



# Theater Safety Quarterly Safety Brief:

## PPE, Confined Spaces, Rigging

This is the fourth in a series of “Quarterly Theater Safety Briefs” and is designed to provide a summary of a few common hazards anticipated, approaches to control hazards, and resources to review for further details and documents. As you review, consider status and actions for your current Theater Safety efforts.

For further specific hazard and improvement actions, consult your Campus Theater Safety Inspection report provided by the University of California.

### Personal Protective Equipment

| <i>What is Concern</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Approaches to addressing PPE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <p>Performing arts activities create exposure to a wide variety of hazards. One of the ways to control the exposure to the hazards is through the use of Personal Protective Equipment (PPE).</p> <p>The correct selection of PPE is critical to ensuring that the employee is properly protected from the identified hazards.</p>                                                                                                                                                                                                                     | <p>As an employer, you must assess your workplace to determine if hazards are present that require the use of personal protective equipment. If such hazards are present, you must select protective equipment and require workers to use it. You must communicate the type of PPE you have selected to your workers and select PPE that fits accordingly.</p> <p>Types of PPE frequently used in Performing Art Production includes:</p> <ul style="list-style-type: none"> <li>• Eye Protection</li> <li>• Hand Protection</li> <li>• Head Protection</li> <li>• Foot Protection</li> <li>• Hearing Protection</li> <li>• Respiratory Protection</li> </ul> |
| <i>Common Areas where PPE is Used</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>PPE Use</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b><i>Prop Shop, Set Construction &amp; Deconstruction, Costume Shop, Audio &amp; Video:</i></b></p> <p>Common hazards requiring PPE in these areas include:</p> <ul style="list-style-type: none"> <li>• Use of noisy power tools</li> <li>• Movement of heavy materials manually or with equipment</li> <li>• Exposure to overhead materials that could fall from storage, cat-walk or other operation</li> <li>• Use of hazardous chemicals for prop production.</li> <li>• Exposure to dust during prop production or deconstruction</li> </ul> | <p><u>Eye Protection Use:</u> Workers performing tasks that may expose the eyes to hazards of flying chips, sparks, chemical splashes, dust, or laser must be protected by the use of eye glasses, goggles, or face shields.</p> <p><u>Hand Protection Use:</u> Workers exposed to injury that may cut, tear, burn or expose hands to harmful substances through skin absorption or extreme temperatures must be protected through the use of gloves. There are many types of protective gloves, so be sure to select the glove suited to the hazard (note: review SDS for glove selection for chemical use.)</p>                                             |

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|  | <p><u>Head Protection Use:</u> Workers exposed to injury from falling objects, electrical injuries or contact with fixed objects must be protected through the use of hard hats. Be sure to select the correct type of hard hat for the type of hazard.</p> <p><u>Foot Protection Use:</u> Workers exposed to injury from the hazards of falling or rolling objects, sharp objects, electrical hazards must be protected by proper footwear.</p> <p><u>Hearing Protection Use:</u> Workers exposed to excessive noise levels should be protected through the use of ear plugs, ear muffs if noise levels reach 85dBA. Further evaluation of noise levels should be conducted to determine the level of hearing protection required.</p> <p><u>Respiratory Protection Use:</u> Workers exposed to harmful dusts, fumes, mists, gases or vapors must be protected through the use of respirators. Employers must determine if a respiratory protection program is needed and provide employees with medical evaluation and training before use.</p> |
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### **Confined Space Hazards**

