

Environmental Health and Safety

ASU Facilities Management Supervisor Safety Manual

February 2018

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Introduction to the supervisor safety manual

The Arizona State University Supervisor Safety Manual was developed by ASU's Department of Environmental Health and Safety, or EHS as a training and reference tool for Facility Management Supervisors. The Arizona State University, or ASU, Supervisor Safety Manual, is an abridged version of existing Occupational Health Safety Programs and ASU Policies. Arizona State University's Department of Environmental Health and Safety and Occupational Health Safety, or OHS, have provided the compliance guidance materials and referenced polices found in each section of the manual.

The manual is divided into three sections:

1. Safety
2. Industrial Hygiene
3. Environmental

These sections contain essential health and safety information as well as answers to general compliance questions. Each section topic summarizes specific ASU EHS and OHS program and policy requirements. Each section topic outlines the required information for Supervisor responsibilities and provides quick references to applicable Federal, State, and University policy. The manual appendix includes various sections topic forms and applicable documents used regularly by Supervisors. Additional copies of these forms can be found within the interactive electronic copy of this manual, available through the Department of Environmental Health and Safety at ASU.

The intent of the Arizona State University Supervisor Safety Manual is to aid and assist Supervisors with integrating existing ASU Environmental Health and Safety Programs and Policies into everyday work practices. Supervisors are responsible for implementing safety policies and procedures in the work areas they supervise. The manual provides information and references to specific requirements of existing ASU Environmental Health and Safety program in one document. Supervisors now have the ability to easily search for and read specific health and safety information and Supervisor requirements. For further instruction or information regarding this manual please contact the Department of Environmental Health and Safety.

"The content of this Safety Manual is not all-inclusive and should not be construed as containing all necessary compliance and safety information. Guidelines within each section are intended to provide an abridged version of existing ASU EHS programs, policies and procedures that apply to employees. For direct assistance or questions regarding the manual please contact the Department of Environmental Health and Safety through the contact information provided below."

Department of Environmental Health and Safety

University Services Building

1551 S Rural Rd.

Tempe, AZ 85281

P: 480-965-1823

F: 480-965-0736

E: [Email](#)

SECTION ONE

What are your Supervisory responsibilities?

Supervisors are responsible for implementing safety policies and procedures in the work areas they supervise.

Including:

- Ensure the work areas they supervise are safe.
- Ensure employees are aware of the safety rules.
- Determine, establish and implement standard safety operating procedures (general and protocol-specific), and ensuring employees follow all safety rules and standard safety operating procedures in their work area.
- Report hazards promptly to the Department of EHS. Continually identify and mitigate hazards in changing work conditions.
- Provide the required PPE while ensuring that employees know how to properly use it.
- Ensure employees use the required Personal Protective Equipment (Safety Glasses, Gloves, Hard Hat, and Face Shield) when necessary.
- Ensure employees use appropriate engineering and administrative controls devices. Promptly notify EHS and/or Facilities Management if engineering controls (e.g., fume hoods) or safety equipment (e.g., emergency showers) becomes nonoperational.
- Ensure employees report accidents and injuries immediately to the Department of EHS.
- Ensure employees attend the required safety training courses.
- Consult EHS on the use of high risk materials (e.g., particularly hazardous substances, infectious materials, select agents or radioactive materials) and on high risk select agents or radioactive materials) and on high risk experimental procedures, so that additional safety precautions may be taken.

ASU employee safety Program Records

For questions about ASU's employee safety training requirements contact the ASU Facilities Maintenance Safety Program Manager at:

- Mobile: 480-248-0599
- Work: 480-965-0789

The EHS training table can be found through the following address, cfo.asu.edu/ehs-training-table, there you will find training listed based on job function or tasks performed by individual employees. It is each supervisor's responsibility to determine each employees training requirements and ensure each employee meets those requirements on the frequency basis identified in the right hand column of the training determination table, also located in Appendix B of this manual. For information on enrollment or scheduling training classes contact Facilities Management Administration.

Training records for each Facilities Management employee are maintained in the Facilities Management office. They may also be accessed any time from the EHS Training web page.

Availability of OSHA Standards - OSHA has developed several employee health and safety regulations that require employers to provide copies of those regulations available to affected employees. Given that these regulations change periodically, ASU regularly communicates to its employees the locations of [web links](#) that provide up to date electronic copies of these regulations. Employees may print a paper copy directly from those links which go directly to the [OSHA](#) web site, or can contact EHS to obtain a copy if needed. Please use electronic copies were feasible.

Note: Employees participating in OSHA required training will be provided information on the location of the OSHA regulations during training (e.g., Asbestos Awareness, Laboratory Safety, Hazard Communication, Respiratory Protection, and Hearing Conservation).

Access to Medical Records and Chemical Exposure Records - Just as information is available to you

related to potentially hazardous materials you may use, any medical or exposure monitoring that has been conducted on your behalf is also available to you. This includes any medical examination you participated in associated with your work and any industrial hygiene personal monitoring data. Industrial hygiene personal monitoring data is information related to chemical or physical agents you may have been potentially exposed to during the course of your work such as formaldehyde or noise. This information may be requested through your Supervisor and/or EHS.

These records are located at either the EHS Department, Campus Health Service or your department's human resources files. The individual responsible for ensuring access to these records is the EHS Industrial Hygienist, John Lemanski, CIH, CSP. A copy of the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1020 standard is available at "[Access to employee exposure and medical records](#)" and describes your right to access these records.

For more information including questions on employee access to medical records or medical evaluations or training requirements, please contact the EHS Department by dialing 480-965-1823 or [Email](#).

ASU WORKPLACE SAFETY

Accident Prevention and General Workplace Safety



ATTENTION

As a part of ASU's general workplace safety requirements it is important that potential safety hazards be recognized, controlled, or eliminated from the workplace whenever possible. Hazards may include, but are not limited to, biological, chemical, environmental, physical and radiological hazards.

