obtaining a proper fit can be difficult. However, if a good seal is not made, air may leak into the respirator without passing through the filter. Respirators also fit incorrectly if the wearer has facial hair (beards, sideburns or even a few hours growth), facial scars, a broken nose, missing dentures, or a very large or very small face. For these reasons, fit-testing is imperative before you use a respirator.

4)

- a) More information can be found on this on the CEHS website. <https://cehs.siu.edu>

b)

- c) ***You must also test your respirator and cartridge before each use.*** The test includes:  
Negative pressure test: block the cartridge air inlets with your hands, inhale and hold your breath for about 15 to 20 seconds. The negative pressure should remain inside the face mask.  
Positive pressure test: block the exhalation valve and gently exhale. You should not detect any pressure changes from air escaping around the face piece.  
Cartridge test (organic vapor spray paint filters): once you have donned your respirator, pass an open bottle of nail polish or iso-amyl acetate in front of your respirator. If you can detect the odor, you need to replace your cartridge.

## C. Respirator & Cartridge Care

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Cartridges and filters should be replaced often.

Filters become clogged as you breathe through them. Once breathing becomes difficult, you should replace your filter. At this point, the pressure from your breathing will draw particles through the filter and into your lungs.

Chemical cartridges simply stop working after a period of time, and once they have stopped working, you will breathe in the contaminant as if you were not wearing a respirator.

- 1) 1) Chemical cartridges should be replaced after 8 hours of use or two weeks of exposure. Pay particular attention to cartridges with expiration dates.
- a) 2) Properly clean and store your respirator after each use. This will help to extend the life of your respirator and your cartridges. Safety equipment wipes may be used to clean the inside and outside of your respirator.
- b)

Store your respirator in an airtight container, away from sunlight. This will keep the respirator from being contaminated by ambient atmosphere.

- 2) Cartridges should not be left out in the air, as they will continue to absorb contaminants, shortening their life.
- 3) Shared respirators must be thoroughly disinfected after each use and cartridges must not be shared.
- 4) Inspect your respirator frequently for signs of wear, missing parts or damage. Do not continue to use a respirator if it is not completely intact.
- 5)

## **IX. Fall Protection**

The following Fall Protection Program is established to comply with OSHA Fall Protection Standards for both General Industry (29 CFR 1910) and Construction Industry (29 CFR 1926.500-503). Theater falls into both categories. The buildings in which we work and our sets (once finished) fall under OSHA's classification of General Industry. While building scenery we may fall under the Construction Industry classification. This program outlines how to prevent falls through fall protection, avoid falls through fall restraint, and implementing fall arrest with a defined rescue plan when necessary.

Employees and students working on an elevated surface while in the construction phase with an unprotected side or edges six (6) feet, 1.8m, or more above a lower level shall be protected from falling. This standard includes "Holes" 19501 (b) (4) (ii). Once a production has completed construction it falls into the General Industry (29 CFR 1910.23 (c)(1) requiring fall protection on surfaces or platforms with an unprotected side or edges four (4) feet or more above a lower level.

1) The Entertainment Services and Technology Association (ESTA) is an American National Standards Institute (ANSI) accredited standards program and provides further details for the prevention of Falls from Theatrical Stages and Raised Performances. See ANSI E.46-2018. The SIUC School of Theater and Dance has adopted these practices for use in all areas of production from design to performance.

### **A. Common Terms**

Fall protection is the first action to be taken after a fall hazard has been identified. Fall Protection is

put in place to eliminate the potential of falls. A common example of fall protection would be railings on the edge of a balcony or ledge.

Fall restraint systems are the steps taken when fall protection is not an option. Fall restraint systems are attached to an individual that do not allow the possibility of falling.

Fall Arrest Systems are a last resort and should only be used when fall protection and fall restraint are not feasible. Fall arrest systems do not eliminate the risk of falling. Instead, they are designed to stop a person's fall before they hit the ground.

## 2B. ANSI Steps

ANSI & ESTA created a list of steps that theaters can follow to eliminate fall hazards. For more details visit [https://incord.com/wp-content/uploads/2020/01/ANSI\\_E1-46\\_2018.pdf](https://incord.com/wp-content/uploads/2020/01/ANSI_E1-46_2018.pdf)

**Risk assessment** - All fall risks should be assessed before having anyone work at height or near a ledge. Once the level of risk has been classified, fall protection should be implemented. See faculty technical director for SIU Theater Risk Assessment Form.

- 1) **Fall Protection** - Fall protection should always be the first step once a fall hazard has been identified. When possible, a guard rail should be the first line of defense in fall protection. Guard rails must be able to withstand at least 200 pounds without more than 3" deflection or failure and must be 42" above the walking/working surface. Temporary ones can be put in place for construction purposes, but permanent ones should be put in place before the scenery is deemed finished.

- 2) **Fall Restraint** - If the risks cannot be eliminated using fall protection, implement restraints to prevent a fall. This could be a tether at a length that prevents the worker from getting too close to the edge.

- 3) **Fall Arrest** - If a worker **must** be exposed to a fall hazard, a fall arrest plan must be implemented. This is when a fall risk is not completely eliminated, but the person is attached to a system that arrests their fall before they hit the floor, lessening potential injury to the fallen person. SIU provides harnesses and lanyards for working in situations when fall risks cannot be eliminated. There are few places in our theater that would require a fall arrest system.