| <i>What is Hazard Concern</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Approaches to Address</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p>Confined spaces can be found within the Theater Arts operation and represent significant threat to those employees who are affected.</p> <p>The ability to recognize a confined space and ensure only trained and authorized employees are allowed to work in those spaces. In industry there have been many instances of untrained and non-authorized employees attempting to rescue people from confined spaces who then become victims themselves of serious injury or death.</p> <p>The Cal OSHA definition of a confined space is:</p> <ol style="list-style-type: none"> <li>1. An area large enough for a person to enter and perform assigned work, and</li> <li>2. Has limited or restricted means of entry or exit, and</li> <li>3. Is not designated for continuous human occupancy.</li> </ol> | <p>General rules for protecting employees and others from confined spaces include:</p> <ul style="list-style-type: none"> <li>• Identify and restrict work areas where confined spaces are located.</li> <li>• Never violating the posted “access restricted, authorized personnel only”, or “Entry by Permit only” signage.</li> <li>• Ensure knowledge of how to identify a confined space.</li> <li>• Never enter into areas that could be consider a confined space. When in doubt, employees must contact their supervisor.</li> <li>• Never enter a confined space to rescue another person (unless trained, authorized, and equipped to do so).</li> </ul> |
| <i>Common Confined Space Areas</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>Hazard Management</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <p><b>Orchestra pit lift area</b> (area under the pit),<br/> <b>Elevator pits, House Cove</b> (attic) <b>lighting positions, Plumbing runs, Boilers, Paint Frame System</b> (depending on where accessed)<br/> Contact your Campus EH&amp;S department for assistance identifying your specific confined spaces.</p> | <p>Reduce confined space hazards by:</p> <ul style="list-style-type: none"> <li>• Restrict access to work areas with confined spaces. Provide visible signage of restriction and enforce.</li> <li>• Introduction of atmospheric smoke, fog, or other similar atmospheric special effect can turn a non-hazardous confined space into a hazardous space. Work with your Campus EH&amp;S department or competent safety resource to evaluate the hazard and determine the best control options. See the UC Performing Arts Safety Manual for further guidance.</li> <li>• Use portable shields if needed.</li> <li>• Use sawdust collection system to reduce build-up of dust.</li> <li>• Do not allow flame or other ignition sources to be used in woodworking and combustible storage areas.</li> </ul> |
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## **Rigging Hazards**

| <b><i>What is Hazard Concern</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b><i>Approaches to Address</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p>Rigging is the use of hardware to lift and lower performance equipment or persons on or above the stage. A variety of rigging hardware may be used for the activities and tasks. Understanding the load capacity for each piece of equipment is critical.</p> <p>There are a variety of rigging systems that are used including Counterweight Fly Wheel, Hoists and Winches, and Ropes, Cordage and Chains.</p> <p>Improperly using Rigging Systems and hardware pose a serious risk from falling, crushing, struck, pinch and lifting hazards.</p> | <p>Establishing safety procedures for the use and maintenance of rigging equipment is fundamental to addressing and managing risks. Additionally, employees involved in rigging must complete and be competent in operation of rigging equipment.</p> <p>Detailed inspections by competent resources should be regularly conducted on rigging systems (such as counterweight systems and tension grids) based on frequency of use. At a minimum, the systems should go through a thorough, documented inspection at least annually.</p>                                                                                                                                                                                                 |
| <b><i>Common Falling Equipment Hazard Areas</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b><i>Hazard Management</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>Set Construction and De-construction, Special Effects, Lighting, and Audio Visual</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Common ways to reduce injury include:</p> <ul style="list-style-type: none"> <li>• Inspect rigging equipment before use, after alterations and on regular intervals.</li> <li>• Make sure the counterweights are secured with a lock plate to keep in place.</li> <li>• Report and remove any damaged or defective ropes from service.</li> <li>• Never shorten ropes or chains by knotting.</li> <li>• Never exceed safe load capacity of the system.</li> <li>• Establish and follow safe procedures when loading, unloading, or operating rigging systems.</li> <li>• Warn anyone nearby (stage or grid) before moving any rigged scenery or other objects.</li> <li>• Maintain control of moving pieces at all times.</li> </ul> |

| <i>What is Hazard Concern</i> | <i>Approaches to Address</i>                                                                                                                                           |
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|                               | <ul style="list-style-type: none"> <li>• Never access the catwalks until trained and authorized.</li> <li>• Secure rigging equipment when it is not in use.</li> </ul> |