When hazards cannot be eliminated, they must be mitigated through special training, equipment lockout tagout, or other administrative control procedure. Including standard operating procedures (SOPs) for area specific actions, job safety analyses (JSAs), and personal protective equipment (PPE) requirements.

Supervisors are responsible for reviewing all job descriptions to determine if safety controls measures and PPE are required. Items such as eye and face foot protection, hearing protection, safety shoes and protective clothing will be provided by your department. Some safety controls and PPE, such as respirators, require medical training through the [Department of Environmental Health and Safety](#).

For information and answers to questions about accident prevention and general workplace safety employee training, please contact the EHS Department by dialing, 480-965-1823 or [Email](#) or visit cfo.asu.edu/ehs-training.

ASU SHOP SAFETY AND HOUSEKEEPING

ASU SHOP SAFETY AND HOUSEKEEPING

APPLICABLE REGULATIONS:

➤ [29CFR1910, Subpart D, Walking-Working Surfaces](#)

The shop safety and housekeeping requirement was developed to manage the safe operation of all ASU shop equipment, employees and their specific work areas. The intent of ASU's shop safety and housekeeping requirements are to provide supervisor with guidelines for proper work area cleanup and general safety considerations.

Clean-Up

All ASU Employees shall strive to keep the work area, specifically walking and working surfaces, clean and free from debris and trash which could cause slipping and tripping hazards. Tools, materials, dirt, lumber, concrete, metal, insulation, paper, etc. should be promptly cleared to prevent the potential for slips, trips and falls. All debris should be disposed of each day in a campus supplied dumpster.

Fall Protection

[OSHA standards](#) on fall protection must be followed.

See: ([29CFR1926; Subpart M, Fall Protection](#))

- ✓ Providing engineering controls as a primary protective mechanism;
- ✓ Providing a competent person at the job site where fall hazards exist; and
- ✓ Providing personal protective equipment and training to protect employees from fall hazards where engineering controls are not feasible.

Guidelines for Safe Roof Access

Personnel accessing building roofs are to follow safe work practices for ensuring life safety as well as ADOSH regulatory compliance, and follow access rules for each building.

Note: Some buildings such as Physical Sciences B and D wings have access notification requirements. In such cases notices are posted at roof access doors and contact as described on each posting must be made prior to working on the roof.

Do not work within 6 feet of the positive pressure side of a laboratory exhaust system without prior approval and notification to the affected laboratory. No hazardous materials should be used in the affected hoods or local exhaust system while maintenance occurs.

Note: Recommendations range from 6 feet to 20 feet and indicate that hazardous materials in the hood should be capped and not used while maintenance occurs. EHS recommends a similar process for exhaust fan maintenance which would potentially require a shutdown notice.

Personnel who access any roofs must be trained on general safe practices in FDM annual training and FDM New Employee Orientation.

Portable and Fixed Ladders

The design for portable ladders must have no structural defects or accident hazards such as sharp edges, burrs.

- Always place the ladder on secure footing and lock in place.
- Short ladders must not be spliced together to make long ladders.
- The top of a regular stepladder must not be used as a step.

- **Always face the ladder when climbing or descending.**

All walking/working surfaces including ladders and scaffolds that may be utilized by ASU employees are subject to inspection by EHS for compliance with OSHA regulations.

Scaffolds and Other Working Surfaces

- The scaffold must be able to support four times the maximum intended load.
- If the working surface is higher than 10 feet, guardrails, midrails and toe boards must be installed.
- Scaffolds must be equipped with an access ladder or equivalent and if people are working or passing underneath, the toe boards and guardrails must have wire mesh between them.
- Ensure workers use proper protection on scaffolds from overhead hazards.
- Whether going up or down stairs, always use the handrail.
- Use the right side of the stairs to improve traffic flow.
- Never carry objects that prevent you from using the handrail or block your view of the stairs.
- Do not place or store materials on the stairs at any time.

ASU Tools and Equipment

- All equipment must be inspected to ensure its safe operating condition.
- All guards must be in place, and meet or exceed all applicable governmental regulations (OSHA, EPA, DOT, etc.).
- Machines must be located to give enough clearance between them so that the movement of one operator will not interfere with the work of another.

Safe Driving

The ASU safe driving program applies to all ASU facilities and operations, and all ASU employees and volunteers who operate university owned and non-university owned, leased, or rented vehicles used for university business.

EHS Policy [EHS 119: Motor Fleet Safety](#) was adopted to ensure insurance coverage is maintained on ASU owned and leased vehicles.

- Each department supervisor is to identify employees under his or her supervision who will operate a university owned and non-university owned, leased, or rented vehicle, or personal vehicle where mileage allowance is paid for university business purposes, and ensure that each identified employee has a valid US driver's license of the appropriate class, completes the [Driver Authorization form](#), and completes Authorized Driver Training.
- Each department supervisor is responsible for ensuring employees under their control understand any driving or mall access restrictions on the campus each employee is assigned to work.

For employees whose business does not take them beyond the campus, ASUPD [Policy 207-02](#) "Vehicles and Carts on Malls or Sidewalks" was adopted to ensure ASU employees were aware of the rules and regulations. The *Driving on the Mall* course is required for anyone who drives an ASU vehicle or cart on campus malls.

Barricades and Traffic Control Program

BARRICADES AND TRAFFIC CONTROL AT ASU

APPLICABLE REGULATIONS:

- [PDP 207-01 and 2: Tempe Campus Transportation Code](#); Revised 11/01/2008, and [Vehicles and Carts on Malls or Sidewalks](#); Revised 03/01/2011

The ASU traffic control policy was developed to regulate the operation of non-pedestrian devices and vehicles on all ASU campuses. The intent of ASU traffic control program is to provide for the safety of all people using the malls, sidewalks, and other pedestrian areas on ASU campuses.

Effective 12/14/12: The use of cell phones or other hand-held electronic devices for text messaging, e-mailing, instant messaging, obtaining navigational information, or engaging in any other form of electronic data retrieval or electronic data communication is strictly prohibited, except as otherwise permitted in this policy. This does not include glancing at or listening to a navigational device that is secured in a designed holder affixed to the vehicle provided that the destination and route are programmed into the device before operating the vehicle.