**NOTE:** Before working at a height that requires fall arrest, you must receive fall protection training from the production manager, technical director, or another assigned trainer. Training should include:

- a) You must be trained to properly fit and adjust a fall harness. Improper fitting can lead to otherwise avoidable damage when a fall occurs.
- b) You must be clipped to a structural support (i.e. a fall arrest anchor, an approved structural beam, etc.) at all times when at height.
- c) When working where there is a risk of falling, there must always be a second person present to monitor the situation and get help if a fall occurs. This person must be within the line of sight and earshot of the person at risk.
- d) Equipment must be checked for any damage or wearing that could cause failure before each use.
- e) A fall rescue plan must be implemented as part of the arrest plan and training.

**NOTE:** If at any time you are asked to work at a dangerous height and you are not comfortable doing so or do not feel like you understand the safety process, make this clear to your supervisor and area head so they can either train you or assign someone else to the task.

## C. Fall Hazards

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- Edge of McLeod stage - The edge of the stage is commonly a topic of confusion on whether fall protection is necessary. OSHA standards for General Industry require fall protection when there is a danger from a height of 4 feet or greater. Since the front of the McLeod stage is less than 4 feet above the audience floor, there is no requirement for fall protection. However, the orchestra lift at the front of the stage can drop below the audience level creating a fall hazard. When the orchestra pit is below audience level, current practice is to erect a caution rope barrier across the proscenium opening,
- 1) preventing travel towards the hazard. During performances however, ANSI E.46-2018 dictates that proper and strategic blocking for performers is considered a form of fall protection for performers. This must be evaluated on a production-by-production basis.

- Multi-Level Sets – During construction, fall protection is required at a height of 6 feet or more. During such work temporary railings should be put in place until the scenery is finished and the final fall protection plan has been put in place. As soon as a set is finished, it becomes general industry for which fall protection is required at 4 feet or more. Escape units must always have guardrails installed, even if an onstage unit is designed without a guardrail. It is the responsibility of the technical director and area heads to prevent employees and visitors falling.
- 2)

- Open Holes – When a trap in the stage floor is opened, it becomes a fall hazard. Proper precautions must be taken by the employee working on the trap to protect themselves, employees, and visitors from falling into the trap. Railings, sawhorses, or safety cones should be set up anytime there is an open hole on stage.
- 3)

- Catwalks – The catwalks above the audience typically do not present a fall risk. However, tools must be secured to prevent them from falling and harming those below.
- 4)

- Gridiron – All tools on the gridiron must be secured tightly. While workers are on the grid, all workers below must wear hardhats. Signage on each door to the stage must be changed to reflect this. If any work needs to be done on the beam alongside the headblocks for the counterweight system, a fall restraint system or self-retracting lanyard must be implemented before anyone sets foot on the beam.
- 5)
  - 6)

- When work must be conducted at height, first notify all those in the area that you are about to conduct such work and hardhats will be required. Put up appropriate hardhat signage at entryways to the space. Next secure your tools in such a way that they cannot fall to the area below you. Tools must be secured **before** entering the work area to protect individuals on the ground should a tool be dropped. Double check that all are wearing hardhats before entering the at-height work area.
- 1)

#### **D. Fall Rescue Plan**

- If a fall should occur while proper harnessing is in place, a rescue plan must be implemented as quickly as safely possible. When a fall occurs and the person is wearing a harness, suspended by their fall restraint system, they must be rescued promptly to prevent any damage that could be sustained
- a) from the suspension. When suspended in a vertical position, blood flow is restricted and can cause blood clotting. This is referred to as Suspension Trauma or orthostatic intolerance. Orthostatic intolerance is what you see when someone stands with their knees locked for a long time and they pass out. Someone experiencing orthostatic intolerance passes out because the body wants to move to a horizontal position so that it can increase blood flow. When you are arrested in the air, however, your body is held in a vertical position, further restricting the blood flow and endangering your health.

Things to remember when executing a fall rescue plan:

- 1) Stay Calm. There is no need to complicate the situation by panicking.
- 2) Have someone contact the technical director and make them aware of the situation.
- 3) Communicate clearly with the person being rescued and anyone else who is assisting in the rescue.
- 4) Encourage the suspended person to keep moving their legs to keep the blood flowing. Encourage the suspended person to utilize the leg stirrups attached to the sides of SIU's harnesses. This will allow them to stand, promoting blood flow. Monitor the person being rescued for any signs of suspension trauma (paleness, faintness, sweating, breathlessness, or hot flashes). If any of these signs occur, call emergency services at **911, immediately.**
- 5) Do not put yourself in an equally dangerous situation while carrying out a fall rescue plan.
- 6) If an ambulance was called: Once the person is safely on the floor, have them lie down in a horizontal position until the EMTs arrive. Once the EMTs arrive, let them do their job and stay out of their way.
- 7) If calling an ambulance was not necessary, get them checked out by a medical professional anyways. Do not let the rescued person convince you they are fine, even if they seem fine. Internal damage and delayed symptoms are both possibilities in this situation.