**References use for this document and for review:**

1. [Performing Arts Safety Manual](#) – University of California Office of the President.
2. California Code of Regulations (Title 8): <https://www.dir.ca.gov/Title8Index/t8index.asp>
3. Centers for Disease Control & Prevention: Safety in the Theater (<https://blogs.cdc.gov/niosh-science-blog/2012/06/11/theater/>)
4. [Theater Safety Manual](#): Southern Oregon Center for the Arts
5. View your campus Environmental Health & Safety Department website for applicable written safety programs.

*This Alliant Risk Control Consulting brief is not intended to be exhaustive. The discussion and best practices suggested herein should not be regarded as legal advice. Readers should pursue legal counsel or campus safety resources to gain more exhaustive advice.*



# Theater Safety Quarterly Safety Brief:

## Housekeeping, Fire Risks, Falling Equipment/Materials Hazards

This is the third in a series of “Quarterly Theater Safety Briefs” and is designed to provide a summary of a few common hazards anticipated, approaches to control hazards, and resources to review for further details and documents. As you review, consider status and actions for your current Theater Safety efforts.

For further specific hazard and improvement actions, consult your Campus Theater Safety Inspection report provided by the University of California.

### Housekeeping hazards

| <i>What is Hazard Concern</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>Approaches to Address</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <p>Performing arts activities require vast amounts of materials throughout the event lifecycle. With this comes a multitude of challenges including congestion, clutter, misplaced items, and available space. All of which can lead to poor housekeeping and increased risk of slips, trips, falls, struck-by injuries, and also fires.</p>                                                                                                                                               | <p>It is essential that the theater is cleaned after each work session to reduce housekeeping hazards. This should include placing tools, building materials, containers, etc. in their proper storage location.</p> <p>General Guidelines:</p> <ul style="list-style-type: none"> <li>• Place trash in receptacles</li> <li>• Avoid accumulating scrap lumber or other materials</li> <li>• Store tools in designated storage locations when not in active use</li> <li>• Clean or dirt, dust and debris from walkways</li> <li>• Keep walkways and exits free of obstructions</li> <li>• Properly store props and other set materials</li> <li>• Regularly inspect work areas at least weekly</li> </ul> |
| <i>Common Housekeeping Hazard areas</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>Hazard Management</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Prop Shop, Set Construction &amp; Deconstruction, Costume Shop, Audio &amp; Video:</b></p> <p>Use of power tools, raw materials (such as lumber), nails/screws, and various containers are common. End of work shift review of the work space for slip and trip hazards should occur.</p> <p>Use of power tools, raw materials such as lumber, loose screws, and equipment can increase the potential for slip, trip and falls, emergency egress problems and puncture injuries.</p> | <p>Secure and/or protect electrical and extension cords that must temporarily travel across walk ways and paths.</p> <p>Require employees to clean up the area during and at the end of each shift as necessary.</p> <p>Require team leaders and department managers to conduct work area safety inspections informally throughout the day as well as the formal “quarterly” inspections that take place.</p> <p>Fire Reduction Guidelines:</p>                                                                                                                                                                                                                                                            |

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|  | <ul style="list-style-type: none"> <li>• Do not store unnecessary items, since large amounts of cluttered fuel containers and packing materials can help fires spread.</li> <li>• Make sure that the height of stacked materials do not come within 18 inches of fire sprinklers, so that the scope of the sprinkler is not restricted.</li> <li>• Maintain clear space and unobstructed pathways to emergency exits, fire extinguishers and pull alarms to allow for easy accessibility in the event of an emergency.</li> <li>• Store flammable liquids and aerosols in UL Listed fire cabinets.</li> <li>• Keep stored chemicals in their original containers and ensure lids are closed tightly to minimize the amount of evaporation.</li> </ul> |
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## **Fire Hazards**