Motor-powered vehicles and carts are only authorized to drive, operate, or park on a sidewalk, mall, or other pedestrian area on an ASU campus when an adjacent **street is not accessible or compatible**.

Rules of Transit

The following shall apply to those areas of the campus not under the jurisdiction of [Arizona Revised Statutes Title 28](#), the state transportation code:

RIGHT OF WAY

1. Each pedestrian or operator shall yield the right of way to all emergency personnel.
2. Each operator shall yield the right of way to any pedestrian.
3. Each operator of a non-pedestrian device shall yield the right of way to any other operator of a non-pedestrian device as necessary to ensure safe, courteous transit.
4. Each operator of a vehicle shall yield the right of way to any operator of a non-pedestrian device.
5. Each operator of a vehicle shall yield the right of way to any other operator of a vehicle as necessary to ensure safe, courteous transit.

Transit Routes

1. A walkway may be used by pedestrians only. Examples include an atrium, patio, point of ingress/egress, stairwell, single step, or flight of stairs, the university overpass, and a disability accommodation ramp.
2. A traveled way may be used by pedestrians and operators. Examples include a campus mall, sidewalk, parking lot, service drive, and loading bay, unless designated otherwise.

NOTE: While a parking structure is a traveled way, operation of a non-pedestrian device is prohibited in a parking structure, excluding enforcement personnel of the ASU PD Bicycle Patrol.

3. A campus street may be used in a manner consistent with Arizona Revised Statutes Title 28, the state transportation code.

Direction of Travel

An operator will bear to the right side of any traveled way as necessary to ensure safe, courteous transit.

Intersections

Unless otherwise indicated, an operator may proceed through an intersection of traveled ways, or of a traveled way and a walkway, at a speed not to exceed that of surrounding pedestrian traffic if and only if safe, courteous transit is ensured and all provisions of the Code are observed.

Speed Limits

1. The **maximum** speed at which a non-pedestrian device or vehicle may be operated on a traveled way or campus street shall not exceed that which is reasonable and prudent for the conditions at the time or that which creates a hazard to any person or property. **In no case shall that speed exceed 5 miles per hour on any traveled way or 15 miles per hour on any campus street.**

NOTE: 5 mph is approximately twice the speed of an average pedestrian walking under fair conditions.

2. Under conditions of heavy congestion on a traveled way such that progress cannot be made without sudden changes in direction, e.g., "weaving," the reasonable and prudent speed is here defined as that of the surrounding pedestrian traffic. If a non-pedestrian device or vehicle cannot be operated safely and courteously at that speed, operation shall be terminated. Operation may resume only when conditions permit safe, courteous operation within the applicable speed limit.

Required Training

The Driving on the Mall course is required for anyone who drives an ASU vehicle or cart on campus malls. If you plan to drive an ASU vehicle on the mall or sidewalk areas, you must first complete this class, and Defensive Driving.

Defensive Driving, for employees who operate a state owned or other university-owned or non-university-owned, leased or rented vehicle, on state business property.

- Conduct training within three (3) months of assignment requiring vehicle operation.
- Refresher training is required: every four (4) years; when the employee has accumulated 6 or more points; has been legally held responsible for a vehicle accident; or is assigned to drive a vehicle other than the original vehicle class.

And,

Driving on the Mall, for employees who operate an ASU vehicle, including motorized carts on campus side-walks and malls.

- Training is required prior to driving an ASU vehicle on campus property.
- Refresher training is required: every four (4) years; when held responsible for a cart accident; when held responsible for unsafe driving; when held responsible for a near-miss involving people/property.

Required Equipment

University-owned vehicles or carts must be inspected by Fleet Service to ensure that the vehicle or cart is in safe condition and is equipped with the following safety and accountability devices:

1. A flashing yellow 360-degree beacon light mounted securely on the top of the vehicle
2. A beeper audible from the front of the vehicle or cart
3. A an accurate speedometer, if originally equipped
4. All other street equipment required by state law for safe operation on public roadways, including but not limited to brake lights;
5. Lighting equipment, such as headlights, taillights, and turn signals, if originally equipped.

Exception

Carts or vehicles designated for “day use only” in legible lettering on each side only need to have brake lights.

6. A current Arizona license plate, properly displayed, and registration document carried securely on board (a photocopy of the original registration document is acceptable)
7. Vehicle number, printed legibly on the back and sides of the vehicle, with letters not less than one inch high
8. Current vehicle inspection decal issued by Fleet Service, in a position to be easily viewed by the driver, and
9. Current ASU parking decal.

Non-ASU vehicles must obtain a Vehicle Inspection sticker from [Parking and Transit Services](#).

Barricades

- A. Barricades are required around all construction sites and all excavations, holes, or openings in floors or roofs, elevated platforms, certain types of overhead work, restricted access areas and wherever otherwise necessary to warn people against the potential for falling in, through, or off. Barricades must be suitable for the area of use.
- B. Prior to erecting any barricades, the service provider shall submit to the Project Manager a site safety plan addressing Interim Life Safety Measures. ASU Police must approve any street barricades by calling 480-965-3456. Additionally, contact ASU Parking and Transit Services (PTS) prior to placing any barricades in and around construction sites.
- C. When operating equipment (i.e. forklifts, scissor lifts) or conducting overhead work within a barricaded pedestrian walk way, a flagman will be present to ground guide the equipment and to warn pedestrians of overhead work.
- D. Barricades shall be removed promptly when no longer needed.