The ideal situation in any fall rescue plan is one that involves the person in the air being in a position where they can rescue themselves without placing another person in a fall risk. This could involve a rescue ladder that is raised or lowered to them, allowing them to carry themselves to safety.

The two most likely places where a fall might occur in our theater are the headblock beam in the grid and above the audience.

- a) If a fall should occur above the audience or above the stage, a ladder or a lift should be erected beneath the fallen person, allowing them a means down.
- b) If a fall above the counterweight system should occur, the fall restraint or self-retracting lanyard will be short enough to allow the person to self-rescue by pulling themselves back onto the beam. Should assistance be required, a worker will put on a harness and clip into an anchor point on the beam above and assist the fallen person. Then the fallen person should be assisted downstairs to be checked by medical professionals.

## **X. Facilities Tour**

*The first purpose of the tour is to orient new employees to the various facilities in which they will work. The second purpose is to identify the locations of emergency equipment, potential hazards, fire lanes, and evacuation areas. Finally, during this part of orientation employees will be trained on the proper use of certain equipment. Throughout the tour, you are encouraged to ask questions about anything that is new or unclear.*

### **1) 2) 3) A. Location of Emergency Equipment**

4) ***During your tour, be sure that you learn the location(s) of the following:***

- Fire extinguishers
- Red Emergency Folder
- First aid kits
- Flammables storage cabinets

### **B. Hazard Identification**

***Your workplace(s) may have potentially hazardous areas, such as steps or catwalks. Be sure to note the following on your tour:***

Steps and stairways, especially:

all exterior steps and stairs that may become slippery in the rain  
the spiral stairs (SR) and the caged straight ladders (SR) leading to the grid  
Steps up the Front of House (FOH) and in and around the FOH  
Spiral staircase in the shop  
The prop loft

- 1)
  - a) Uneven and/or potentially wet and slippery walking surfaces, especially:
  - b) loading dock
  - c) ramp leading up to the observation booth
  - d) theater floor
  - e)
- 2)
  - a) Overhead obstructions, especially:
  - b) In the grid and catwalks
  - c) The FOH
- 3)
  - a) Other potential fall hazards, including:
  - b) The orchestra pit when it is lowered
- 4) Opening in the grid and at the upper loading rail
  - a) On the fly rail
  - b) FOH
  - c)
  - d)

### **C. Fire lanes and exits**

- 1) Note the location of these and ***remember that fire lanes and exits may never be blocked, for any reason, not even for a short time.***

### **D. Equipment training**

- 1)
  - a) During the next few days, depending upon your work area, you will receive training on the following
  - b) equipment:
  - c) ladders, including how to properly secure your tools so that they cannot fall
  - d) personnel lifts, including the use of outriggers and the proper securing of tools
- 2) the counterweight system, including using the locking rail and proper weight loading
  - a) fall restraints (personal fall arrests) for working at the loading rail and in the catwalks.
  - b)

You will also receive appropriate training on:

all power tools that you will be required to use

- 1) all personal protective equipment required to safely use or be in proximity to the tools and equipment used in your area.

### **E. Evacuation meeting area**

Finally, note the location of your assigned meeting area in case of an emergency evacuation of the theater or your shop.

## XI. Workplace Health & Safety Glossary

**ACCGIH** - American Conference of Industrial Hygienist; publishes the recommended TLV's for hundreds of workplace chemicals.

**Acute** - Severe, often life-threatening short-term effects due to brief hazardous chemical exposure.

**Allergy** - A failure of the immune system in response to chemical exposure.

**ANSI** - American National Standards Institute; rates safety and protective equipment.

**Asphyxiate** - A chemical (gas or vapor) that can cause death or unconsciousness by suffocation.

**Boiling Point** - temperature at which liquid changes to vapor, usually by rapid bubbling. Materials with low boiling points may present fire hazards.

**Carcinogens** - substances which cause cancer.

**Ceiling or C** - descriptive term connected with chemical exposure limits. It represents the maximum exposure a worker may experience during a given period of time. It may also be written as TLV- C or Threshold Limit Value- Ceiling. *See also ceiling and time weighted averages.*

**Chronic** - repeated, prolonged or persistent condition.

**Combustible** - liquids with a flash point at or above 100° F or liquids that burn are considered combustible. These liquids do not burn as easily as flammable liquids.

**Concentration** - the relative amount of a material in combination with another material.

**Corrosive** - a substance that causes visible destruction or permanent damage in human skin or tissue at the contact site or is highly corrosive to steel.

**Decibels (dB)** - measure of the intensity of sound.

**DOT** - Department of Transportation; US government agency that regulates the transport and labeling of hazardous materials.

**EPA** - Environmental Protection Agency; US government agency that administrates laws to control and/or reduce pollution of air, water and land systems.

**ESTA** - Entertainment Services and Technology Association. Develop safety standards and certifications for the entertainment technology industry. Also represent the interests of the industry to government, regulatory bodies, and related industries; and raising the bar for ethical and professional behavior.

**Evaporation Rate** - rate at which a material converts to vapor at a given temperature and pressure when compared to the evaporation rate of a given substance.