| <i>What is Hazard Concern</i>                                                                                                                                                                                                                                                                                                                    | <i>Approaches to Address</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <p>Fire hazards are common in Theaters' due to use of flammable chemicals, combustible materials, tools that can cause heat or sparks, lighting, electrical cords, and accumulated dust.</p> <p>Additionally, the volume of both flammables and combustibles can result in a high "load" that may increase the risks and intensity for fire.</p> | <p>Reducing potential fires starts with ensuring a fire plan is in place. This plan should include:</p> <ul style="list-style-type: none"> <li>• Storage of flammables and aerosols in approved storage cabinets when not in use.</li> <li>• Store combustible materials away from ignition sources and equipment such as heater and water heaters.</li> <li>• Practice good housekeeping to reduce dusts (especially wood dust), and remove refuse regularly.</li> <li>• Implement Hot Work practices to monitor ignition sources created by use of torches, grinders, and other heat producing equipment that may be used for maintenance or to build props.</li> <li>• Regularly inspect work areas for potential ignition sources (hot lights, hot tools, combustible load, flammables)</li> <li>• Obtain all required permits for use of special effects.</li> <li>• Ensure fire emergencies are planned for a documented emergency response plan (including fires) is in place and regularly practiced (including drills).</li> </ul> |
| <i>Common Fire Hazard Areas</i>                                                                                                                                                                                                                                                                                                                  | <i>Hazard Management</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>Prop Shop:</b><br/>The shop includes many tools that create heat or produce sparks that could ignite a fire. Additionally, in woodworking, dust accumulation is another source of fuel for a fire.</p>                                                                                                                                     | <p>Reduce fire hazards by:</p> <ul style="list-style-type: none"> <li>• Ensure metal working areas are separated from woodworking.</li> <li>• Use portable shields if needed.</li> <li>• Use sawdust collection system to reduce build-up of dust.</li> <li>• Do not allow flame or other ignition sources to be used in woodworking and combustible storage areas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Lighting:</b></p>                                                                                                                                                                                                                                                                                                                          | <p>Reduce fire hazards by:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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| Lighting equipment used can generate significant heat and be potential cause of burns and also ignition of fires. Electrical cords can be damaged and create potential for shock or fire. | <ul style="list-style-type: none"> <li>• Ensure high powered or hot lighting is placed in a manner to prevent igniting combustibles (such as paper, plastic, cloth, flammable draperies or furniture).</li> <li>• Regularly inspect electrical cords and cables for damage to ensure they do not create an ignition source.</li> <li>• Only use extension cords for temporary situations. Make sure cord is in good shape and that the ground plugs are in place.</li> <li>• Use ground fault circuit interrupting devices where electrical sources are used.</li> </ul> |
| <b>Special Effects:</b><br>Use of a variety of potential sources of fire include chemicals used to create smoke, pyrotechnics and fire itself.                                            | Use of explosives is prohibited. Use of pyrotechnics and fire can have catastrophic results and requires approval and strict management.<br><br>Use of fireworks, pyrotechnics and open flame require permits and Fire Marshal and/or Bureau of Alcohol, Tobacco and Firearms (ATF) approval in most jurisdictions. Additionally, there are requirements for use by the National Fire Protection Agency (NFPA).                                                                                                                                                          |
| <b>Theater Curtains:</b><br>Theater curtains are a potential source of fire and must meet the American National Standards Institute (ANSI) and any building/fire code requirements.       | Be sure that the Theater curtains meet all building, fire and ANSI requirements, and are maintained per the manufacturer instructions.                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## **Falling & Materials Equipment**