Enforcement

- A. The campus administration and finance officer authorizes ASU PD and PTS to enforce the Code. The campus administrative services officer may authorize others to enforce the Code, as needed. ASU PD, by virtue of its employment of state certified sworn peace officers, is also empowered to enforce all state laws, both on and off university property, the most notable of which for this context is [Arizona Revised Statutes Title 28](#), the state transportation code.
- B. An enforcement officer may issue a citation for any violation of the Code. The enforcement officer may assign a level of severity to the violation that is commensurate with any aggravating circumstance present at the time of the violation. A citation may be issued for a violation of the Code with or without proper operator identification.
- C. An enforcement officer may impound a non-pedestrian device or vehicle in conjunction with a citation for a violation of the Code.
- D. An enforcement officer may instruct an operator to redirect, modify, or terminate operation of a non-pedestrian device or vehicle, whether or not a citation has been issued. Failure to comply with such instruction is a Level 3 violation of the Code and, at the discretion of the enforcement officer, may be addressed as violation of state law, i.e., [Arizona Revised Statutes 13-2911](#), which relates to compliance with the rules of an educational institution.
- E. An enforcement officer may ask an operator to leave university property, whether or not a citation has been issued. Failure to comply with such a request is a violation of state law, i.e., [Arizona Revised Statutes 13-1502](#), which relates to criminal trespassing. Operation of a non-pedestrian device or vehicle in order to comply directly with such a request is permitted if such operation is safe and courteous at all times, unless otherwise prohibited or an instruction to terminate operation has been issued.

HAZARD COMMUNICATION AT ASU

APPLICABLE REGULATIONS:

- [29CFR1910.1200; Toxic and Hazardous Substances; Hazard Communication.](#)

It is the responsibility of ASU to provide a safe workplace for its employees. The main objective of the Arizona State University [Hazard Communication Program](#) (HazCom) is to minimize employee exposure to hazardous chemicals in the workplace. ASU's HAZCOM ensures employees are informed of the potential hazards in their workplace, and also the appropriate means to protect themselves. When chemicals are used by ASU employees in the performance of their duties, these activities shall be conducted in accordance with the provisions of the ASU HAZCOM. The written HAZCOM shall be readily available to all employees, employee representatives and appropriate regulatory agencies upon request.

The HAZCOM standard requires ASU to

- Ensure hazard identification;
- Determine employee exposure to hazardous chemicals;
- Develop a written hazard communication Program;
- Inform employees of identified potential hazards;
- Provide training and information on safe work practices;
- Establish a file of the chemicals used;
- Acquire and distribute Safety Data Sheets (SDS) for each chemical used;
- Maintain a container labeling system; and
- Establish record keeping procedures.



Hazardous Materials (Chemical) Inventories (EHS Registration)

A list of the hazardous chemicals known to be present using a product identifier that is referenced on the appropriate safety data sheet will be maintained by each individual work area (such as a shop or lab). A copy of the prepared chemical inventory shall be forwarded to Environmental Health and Safety at and updated at least annually along with registration information (similar to responsible party information collected for laboratories). EHS is required to maintain the Master Chemical Inventory for ASU and assist departments with hazardous materials management guidelines. Chemical inventory templates and registration documents are to be obtained from the Facilities Safety Program Manager or EHS.

Chemical inventories should be placed with the SDS for each shop locations. information shall be accessible to all employees at all times. Chemical inventories are to be forwarded to EHS and updated at least annually.

Each ASU employee is responsible for knowing the following:

- Know the location and how to use the information provided in the SDS;
- Ensure proper labeling of hazardous chemical containers;
- Attend initial and follow-up hazard communication training as required;
- Report potential hazards; accidents and near-misses to supervisor immediately; and

- Assist in implementing recommendations for improving safety.

Chemical Labeling

All secondary container(s) shall use either the NFPA or the GHS label or manufacturer's label of the appropriate size for the container. Supervisors will ensure that appropriate labels are available. If a manufacturer's label is unavailable, the appropriate information should be copied from the SDS to the blank NFPA label available at www.asu.edu/ehs/documents/lab-diamond-labels.doc. If it is not practical to label a container, the proper chemical hazard information may be placed on a sign near the container, which is clearly visible to employees.

Containers of hazardous chemicals at ASU must be received with a label that provides the appropriate identification and the hazards associated with the chemical. The label is to be supplied by the manufacturer, importer or distributor of the chemical. If the container arrives without a label, an HMIS label will be affixed to the container as outlined:

- Identity of chemicals (chemical or common name on the Safety Data Sheet);
- Name and address of the chemical manufacturer or distributor; and
- Appropriate hazard warning (designated by the chemical manufacturer or distributor).

Labels will not be removed unless the container is immediately re-labeled or the chemical in the container is emptied, cleaned and/or a new type of chemical is placed in the container, and the chemical container is re-labeled with the identity of the new chemical.

It should be noted that while the NFPA 704 Labeling system and the GHS labeling system are not the same. Laboratories registered with EHS is posted with an NFPA 704 label (referred to as an NFPA Diamond) as are chemical storage containers and chemical storage areas as required by local fire codes. When transferring information from the SDS make certain which rating is being provide, because many manufacturers may use the NFPA rating or both ratings.

Non-Routine Tasks

The methods used to inform employees of the hazards of non-routine tasks (such as the cleaning of reactor vessels, or one time equipment maintenance tasks) include the Confined Space Entry Program, Prior Approval under the ASU Chemical Hygiene Plan and Appendix D of this program "Job Hazard Analysis Form".

Unlabeled Pipes

Unlabeled pipes in any work area must be identified on engineering drawings and the hazards associated with chemicals contained in unlabeled pipes in their work areas will be identified through SDS available in that work area.

Supervisors are also responsible to ensure Vendors, Contractors and Visitors under their control understand that they are responsible for the following:

- Notifying their ASU contact of their activities and reviewing any information provided related to Hazardous Chemicals in use at ASU;
- Providing SDS and related hazard information to their ASU contact prior to utilizing any Hazard Chemical associated with their activities at ASU;
- Complying with all applicable EHS regulations and ASU Policies related to their activities related to their purchase order, contract or any other agreement with ASU;
- Informing each ASU department of any hazardous chemical(s) they may be using during the performance of their work.

Employee Training

The workplace supervisor will ensure that employees are trained in the specific topics covered in the HAZCOM and provide further training relative to the specific hazardous chemicals employees will use in the performance of their duties.