**Flash Point** - the lowest temperature at which a flammable liquid will give off enough vapor to ignite when an ignition source is present.

**Hazardous Material** - any substance or material which can produce adverse effects on a human's health and/or safety.

**Health Hazard** - substance for which there is significant statistical evidence that acute or chronic health effects may occur as a result of exposure.

**IARC** - International Agency for Research on Cancer

**Ignitable** - solid, liquid or gas that has a flash point of less than 140°F. Ignitable material may be regulated by the EPA

**Inhalation** - breathing in an airborne substance.

**Inhibitor** - Substance added to another that slows down the rate of change.

**Irritant** - Substance which produces an undesirable effect when it comes in contact with skin, eyes, or respiratory system.

**LEL** - lower explosive limit.

**LFL** - lower flammable limit.

**Melting Point** - temperature at which a solid changes to a liquid.

**Mutagen** - anything that can cause a change in the genetic material of a live cell.

**Narcosis** -Unconscious condition or stupor resulting from chemical exposure.

**NFPA** - National Fire Protection Association; voluntary organization which promotes and improves fire protection and prevention; also publishes the National Fire Codes.

**NIOSH** - National Institute of Occupational Safety and Health; US federal agency that tests and certifies respirators, trains health and safety consultants, and conducts research on workplace hazards.

**NRR** - noise reduction rating; an indication of the amount of protection hearing protection devices will provide.

**NTP** - National Toxicology Program.

**OSHA** - Occupational Safety and Health Administration; federal agency within the Department of Labor, publishes and enforces health and safety regulations for US business and industry.

**Oxidation** - process of combining oxygen with another substance; chemical change in which an atom loses an electron.

**Oxidizer** - substance that gives up oxygen easily to aid in combustion of organic material.

**PEL** - Permissible Exposure Limits; legal standard regulated by OSHA for exposure to hazardous substances. Expressed as a time weighted average (TWA), 15 minute short term exposure limit (STEL), or ceiling (C). See also TLV.

**Personal Protective Equipment** - devices or clothing worn to protect the worker from hazards, i.e. Respirators, gloves, safety glasses.

**Physical Hazard** - phenomena which will cause damage to the body or surroundings.

**Polymerization** - chemical reaction in which 2 smaller molecules combine to form a larger one. Hazardous polymerization is this same reaction with an uncontrolled energy release.

**ppm** - parts (of gas or vapor) per million (parts of air); a comparison of gas volume in air.

**Respirator** - device designed to protect the wearer from inhaling harmful contaminants in the air.

**Respiratory Hazard** - airborne contaminant that impairs some bodily function when breathed into the lungs or enters the respiratory system.

**Sensitizer** - substance that may cause no reaction in the first exposure but causes an allergic reaction in further exposure.

**Short Term Exposure Limit** - the maximum concentration to which workers can be exposed for a short period of time (15 minutes). One hour between exposures is required and workers must not be exposed more than 4 times in one day. The TLV-TWA must not be exceeded either.

**Specific Gravity** - weight of a substance in comparison to a reference substance. STEL- short term exposure limit.

**Synergistic** - effects occurring when 2 chemicals produce a greater effect than the total effects of each alone. Alcohol and barbiturates or smoking and asbestos are common examples.

**Systemic** - affecting many or all body systems or organs; spread throughout the body.

**Threshold Limit Value** - concentration of airborne substances, devised by ACGIH, to which workers may be exposed with no adverse effects. Advisory guidelines based on industrial experience or human or animal studies.

**Time Weighted Average** - average time of allowable exposure to a hazardous substance, in relation to a given work period (i.e. 8 hour workday); represented as TLV- TWA.

**TLV** - Threshold Limit Value.

**Total Body Burden** - The amount of a chemical present in the body from all sources.

**Toxicity** - a measure of the potential of a substance to produce adverse effects in humans or laboratory animals, condition, and concentration under which the effect occurred and a description of the effect.

**Trademark** - commercial or registered name by which a product is known. TWA- see time weighted average.

**UEL** - upper explosive limit.

**UFL** - upper flammable limit.

## XII. Reference Sources and Bibliography

The following sources were used in preparing various aspects of the SIUC School of Theater and Dance Health & Safety Manual.