| <b><i>What is Hazard Concern</i></b>                                                                                                                                                                                                                                                                                                                           | <b><i>Approaches to Address</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| <p>Throughout the Theater operation, many items are stored or used above active work areas, stages, and walkways. Additionally, there may be pits or other below level work areas that are vulnerable to materials falling into the area.</p> <p>Equipment or other materials falling onto employees has occurred and can result in catastrophic injuries.</p> | <p>To reduce the likelihood of material falling onto personnel, below are a few suggestions:</p> <ul style="list-style-type: none"> <li>• Train employees on proper storage expectations</li> <li>• Properly secure stored materials, or store properly to prevent material from falling. This may mean directly securing item, or if on a shelf – adding protection from material falling off shelf (such as shelf guard, cargo netting, and bungee cords).</li> <li>• Identify activities with elevated potential for falling materials (such as grid set-up) and ensure only authorized personnel can access work area. Be sure that no one is working below areas with greatest risk (such as installation and movement of lighting and audio equipment).</li> <li>• Utilize warning system to communicate and manage employees when materials are actively being raised or lowered.</li> </ul> |

| <i>What is Hazard Concern</i>                                                                                       | <i>Approaches to Address</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|                                                                                                                     | Cal/OSHA has fall protection requirements for workers exposed to working from heights and also for protection of workers below working areas. Specific requirements are in place that include guardrails, balconies, stairs, ladders, scaffolding, and elevated work platforms. Become familiar with the requirements that are applicable to your theater operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>Common Falling Equipment Hazard Areas</i>                                                                        | <i>Hazard Management</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Set Construction and De-construction, Prop Shop, Costumes, Lighting, Rigging, Stage (pits), and Audio Video:</b> | <p>Common ways to reduce injury include:</p> <ul style="list-style-type: none"> <li>• Secure materials when using a land line, lift or hoist to prevent them from falling or falling out when being lifted or lowered</li> <li>• Secure stored ladders to prevent them from falling.</li> <li>• Use a spotter when there is a risk of objects falling from tension grid or props. Spotter should be positioned in a safe location to keep unauthorized personnel out of the area below and warn those working within the area of the hazardous condition.</li> <li>• Install warning system (signs and barriers) to prevent unauthorized personnel from entering the areas below grid, prop or other area where materials are lifted overhead.</li> <li>• Utilize approved hard hats and safety shoes for authorized personnel working on stage or other areas where falling materials is possible during set-up, tear-down or active use.</li> </ul> |

**References use for this document and for review:**

1. [Performing Arts Safety Manual](#) – University of California Office of the President.  
Contents related to hazards above include:
  - a. Safety Inspection Checklists:
2. California Code of Regulations (Title 8): <https://www.dir.ca.gov/Title8Index/t8index.asp>
3. Centers for Disease Control & Prevention: Safety in the Theater (<https://blogs.cdc.gov/niosh-science-blog/2012/06/11/theater/>)
4. [Theater Safety Manual](#): Southern Oregon Center for the Arts
5. View your campus Environmental Health & Safety Department website for applicable written safety programs.

*This Alliant Risk Control Consulting brief is not intended to be exhaustive. The discussion and best practices suggested herein should not be regarded as legal advice. Readers should pursue legal counsel or campus safety resources to gain more exhaustive advice.*



# Theater Safety Quarterly Safety Brief:

## Ladders, Lifting - Material Movement, Chemical Hazards

This is the second in a series of “Quarterly Theater Safety Briefs” and is designed to provide a summary of a few anticipated hazards, approaches to control the hazards, and resources to review for further details and documents. As you review, consider the status of the items below and actions to support your current Theater Safety efforts.

For further specific hazard and improvement actions, consult your Campus Theater Safety Inspection report provided by the University of California for more specific guidelines to take for your Campus Theater.