ASU Laboratories

Laboratories at ASU contain hazardous materials and processes. Notify lab occupants prior to entering and working in any laboratory and determine if there are any special entry requirements. Explain to lab occupants that FDM employees will not work in locations where there is a potential for them to be exposed to hazardous chemicals or processes. SDS are available for any chemical used in a particular laboratory and must be provided by the laboratory upon request.

Resources for Obtaining SDS

SDSs can be obtained by contacting the vendor selling the product or the product manufacturer. Most SDS can be found by a simple web search such as google. If you have difficulty locating an SDS please contact EHS at [Email](#) or 480-965-.



FIRST AID AND CAMPUS HEALTH AND SAFETY INFORMATION

➤ [29 CFR § 1910.151 APPENDIX A](#)

First Aid Kits [Non-mandatory]

ASU's First Aid Policy is a non-mandatory requirement of OSHA. Your department may not have first aid kits due to your proximity to [Campus Health Services](#) and other medical facilities nearby. If your department does have a first aid kit, ensure the contents include the following minimum content quantities for these supplies.

Basic Fill Kit Contents	Minimum Content	Minimum Quantity
Absorbent compress	32 sq. in	1
Adhesive Bandages	1 x 3 in.	16
Adhesive Tape	5 yds.	1
Antiseptic	0.5g application	10
Burn Treatment	0.5g application	6
Medical Exam Gloves		2 pair
Sterile pads	3 x 3 in.	4
Triangle Bandage	40 x 40 x 56 in.	1

[ANSI Z308.1-1998]

Where the potential for injury to the eyes, face, or body of any person may be exposed to hazardous materials, the Supervisors are responsible for informing employees of the location of first aid kits and eye wash/safety shower within the work area for immediate emergency use.

Departments should contact ASU EHS for further guidance at:

Phone: 480-965-1823

Fax: 480-965-0736

E-Mail: [Email](#)

Web: cfo.asu.edu/ehs-contact

Health Services Locations and Hours

Campus Health Services has a location available for medical treatment of work related injuries that are not considered a medical emergency at the Tempe, Downtown, Polytechnic and ASU West Campuses. For exact locations and hours please visit their website at <https://eoss.asu.edu/health/contact>.

For Emergency Situations

Dial 9-1-1

Police • Fire • Medical

Emergency Procedures and Information: asu.edu/emergency
Emergency Information Hotline: 480-727-9911
[Campus Safety and Compliance Hotline](#)

A copy of the ASU Emergency Response Guide is included with this manual. Please review it, become familiar with instructions for each type of emergency and keep it in a convenient location for quick reference.

Contact Information

In the event of a serious or major accident please contact your local Emergency Response; Police, Fire and Ambulance by dialing **911**.

For all campus emergency Response, contact ASU Police by dialing: **480-965-3456**.



Environment, Health and Safety (EHS)

EHS Primary Phone:

480-965-1823

Reporting Serious Injuries:

480-965-1823 or **480-727-9669**

If you are a Facilities Management employee in need of immediate assistance call:

480-965-3633

After hours:

480-965-3653

Additional ehs contact information

Environmental Affairs:	480-965-8554
Fire Prevention:	480-965-0536
Fiscal Operations:	480-965-2165
For Bio Safety:	480-965-5389
Laboratory Safety:	480-965-6219
Occupational Health Safety:	480-965-6219
Radiation Safety:	480-965-6140
Safety (OSHA) Compliance:	480-965-0783
University Risk Management:	480-965-6140

For web based emergency response alerts and information please visit the ASU Emergency Website: cfo.asu.edu/emergency

Campus Health Services

If you are seeking campus medical treatment for non-emergency injury, the Campus Health Services Building (HSB) is located at: SRC Building

South Hallway, First Floor
Call: **480-965-3349**
Open: Tuesday – Thursday
9:00 am – 12:00 pm

Remember:

Emergency call boxes on the Polytechnic, Tempe, and West campuses provide a direct and immediate communication with the ASU Police Department Communications Center. Emergency call boxes are identified with a bright blue light above the phone. Call boxes are located in parking structures (multiple locations on each level) and high traffic areas throughout each campus.



ASU Alert and Advisory System

ASU has in place an **emergency notification and advisory communication system** that delivers alerts to the ASU community with up to date information for emergency situations on all four campuses. The ASU Alert and Advisory System uses standard SMS text messaging, personal e-mail, Facebook, ASU Twitter Alerts, and ASU RSS feeds, to deliver the appropriate communications about both life-threatening and potentially hazardous situations.

ASU Alert and Advisory System can be found at the following address: cfo.asu.edu/emergency-alert

How to sign up

- Go to the ASU Alert and Advisory System Home Page listed above and click on the, "ASU Alert," hyperlink.
- Sign in using your ASUwrite ID and password.
- Create a new user account.
- Input your cell phone number, cell phone carrier and Email address.
- Check the box for, "ASU Advisory," under optional groups.
- Check the box, "agree to terms of service," after reviewing.
- Create the account and validate phone numbers and Email to make your account it active.
- Follow the [ASU Alert Twitter page](#) and sign up for the [RSS feed](#) (optional).
- Do not forget to, "Log out".



ASU INJURY REPORTING AND TREATMENT INFORMATION

Reporting Accidents, Injuries and Illnesses

Accidents or incidents are typically defined as an unintended happening or mishap. Most often an accident is any unplanned event that results in personal injury or in property damage. The failure of people, equipment, supplies, or surroundings to behave or react as expected causes most accidents.

ASU asks that all incidents resulting in an injury to an ASU employee, student, or visitor, or damage to ASU property in excess of \$500 be reported to EHS.

Incidents may be reported electronically by using an electronic form available at the [Incident Reporting](#) web page. Alternatively you may report the incident by telephone at 480.965.3783 or 480.965.1823.