- 1) *The Glimmerglass Opera Production Staff Workplace Health & Safety Training Guide*
- 2) CAL/OSHA. *Workplace Injury and Illness Prevention Model Program, for employers with intermittent workers*. State of California, Department of Industrial Relations, Division of Occupational Safety & Health, 1994.
- 3) Cal/OSHA. *Workplace Injury and Illness Prevention Model Program, for high hazard employers*. State of California, Department of Industrial Relations, Division of Occupational Safety & Health, 1995.  
Both of these Cal/OSHA models contain training guides as well as excellent hazard assessment checklists. (Neither film nor theater production work is classified as high hazard.)
- 4) Kirk, H. Ray. *OSHA Compliance Guide, General Safety Standards, Sample Programs and Forms*. Business Publishing, Summers Press, IN> Bedford TX 1993.  
A Yale University MFA thesis, this is a thorough application of OSHA general industry standards as they apply the theater production work and facilities.
- 5) Inkel, Raymond. *Theatre Industry Digest of Safety and Health Standards: A guidebook to Applicable Occupational Safety and Health Administration Standards*. Raymond P. Inkel, New Haven, 1995.  
A Yale University MFA thesis, this is a thorough application of OSHA general industry standards as they apply the theater production work and facilities.
- 6) Rossol, Monona, *Stage Fright: Health and Safety in the Theater*. Center for Occupational Hazards, Inc. New York, 1989.  
The original guide to the safe use and disposal of hazardous chemicals, and an excellent introduction to MSDS.
- 7) Rossol, Monona, *the artist's Completes Health and Safety Guide*. Allsworth Press, New York 1994.  
Focusing primarily on artist's materials, this is another detailed source of chemical terminology and safety precautions.
- 8) Sapsis, Bill, editor. *Entertainment Rigging for the 21st Century: Compilation of Work on Rigging Practices, Safety, and Related Topics*. Focal Press, 2015.
- 9) *Standard for the Prevention of Falls From Theatrical Stages and Raised Performance Platforms*. ANSI/ESTA E1.46-2018.
- 10) "Theaters." *Systems & Equipment | Diversified Fall Protection*, 2020, [www.fallprotect.com/solutions-by-market-segments/recreation/theaters/](http://www.fallprotect.com/solutions-by-market-segments/recreation/theaters/).

The Inkel and Rossol volumes also contain excellent bibliographies, listing many individual industry and government safety and health resources.

The Following United States Government publications provide further information about worker health and safety.

U.S. Department of Labor, Occupational Safety and Health Administration:

- 1) OSHA 2202 *Construction Industry Digest, 1991 (revised)*  
OSHA 3021 *OSHA: Employee Workplace Rights, 1994 (revised)* OSHA 3047  
*Consultation Services for the Employer, 1995(revised)* OSHA 3074 *Hearing Conservation, 1995 (revised)*  
OSHA 3077 *Personal Protective, 1993 (revised)*  
OSHA 3079 *Respiratory Protection, 1993 (revised)* OSHA 3124  
*Stairways and Ladders, 1993 (revised)* OSHA 3146 *Fall Protection in Construction, 1995*

- 2) *Code of Federal Regulations, Title 29, Part 1910. Labor.* 2 Volumes. Office of the Federal Register, National Archives and Records Administration, 1992  
Regulations relating to Labor (continued): Chapter XVII- Occupational Safety and Health Administration, Department of Labor.

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## Appendix A-Alarm Procedures

### Fire Alarm – Theater, No Audience

- 1) Alarm sounds in theater or you discover a fire
- 2) Call Public Safety at **911** before doing anything else.
- 3) Evacuate the Theater Immediately and proceed to assigned areas. People in the auditorium should exit and meet on the lawn in front of the Box Office.
- 4) If the fire is small and you have training, use a proper fire extinguisher to combat the fire. **DO NOT ENDANGER YOURSELF OR OTHERS** by trying to extinguish a large, well-developed fire. (The fire department must be called even if the fire was contained. Be sure to explain the extent of the fire so that the correct equipment can be sent. No one returns to the building until the fire chief indicates that it is safe to do so.)
- 5) If the fire is beyond your means:
  - a) Pull a fire alarm.
  - b) Help rescue anyone in need of assistance.
  - c) Contain the fire by closing, but not locking, as many doors as possible
  - d) Evacuate the area.
  - e) Drop fire curtain, if necessary.
  - f) Take roll call of crews from each area.
  - g) Check for any vehicles that may be in the fire department's way.

### If you are notified of a fire in your building:

- 1) Evacuate:
  - a) Take keys, briefcases, purses, wallets, coats, and other personal belongings.
  - b) Do not use elevators.
  - c) Close, do not lock, doors.
  - d) Turn off all electronics, including computers (except in the case of a gas leak
  - e) Evacuate in groups to ensure all are able to get out.
  - f) Provide assistance for those with physical disabilities.
  - g) Evacuate in a safe, orderly manner.
- 2) If you are above the ground floor and fire or dense smoke has restricted your exit routes:
  - a) Remain in your room.
  - b) Place something at the base of your door to prevent the entrance of smoke.
  - c) Call Public Safety **911** and let them know your situation.
  - d) Open any windows and signal your need for help.

## Fire Alarm – Theater, With Audience

- 1) The Alarm sounds or if a fire is spotted.
- 2) **Stage Manager**
  - a) Instructs **Fly Operator** or Crew Member to lower the main curtain.
  - b) At his/her discretion may instruct the **Fly Operator** to drop the fire curtain to prevent flames, smoke, or cinders from entering the pit or house, provided the stage is clear.
  - c) Instructs **Board Operator** to bring up house lights.
  - d) Reads the following announcement:

*“Patrons: May I have your attention please? We ask for your cooperation at this time. Our Fire alarm system has been activated and we must evacuate the theater. For your safety, and the safety of those around you, please stand and calmly exit to the exit door nearest you. The ushers will guide you out of the theater. Once again, please stand and calmly exit to the exit door nearest you following the ushers. Move away from the building to a safe distance, and we will notify you when it is safe to return to your seats. Thank you.”*

- e) Evacuates the stage house to lawn in front of Box Office, closing any doors behind him/her.
- 3) **House Manager**
    - a.) Instructs **Ushers** to move to their emergency stations.
    - b.) After stage management’s announcement, instructs **Ushers** to begin evacuating the house using the Emergency Evacuation Plan. Each usher is responsible for ensuring that his/her section is evacuated.
    - c.) Close Main doors.
  - 4) After evacuation, if the **Fire Chief** has confirmed a false alarm, an administrator makes an announcement to the remaining audience stating that it is a false alarm, and the show will continue. The audience will then be reseated.