### Ladder Hazards

| <i>What is Hazard Concern</i>                                                                                                                                                                                                                              | <i>Approaches to Address</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| Falls from portable ladders are one of the leading causes of occupational fatalities and injuries. Many accidents can be avoided with good work practices. Knowing proper set-up techniques will give the ladder maximum stability and help ensure safety. | <p>To reduce potential for falls from ladders, all ladders must be inspected before each use. All defective ladders must be removed from service immediately and labeled, “Defective, do not use.” All damaged ladder must be rendered unusable prior to discarding (this may include complete disassembly, cutting into pieces, removing rungs and/or other means to avoid potential use). Make sure to use the right size ladder for the task and that labels are visible and legible.</p> <p>General Guidelines:</p> <ul style="list-style-type: none"> <li>• All ladder users complete ladder and fall protection training.</li> <li>• Never use unprotected fixed ladders over 20 feet in length.</li> <li>• Maintain 3-points of contact with ladder at all times during use. Be sure ladder is stable prior to use.</li> <li>• Use only wood or fiberglass ladders when doing electrical work.</li> <li>• Check to ensure ladder is rated to support total weight (materials plus user) and has all required stickers.</li> <li>• Practice proper techniques when using ladder (such as facing ladder when ascending and descending).</li> <li>• Secure ladders when not in use.</li> </ul> |
| <i>Common Ladder Use Areas</i>                                                                                                                                                                                                                             | <i>Hazard Management</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Set Construction &amp; Deconstruction, Lighting and Projection, Maintenance:</b>                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Ensure ladders are secured at all times when being stored.</li> <li>• Review operation and ensure the correct type of ladder is available for need. Ensure all ladders are</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| <p>There are a variety of possible ladders that may be used in the operation (fixed and portable). It is important to confirm the correct ladder is used for the activity.</p> <p>Review the Ladder Duty Ratings to ensure the correct ladders are used within the operation: Type 1 Ladders: load capacity of 250 lbs. Type 2 ladders: up to 225 lbs., Type 3 ladders: up to 200 lbs. (household ladders).</p> | <p>in good shape, inspected prior to use and have all required labels in place and legible.</p> <p>Fixed ladders may require fall prevention or fall arrest systems. Fall protection from fixed ladders is required if the fixed ladder exceeds 20 feet in length and is not equipped with a cage and does not have a rest balcony every 20 feet. Exceeds 30 feet and is equipped with cage – but no rest balcony every 30 feet.</p> <p>Review the CalOSHA Fixed Ladder Standard for specific details on requirements:<br/> <a href="https://www.dir.ca.gov/title8/3277.html">https://www.dir.ca.gov/title8/3277.html</a></p> |
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## **Lifting - Materials Movement Hazards**

| <b><i>What is Hazard Concern</i></b>                                                                                                                                                                                                                                                                                                                                     | <b><i>Approaches to Address</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p>Back pain and injuries as well as strains or sprains from lifting and movement of materials are a frequent cause of injuries in Theater operations. Many times, materials that are moved are awkward, heavy, are unbalanced, difficult to hold, and not designed for manual lifting.</p>                                                                              | <p>Avoid “awkward positions” such as bending, over-reaching, and twisting, which put excessive strain on your back.</p> <p>Remember to wear supportive non-slip closed-toe shoes to help avoid a fall while carrying your load. In some cases, protective work boots with steel-toe reinforcement and other safety features may be required. Follow these safe lifting techniques:</p> <ul style="list-style-type: none"> <li>• Stretch before your work to warm up muscles. Pause often to do the same during your work schedule.</li> <li>• Evaluate the load and if load is too heavy or cumbersome, do not attempt to lift or move it yourself. Use equipment to avoid lifting or get assistance from others.</li> <li>• Get as close to the load as possible. Objects become heavier the farther away they are located from the body’s center. Lifting such objects creates excessive strain on the back.</li> <li>• Keep your back straight.</li> <li>• Tighten your stomach muscles, which helps keep your spine from twisting.</li> <li>• Grip load securely.</li> <li>• Lift with your legs (not your back).</li> <li>• Lower the load by keeping close to body, avoid twisting, and use your legs.</li> </ul> |
| <b><i>Common Lifting Hazard Areas</i></b>                                                                                                                                                                                                                                                                                                                                | <b><i>Hazard Management</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b><i>Set Construction/Deconstruction, Shop, Storage,</i></b><br/>:</p> <p>Common activities found in Theater operations:</p> <ul style="list-style-type: none"> <li>• Moving lumber, platforms, risers</li> <li>• Setting up scenery</li> <li>• Placing counter weights, ramps or structures on stage.</li> <li>• Lifting AV, lighting, costumes or boxes</li> </ul> | <p>Review Operation for Lifting Hazards:</p> <ol style="list-style-type: none"> <li>1. Evaluate material storage,</li> <li>2. Material movement requirements for operation,</li> <li>3. Equipment for use to move materials.</li> </ol> <p>Consider where improvements can be made to minimize lifting, reaching or stretching to move materials.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| <ul style="list-style-type: none"> <li>• Pushing/Pulling wagons, curtains</li> <li>• Unloading pallets and trucks</li> </ul> | <p>Prioritize activities to maximize correct material storage, and use of equipment to avoid lifting requirements. Where manual lifting will be required, ensure employees are properly trained in back safety and material handling techniques.</p> |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **Chemical Hazards**