If an ASU employee is injured or becomes ill from a work related incident, the Arizona Department of Administration requires reporting and additional forms to be completed in order to process Worker's Compensation Claims. These [forms](#) along with step by step instructions on how to complete the process are available on the Human Resources forms webpage under Worker's Compensation Packet.

Also, please be aware that the Arizona Department of Administration (ADOA) is adding an additional service to its worker's compensation management system. As of August 1, 2015

ADOA is making a Nurse Triage Service available to any employee who is unfortunate enough to be injured while on the job.

Insurance related information is available on the [Insurance Services webpage](#) and additional insurance forms are available on the [Insurance Forms webpage](#).

As a reminder, supervisors or other management personnel completing incident investigation reports should determine an initial or apparent cause to the accident and ensure correct action is taken as appropriate to prevent others from being injured in the same manner. Listed below are steps involved in completing an accident investigation.

- 1) Ensure medical treatment is provided if necessary. Call 911 if it is a medical emergency.
- 2) Secure the scene if there is a serious accident and contact ASU EHS.
- 3) Identify what occurred by interviewing the employee and/or any witnesses.
- 4) Identify what happened (who, what, where, why).
- 5) Identify an apparent cause of the accident.
- 6) Complete the Supervisor's Investigation Form and review it with the Facilities Development and Management Safety program Manager.
- 7) Submit the forms included in Appendix A to the FDM Human Resources Representative.

Please contact the EHS office by dialing, 480-965-6219 or [Email](#) if you require assistance in determining the cause of an incident.

Emergency Response

The following emergency response guide was prepared to aid Facilities Management Supervisors in how to properly respond to potential emergencies, disasters, accidents, and injuries.

If you have questions concerning a unique situation not covered in this reference, or need additional emergency information, please contact:

- ASU Police at 480.965.3456 or
- ASU Environmental Health and Safety at 480-965-1823.
- For online access see: hcfo.asu.edu/emergency-guide

WHAT YOU CAN DO NOW TO PREPARE

- Keep emergency supplies in your office (medications, flashlights, comfortable shoes, bottled water, batteries, portable radio)
- Post an Emergency Response Guide in a visible location in your office. Ensure all staff are made aware of its location.
- Become familiar with all exit routes from your building.
- Locate the nearest fire extinguisher and pull station and register for a fire safety and fire extinguisher training course.
- Register for Cardiopulmonary Resuscitation (CPR), Automated External Defibrillator (AED), First Aid, Crime Prevention, or other safety training courses.

If calling 911 from a Cell Phone identify your location as ASU and the Campus.

Using a Fire Extinguisher

Only use a fire extinguisher if the fire is very small and you have been trained to do it safely. If you can't put out the fire, leave immediately and make sure the building alarm is activated and emergency personnel notified.

TOTAL AND IMMEDIATE EVACUATION IS THE SAFEST.

FIRE SAFETY AND PREVENTION AT ASU

APPLICABLE REGULATIONS:

- [International Fire Code \(IFC 2003\)](#) ; [National Fire Protection Association \(NFPA 2007\)](#)

Introduction

The ASU Fire Prevention and Safety Plan objectives are, to provide one comprehensive fire prevention and safety document that provides references to safe practices, and ensure fire prevention measures are implemented in each university operation.

Responsibilities

Managers and Supervisors - Managers and supervisors are responsible for ensuring all ASU and department fire and safety policies and evacuation plans are implemented, and all staff is aware and trained on the policies and evacuation plan. The policies and evacuation plan must be specific to their operation and comply with the Plan and all applicable codes.

EHS encourages all departments to have a fire and safety self-inspection program to ensure the facility is safe and that any safety hazards can be identified and mitigated appropriately. A copy of the fire and safety self-inspection form can be obtained from EHS.

Certificate of Occupancy

No building or portion of a building will be used or occupied without being issued a Certificate of Occupancy by CPMG’s Building Inspectors (for construction/renovation facilities) or Fire/Safety Inspection Report from the ASU Fire Marshal’s Office or by EHS (for any instances other than construction/ renovation related).

Permits

Permits are required by Environmental Health and Safety for the following:

- Special Events
- Fireworks or Pyrotechnics
- Open flames or open burning
- Storage of chemicals over the UBC/UFC exempt amounts or if considered a controlled area
- Any condition, operation, or use of materials considered being hazardous, dangerous, or unsafe
- Hot Work Operations in confined spaces requires a [confined space permit](#). Hot work must comply with [EHS102](#) and Hot Work Compliance Guidelines (See Appendix B).
- Laboratories, research, and other similar buildings or areas within buildings, must have permits to operate, store, and use hazardous chemicals—this is permitted through an Environmental Health and Safety certification program called Laboratory Management Information System

Portable Fire Extinguishers

Remember, you must receive Fire Safety and Prevention training in order to use fire extinguishers at ASU. Training is providing during annual Facilities Management OSHA training.

Remember!



Quick reference to the ASU Fire Prevention and Safety Plan Key Sections:

• Inspections: Self Inspections.....	See	Pg
3		
• Certificate of Occupancy.....	See	Pg
4		
• Occupant Load.....	See	Pg
5		
• Fire Alarm; Fire Suppression Systems.....	See	Pg
6		
• Evacuation Procedures.....	See	Pg
8		
• Storage.....	See	Pg
10		
• Flammable and Combustible Liquids.....	See	Pg
11		

ELECTRICAL SAFETY

APPLICABLE REGULATIONS:

➤ [29 CFR §1910; \[Various\]; Electrical Safety.](#)

Electricity has long been recognized as a serious workplace hazard. OSHA's electrical standards are designed to protect employees exposed to dangers such as electric shock, electrocution, fires, and explosions. Electrical hazards are addressed in specific standards for the general industry, shipyard employment, and marine terminals.