NOTE: If a fire occurs in any on-site building during a performance, the theater shall be evacuated.

## Patron Illness

- 1) If a patron is ill during a performance, a **member of the House Management Staff**
  - a) Assists the patron out of the theater as discretely as possible.
  - b) Remains with the ill patron at all times.
- 2) If a patron becomes **extremely ill** during a performance such that he/she requires emergency medical attention and the performance must be interrupted
  - a) The **House Manager, having discretion over stopping the performance** based on location of the patron and severity of the situation
    - 1) Calls Public Safety at **911**.
    - 2) Contacts the **Stage Manager** to stop the performance.
    - 3) Tries to get the following information from the patron or his/her companion: current

medication, medical history, recent actions or events that may have contributed to injury or illness. This will assist the first responders.

- 4) Instructs someone to greet the ambulance and other emergency vehicles and direct them to the patron.
- 5) Completes an Accident Report.

b) the **Stage Manager**

- 1) Stops performance.
- 2) Makes the following announcement:

*“Patrons: May I have your attention please? Due to a patron’s illness, we must temporarily stop the performance so that he/she can receive medical attention. Please remain in your seats and we will resume the performance shortly. Thank you.”*

- 3) The performance should not resume until the patron has been removed from the theater.

## **Severe Weather**

1) In the case of a **Tornado Watch**

- a) If a tornado warning is in effect at the start of a performance or before a subsequent act, the **Stage Manager** makes the following announcement before curtain:

*“Patrons: May I have your attention please? A severe weather warning is in effect for this area. Should severe weather occur during the performance, you are advised to remain in the theater for your safety. Thank you.”*

2) In the case of a **Tornado Warning**

- a) If a tornado is sighted in the area during the performance, the **Stage Manager**
  - 1) Stops the performance.
  - 2) Makes the following announcement:

*“Patrons: May I have your attention please. A tornado has been sighted in our immediate area. For your safety, please remain in the theater and bend forward over your knees with your arms locked over your head. We will notify you when the threat has passed. Please take these positions now. Thank you.”*

b) The **House Manager**

- 1) Instructs the **Ushers** to move to their emergency stations to keep the patrons calm and assist them in preparing for the emergency.
- 2) Instructs anyone outside the theater to come inside immediately.
- c) The **Follow-Spot, Light Board, and Flyline Operators, Stage Manager, and anyone in upper vestibules** should move to lower ground.
- d) **Cast and Crew** should move to the basement.

## **Bomb Threat**

*Anyone receiving notification of a bomb threat should follow the plan below. A copy of the Bomb Threat Report Form is available in each of the emergency procedures notebooks.*

- 1) During the call
  - a) **Be Calm and courteous.**
  - b) **Listen, do not interrupt** the caller.

- c) Notify your supervisor if possible.
  - d) Use the **Bomb Threat Report Form**.
- 2) After the call
- a) Notify your supervisor as well as the Stage Manager.
  - b) Inform the Jackson County Sheriff's Department or the Illinois State Police who will
    - 1) Send Fire and Emergency Medical Personnel.
    - 2) Conduct and confirm any investigation relative to the threat.
    - 3) Advise management of further courses of action to take.
  - c) Initiate evacuation of the facility.
  - d) Do not search for the bomb.

**Note:** Report any suspicious object that you feel may be a bomb. Do not touch it.

- 3) Any performance in progress may be cancelled depending on the time required to investigate.
- 4) If the performance needs to be interrupted, the following announcement should be made:

*“Patrons: May I have your attention, please? We ask for your cooperation at this time. Please follow the instructions of the ushers who will guide you out of the theater. We apologize for the interruption of today’s program and hope that it can resume shortly. Thank you.”*

- 5) If the performance needs to be cancelled, the following announcement should be added to above:

*“Patrons: May I have your attention please? Unfortunately, today’s performance must be cancelled. We apologize for any inconvenience this creates. Thank you.”*

## **Power Outage**

- 1) In the event of a power outage, the emergency generator immediately kicks in providing power to the emergency floodlights in the auditorium and stage house and to the pump room for the fire sprinkler system.
  - a) The **Stage Manager** makes the following announcement;

*“Patrons: May I have your attention, please? A power outage has occurred and we must temporarily stop the performance in order to locate the cause of the problem. Please remain in your seats until we can resume the performance. Thank you.”*

- b) The **House Manager** instructs the **Ushers** to move to their emergency stations and be available to keep patrons calm and in their seats.
- 2) If the cause of the outage is found and can be corrected in a reasonable amount of time, the **Stage Manager** makes the following announcement:

*“Patron: May I have your attention, please? We have determined the cause of the power outage, and once power is restored, we will be able to resume the performance. Please remain in your seats and thank you for your patience.”*

- 3) If the outage cannot be remedied in a reasonable amount of time
  - a) the **Stage Manager** makes the following announcement:

*“Patrons: May I have your attention please? We are unable to correct the problem causing the power outage and must cancel the performance. Please follow the direction of the ushers who can assist you in exiting the theater. Thank you.”*

- b) the **House Manager** instructs the **Ushers** to direct patrons out of the theater.