| <i><b>What is Hazard Concern</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i><b>Approaches to Address</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hazardous chemicals are present in Theater operations. These hazardous chemicals and toxic substances represent exposures that can cause acute and long-term adverse health effects.</p> <p>Effects from these chemicals range widely from irritation, to carcinogenic. Many of these chemicals are also dangerous as they are flammable, corrosive or explosive.</p>                                                                                                                                                                      | <p>In order to ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers.</p> <p>Each chemical container has a manufacturer's label with the chemical name(s), hazard warnings, and the manufacturer's name and address. Labels must not be removed. If secondary containers are used, those containers must also be labeled with the information.</p> <p>Ensure Safety Data Sheets (SDS) are readily available, employees are trained in hazard communication (and retrained any time a new chemical are introduced), required PPE is available and used properly, and all chemicals are stored correctly (according to SDS).</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i><b>Common Chemical Hazard Areas</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i><b>Hazard Management</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Set Construction, Maintenance, Shop, Make-up, Costumes</b></p> <p>Various chemicals are used in several areas of Theater Arts production. Some more common exposures to these chemicals include paints and solvents, adhesives, fire retardants (applied to costumes), dry ice, oil/water based fog liquids, pyrotechnics, and make-up</p> <p>Common activities found in Theater operations:</p> <ul style="list-style-type: none"> <li>• Set painting</li> <li>• Cleaning</li> <li>• Pyrotechnics</li> <li>• Fog production</li> </ul> | <p>There are many types of paints, inks, pigments, and dyes used in the performing arts. While each product will have specific manufacturer's instructions, the following safety guidelines apply to all products:</p> <p>Read the product labels and the SDS to help you identify the potential hazards of the product you are using.</p> <ol style="list-style-type: none"> <li>1. Know the ventilation requirements of the products you are using.</li> <li>2. Avoid ingestion of materials by not eating or drinking in your work area, and wash your hands before eating and drinking.</li> <li>3. Keep containers closed except when you are using them.</li> <li>4. Control ignition sources in areas where flammable liquids are used.</li> <li>5. Never puncture aerosol cans or expose them to high heat.</li> <li>6. Dispose of each product as directed by the manufacturer and in accordance with your Campus Hazardous Waste Management Program. Contact your Campus EH&amp;S Department if you have questions.</li> <li>7. Know and understand the chemical spill procedures for each of the products you are handling.</li> </ol> |

**References use for this document and for review:**

1. [Performing Arts Safety Manual](#) – University of California Office of the President.
2. California Code of Regulations (Title 8): <https://www.dir.ca.gov/Title8Index/t8index.asp>
3. Centers for Disease Control & Prevention: Safety in the Theater (<https://blogs.cdc.gov/niosh-science-blog/2012/06/11/theater/>)
4. [Theater Safety Manual](#): Southern Oregon Center for the Arts
5. View your campus Environmental Health & Safety Department website for applicable written safety programs.