The primary purpose of the ASU Electrical Work Safety Program is to prevent employee electrical shock and injury caused by electrical hazards. This program meets the requirements of EHS 118: [Electrical Safe Work Practices](#). Whenever possible ASU employees will de-energize systems as the primary method of hazard control and use appropriate "[Lockout and Tag out](#)" procedures. If an electrical system cannot be de-energized, then only qualified personnel as specified under [29CFR1910, Subpart S](#) will work on the system using the appropriate personal protective equipment as specified in this program and under [NFPA 70E](#). Employees who face a risk of electrical shock or related injuries must be trained in appropriate electrical safety work practices. In addition, employees that work around, but not on electrical systems must also be trained in the hazards associated with electricity.

Application

This program applies to all ASU campuses, all work performed on the university campus, and to any work performed by ASU employees regardless of jobsite location.

Responsibilities

Environmental Health and Safety:

ASU EHS is responsible for developing, implementing, and administering the Electrical Safety Program for the University.

This involves;

- Training supervisors and designated departmental program coordinators and their employees on this program. (specific electrical training will be obtained from nationally recognized resources or equipment manufacturer's or trade schools)
- Maintaining centralized records of training, energy control procedures and inspection data and reports.
- Providing technical assistance to university personnel and departments.
- Developing and maintaining the written program, training programs and other training resources that can be used by university personnel.
- Evaluating the overall effectiveness of the Electrical Safety Program on a periodic basis and making the necessary changes.

Supervisors

Departments are expected to maintain a safe and healthy working environment for their faculty, staff, students and visitors to our campus. Departments are expected to assure that all employees are thoroughly familiar with their safety responsibilities and that safety practices are followed at all times. Departmental

worksites should be inspected on a frequent basis to identify and correct hazards. Employees are expected to comply with all safety requirements and act proactively to prevent accidents and injuries by communicating hazards to supervisors or reporting concerns directly to ASU EHS offices.

Contractors

Contractors must comply with all local, state, and federal safety requirements and assure that all of their employees and sub-contractors performing work on ASU property have been suitably trained. Contractors must comply with the requirements under Arizona Department of Occupational Safety and Health (ADOSH) for General and Construction Industry Standards.

Training

Employees who face a risk of electrical hazards that are not reduced to a safe level by the electrical installation must be trained per the requirements of this program.

Employees in the following occupations must be trained:

- ✓ Any employee who faces a risk of injury due to electric shock or electrical hazards.
- ✓ Material handling equipment operators
- ✓ Supervisors of employees performing work around or on electrical systems
- ✓ Mechanics and repairers
- ✓ HVAC Technicians
- ✓ Electricians
- ✓ Painters
- ✓ Electrical and electronic engineers
- ✓ Industrial machine operators
- ✓ Researchers
- ✓ Instructors and Student Workers
- ✓ Electrical/ electronic equipment assemblers
- ✓ Welders
- ✓ Engineers
- ✓ Project Managers
- ✓ Electrical and electronic technicians
- ✓ Custodial

Note: Employees in these groups do not require training if their work does not bring them close enough to exposed parts of electric circuits operating at or above 50 volts.

Qualified persons working on or near exposed energized parts must receive training in the following:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment;
- The skills and techniques necessary to determine the nominal voltage of exposed live parts; and
- The clearance distances specified for working on or near exposed energized parts and the corresponding voltages to which the qualified person will be exposed.
- Appropriate safety equipment and tools necessary to safely perform work in accordance with OSHA and NFPA 70E.

Retraining will be performed whenever inspections performed by ASU EHS or the employee’s supervisor indicates that an employee does not have the necessary knowledge or skills to safely work on or around electrical systems. Retraining will also be performed when policies or procedures change and/or new equipment or systems are introduced into the work area. Refresher training once every two to three years is recommended to maintain safe work practices skills and knowledge.

Quick reference to the ASU Electrical Work Safety Program Key Sections:

• Electrical installations	See Pg 7-13
• Identifying the Hazards.....	See Pg 9
• Ventilation of the Confined Space.....	See Pg 12
• Training.....	See Pg 13
• Emergency Rescue.....	See Pg 15
• Appendix A: Electrical Safety Work Practices Checklist and; Lockout/Tag out Procedure Checklist Form.....	See Pg 30
• Appendix B: Electrical Safety Training Checklist.....	See Pg 34
• Appendix C: Energized Electrical Work Permit.....	See Pg 38

Lockout Tagout

APPLICABLE REGULATIONS:

➤ [29 CFR §1910.147; The Control of Hazardous Energy \(Lockout/Tagout\).](#)

The ASU Lockout Tagout (LOTO) Program was developed to control the hazards associated with energy. This program establishes the requirements for isolation of both kinetic and potential electrical, chemical, thermal, hydraulic and pneumatic and stored (gravitational) energy prior to equipment repair, adjustment or removal.

Applicability

All ASU Facilities and employees.

Procedure Locks and tags will be provided or made available by the unit supervisors. All lockout tags, as well as the multiple hasp or clamshell locking devices, will be stocked in the Facilities Management Maintenance Stores Warehouse.

- ✓ Locks for personal safety-Only Master Lock 6835 may be used for Lockout Tagout and should be yellow in color.
- ✓ Locks for equipment securing – Shop Locks which are typically American Standard 1105 should be used for equipment out of service locks.

All personal safety locks for which only one key exists for the employee shall be used for lockout and will be provided by the individual unit supervisor. Multiple personnel locks may be keyed the same for each lock used for LOTO provided it is issued to the same individual. When a piece of equipment is locked out,

a tag will be attached at the disconnecting means to indicate who, which unit, date and a description of the piece of equipment or system that is being locked out.

- An approved one piece personal tag can be used to tag out a piece of equipment if the equipment is down for a short duration such as; preventative maintenance (PM's), trouble shooting, minor repairs or adjustments.
- When a piece of equipment is locked and tagged out, and it will remain "out of service" longer than a four (4) hour period, or if the employee leaves the area for any substantial length of time, an approved equipment "out of service" tag will be placed on the equipment with an equipment lock, which will be different from locks used for LOTO.
- See Machine or Equipment Isolation Section of the ASU LOTO Program for specific equipment or system procedures.