**NOTE:** Once normal power has been restored, the emergency generator remains running for an additional ten to fifteen minutes, and emergency lighting stays on for an additional five minutes.

## **Earthquake**

- 1) If you feel an earthquake, it will probably happen so fast that the Stage Manager will not have time to make an announcement. If possible to announce during:

*“Patrons: May I have your attention please? Please crouch down as low as you can in your seat and cover your head with your hands. We are experiencing a small earthquake and it will be over shortly. DO NOT ATTEMPT TO LEAVE YOUR SEAT AT THIS TIME. Actors, please exit the stage into the wings. Once again, crouch down low in your seats and cover your head with your hands. Please remain calm and remain in your seats. Thank you.”*

Otherwise, when the quakes have stopped and making an announcement is a viable option, announce:

*“Patrons, we have just experienced an earthquake. Please remain calm and let ushers know of anyone who needs immediate attention. Otherwise, please exit the Theater in a calm manner. Watch out for broken glass, hanging electrical lines, and unstable equipment and debris. Thank you.”*

- 2) No matter what, stop the performance for the day
- 3) Call **911** if there is significant damage to your building or if anyone is hurt.

## **Emergency Numbers**

Fire, Ambulance, & Police .....	911
Carbondale Police .....	618-457-3200
SIUC Police .....	618-453-3771
Jackson County Sheriff.....	618-687-3822
Illinois State Police.....	618-662-4475

## **Services**

Facilities of Operation (ex. Gas, Electric) .....	618-453-3621
Illinois Department of Transportation .....	618-281-4565
Jackson County Emergency Management.....	618-684-3137
SIUC Center for Environment Health and Safety.....	618-453-7180

## **McLeod Theater**

Box Office.....	618-453-3001
Main Office.....	618-453-5741
Costume Shop.....	618-453-7592
Publicity.....	618-453-7589

## **Faculty**

NOTE: Home numbers should only be used in case of an emergency.

### Director of the School of Theater and Dance

Mark Varns .....

	(W) 618-453-5741
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### Production Manager & Technical Director

Thomas Fagerholm .....

	(W) 618-453-5747	(H) 651-341-3926
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### Associate Technical Director

Robert Anderson.....

	(H) 507-398-6958
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## **Announcements to the Audience**

### 1) Evacuation

*“Patrons: May I have your attention please? We need to evacuate the theater at this time. We ask your cooperation at this time. Please follow the instructions of the ushers who will guide you out of the theater. We apologize for the interruption of today’s program and hope that it can resume shortly. Thank you.”*

### 2) Casting Change

*Patrons: May I have your attention please? Welcome to \_\_\_\_\_. In this evening’s performance, the role of \_\_\_\_\_, usually played by \_\_\_\_\_, will be played by \_\_\_\_\_. Thank you and enjoy the show.*

### 3) Technical Problem

#### a) Brief Stop:

*“Patrons: May I have your attention please? We are currently experiencing some technical difficulties on stage. Please bear with us and the performance will continue in just a moment. Thank you for your patience.”*

#### b) Intermission:

*“Patrons: May I have your attention please? We are currently experiencing some technical difficulties on stage. At this time, we will take an early intermission. Please feel free to leave your seats, and we will let you know as soon as we are ready to continue the performance. Thank you for your patience.”*

### 4) Possible Fire

*“Patrons: May I have your attention please? We have been notified of a possible fire somewhere in our building. For your safety, and the safety of those around you, we are going to evacuate the theater until the fire department tells us it is safe to resume the performance. Please follow the instructions of the ushers who will guide you out of the theater. Please notify an usher if assistance is needed. Move away from the building to a safe distance, and we will notify you when it is safe to return to your seats. Thank you.”*

### 5) Noticeable Fire

*“Patrons: May I have your attention please? We ask for your cooperation at this time. Our Fire alarm system has been activated and we must evacuate the theater. For your safety, and the safety of those around you, please stand and calmly exit to the exit door nearest you. The ushers will guide you out of the theater. Once again, please stand and calmly exit to the exit door nearest you following the ushers. Move away from the building to a safe distance, and we will notify you when it is safe to return to your seats. Thank you.”*

### 6) Power Outage

*“Patrons: May I have your attention please? A power outage has occurred and we must temporarily stop the performance in order to locate the cause of the problem. Please remain in your seats until we can resume the performance. Thank you.”*

#### a) If the outage can be corrected:

*“Patrons: May I have your attention please? We have determined the cause of the power outage, and once power is restored we will be able to resume the performance. Please remain in your seats, and thank you for your patience.”*

#### b) If the outage cannot be corrected:

*“Patrons: May I have your attention please? We are unable to correct the problem causing the power outage and must cancel the performance. Please follow the direction of the ushers who can assist you in exiting the theater. Thank you.”*

7) Patron Illness

*“Patrons: May I have your attention please? Due to a patron’s illness, we must temporarily stop the performance so that he/she can receive medical attention. Please remain in your seats and we will resume the performance shortly. Thank you.”*

8) Severe Weather

a) Tornado Watch.

*“Patrons: May I have your attention please? A severe weather warning is in effect for this area. Should severe weather occur during the performance, you are advised to remain in the theater for your safety. Thank you.”*

b) Tornado Warning.

*“Patrons: May I have your attention please. A tornado has been sighted in our immediate area. For your safety, please remain in the theater and prepare to bend forward over your knees with your arms locked over your head. We will notify you when the threat has passed. Please take these positions now. Thank you.”*

9) Earthquake

a) If possible to announce during:

*“Patrons: May I have your attention please? Please crouch down as low as you can in your seat and cover your head with your hands. We are experiencing a small earthquake and it will be over shortly. DO NOT ATTEMPT TO LEAVE YOUR SEAT AT THIS TIME. Actors, please exit the stage into the wings. Once again, crouch down low in your seats and cover your head with your hands. Please remain calm and remain in your seats. Thank you.”*

b) Otherwise announce:

*“Patrons, we have just experienced an earthquake. Please remain calm and let ushers know of anyone who needs immediate attention. Otherwise, please exit the Theater in a calm manner. Watch out for broken glass, hanging electrical lines, and unstable equipment and debris. Thank you.”*

## **Directions to Memorial Hospital of Carbondale ER**

From School of Theater and Dance loading docks at the Southwest corner of the Communications Building:

Straight going past satellite dishes (heading west)

Take a right until Chautauqua Rd. (heading north)

Take a right on Chautauqua Rd. until Lincoln Dr.

Take Left on Lincoln Dr. until Stop Sign (Poplar Rd.)

Take Left on Poplar and take Poplar past West and East Bound Rt. 13

Hospital is on the right-hand side after East Bound Rt. 13



## Appendix B– Dye Vat and Room

### Using the Dye Vat and Room

The red power switch must be on. Leave it on at all times.

The pressure gauge should be checked periodically. It should read 20-25, or the green area, when the vat is cold. If the reading is different, tell the Costume Shop Manager or Faculty Costume Designer immediately.

Protective equipment should be worn in the dye room. An apron, rubber gloves, goggles, and a dust mask or respirator should be worn even in the preparatory stages. These pieces of equipment should remain in the dye room and must be taken off in order to leave the room.

- 1)
- a)
- b)

### Directions for using the Dye Vat

- c) Turn on the exhaust fan switch. The fan is to remain on until the dyeing job is complete, and the vat is cleaned and turned off. Keep the door to the dye room closed to make the exhaust fan more effective and to contain the chemicals.
- 2)
- a) Make sure that the vat is clean and that the screen is in place.
- b) Close the drain valve by turning it clockwise. Do not over tighten. Run a little water and listen to make sure that the valve is closed.
- c) Fill the vat with hot water from the tap attached to the vat.
- d) The water should stop at the steam-jacket line. Less water can be used for smaller projects. Make sure not to overfill the vat.
- e) Turn on the power switch, which is located on the panel near the bottom of the vat.
- f) Turn the temperature control to 8. Turning the control higher will not make the water heat up faster;
- g) it will only make the water hotter.
- h) Mix the powder dyes in water in a separate container to dissolve the dye and prevent uneven dyeing. Use a small stainless-steel container on the drain board. Mixing here allows the exhaust hood to carry away particulates from the dyes.
- i) The vat water has reached 8 when the light indicator shuts off.
- j) Stir in the dye mixture once the vat water has reached this temperature. Be aware that the vat will be hot and leaning against it or touching it may burn you. The indicator light will come back on when the vat is reheating.
- k) The mixture in the vat is hot enough when you see small bubbles rising to the surface. This is a simmer, and it takes the vat about 10 minutes to reach this temperature.
- l) Wet out your fabric in the sinks. Use a small amount of soap, like Synthrapol, to remove surface dirt and finishes.
- m) Put wetted out fabric into the dye vat. Make sure the fabric does not wad up, or it will dye unevenly.
- n) Stir the fabric gently using the dowel rods provided.
- o) Do not leave the vat unattended while dyeing!
- p) Once the desired color depth is reached, remove the fabric from the vat using the dowel rods.
- q) Drag the fabric across the drain board and into the sink. Follow regular procedures for rinsing dyes out of fabrics.
- r) Once you are finished with the vat, open the drain valve by turning it counterclockwise.
- s) When the vat is empty, use the sprayer hose to rinse it out.
- t) Use the provided scrub brush and a mild detergent to remove all the dye residue. Do not use a solvent or steel wool as they will scratch the surface of the vat.
- u) Rinse the vat again with the sprayer hose and repeat until the vat is perfectly clean.
- v) Turn off the exhaust fan switch.
- w) Before you leave the room make sure that:

- 1) The vat is clean.
- 2) The vat switch is off.
- 3) The temperature control is off.
- 4) The sinks are clean and free of debris.
- 5) The exhaust hood switch is off.
- 6) The lights are turned off.
- 7) The door is locked and closed.