BASIC RULES FOR USING THE LOCKOUT/TAGOUT SYSTEM

All equipment that is to be serviced or worked on or adjusted shall be locked out and tagged out prior to work being performed on the equipment or system to ensure protection against accidental or inadvertent operation when such operation could cause injury to personnel.

DO NOT ATTEMPT TO OPERATE ADJUST OR WORK ON ANY SWITCH, VALVE, OR OTHER ENERGY-STORING DEVICE OR SYSTEM UNLESS IT IS LOCKED AND TAGGED OUT AND HAS BEEN VERIFIED AS TO "ZERO" STATE.

NOTE: All sources (energy) must be VERIFIED "Zero" state before work may begin.

Only those Electricians TRAINED AND QUALIFIED to operate the ASU electrical primary distribution system will be the "ONLY" authorized personnel to lockout/tag out primary power sources. Electricians will be authorized to lockout/tag out motors and machines for both their safety and the safety of other employees.

MANAGEMENT'S REMOVAL OF LOCK AND TAG OUT

Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Maintenance Manager or Supervisor may remove the lock and tag if the abandoned lock procedure process is followed and the attached form is completed.

CONTRACTORS

Contractors, working on ASU property and equipment must comply with lockout tagout and energy control procedures as prescribed under, [29 CFR § 1910.147](#), while servicing, maintaining or installing equipment, machinery or processes. ASU employees and contractors working in the same location must adhere to their respective lockout/tagout procedures and inform each other of the specific procedures being followed while working in the same location.

TRAINING

All employees will be given training on the lockout/tag out procedure. All employees will be retrained on a yearly basis. [Records of participation](#) on this training will be retained in Facilities Management office files.

Authorized Employees Training

All Building and Equipment Maintenance employees and their Supervisors will be trained to use the Lock and Tagout Procedures. Additionally, employees involved in research activities that may involve Lockout Tag Out will be trained. The training will be conducted by EHS or other designated trainer at the time of initial hire. Retraining shall be held at least every three years or as needed.

Training will consist of the following

- i. Review of General Procedures
- ii. Review of Specific Procedures for machinery, equipment and processes
- iii. Location and use of Specific Procedures
- iv. Procedures when questions arise

Affected Employee Training

- i. Only trained and authorized Employees will repair, replace or adjust machinery, equipment or processes
- ii. Affected Employees may not remove Locks, locking devices or tags from machinery, equipment or circuits.
- iii. Purpose and use of the lockout procedures.

Other Employee Training

- i. Only trained and authorized Employees will repair, replace or adjust machinery or Equipment.
- ii. Other Employees may not remove Locks, locking devices or tags from machinery, equipment, circuits, or special hazards and special safety procedures. The schedule will be reviewed each time to ensure employees properly lock and tag out equipment and machinery. If a Tagout Schedule does not exist for a particular piece of equipment, machinery and process, one must be developed prior to conducting a Lockout - Tagout. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

THE MACHINE OR EQUIPMENT IS NOW LOCKED OUT

Restore the machine or equipment to service after the service or maintenance is completed and the machine or equipment is ready to return to its normal operating condition by doing the following steps:

- Step 1:** Check the machine or equipment and the immediate area around it to make sure all nonessential items have been removed and that the machine or equipment is in operating condition and ready to energize.
- Step 2:** Make sure all employees are safely positioned for starting or energizing the machine or equipment.
- Step 3:** Verify that the controls are in neutral.
- Step 4:** Remove the lockout devices and reenergize the machine or equipment. Note: Some forms of blocking may require re-energization of the machine before they can be safely removed.
- Step 5:** Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready to use.

Quick reference to the ASU Lockout Tag Out Program Key Sections:

• Definitions.....	See Pg 1
• The Procedure: Personnel Safety Lockout.....	See Pg 3
• Preparation for Lockout/Tagout.....	See Pg 4
• Verification of Isolation.....	See Pg 4
• Release from Lockout/Tagout.....	See Pg 5
• LOTO Procedures for Electrical Plug Type Equipment.....	See Pg 5
• LOTO Procedures involving more than one employee.....	See Pg 5
• Group Lockout/Tagout.....	See Pg 5
• Periodic Inspection Program.....	See Pg 5
• Machine/Equipment Control (Equipment Lock).....	See Pg 6
• Appendix A: Fill-in-the-Blank ECP Template	See Attached
• Appendix B: Annual Review Information.....	See Attached
• Appendix C: Abandoned Lock Removal Procedures.....	See Attached

Fill-in-the-Blank ECP Template

SCOPE:

This lockout procedure is for (Specific machine or equipment that this procedure applies to):

PURPOSE:

- This procedure establishes the minimum requirements necessary to protect employees from injury caused by the unexpected energization, start up, or release of stored energy during service or maintenance.
- Use this procedure to make sure the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before any employee begins work.

AUTHORIZATION:

The following persons are authorized to lock out the machine or equipment using this procedure

(List the names of authorized employees you want to use this procedure):

COMPLIANCE WITH THIS PROGRAM:

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. Authorized employees will perform lockout as described in this procedure. No employee will attempt to start, energize or use any machine or equipment that is locked out. Failure to comply with this procedure will result in the following disciplinary action.

INTENDED USE:

This procedure will be used for the following service or maintenance actions

(List the service and maintenance activities that require using the procedure):

SPECIFIC PROCEDURAL STEPS:

Step 1:

The authorized employee will identify the type and magnitude of the energy that the machine or equipment uses, understand the hazards of the energy, and the methods to control the energy before using this procedure.

(List the type and magnitude of the energy, its hazards, and the methods to control the energy.)

Step 2:

Notify all affected employees that the machine or equipment is to be shut down and locked out for service or maintenance.

(List the names or job titles of affected employees and how to notify them (i.e. verbally):

Step 3:

Shut down the machine or equipment by the normal stopping procedure (such as depressing a stop button, opening switches, or closing valves).

(List types and locations of machine or equipment operating controls.)

Step 4:

Completely isolate the machine or equipment from its energy sources by using the appropriate energy-isolating devices.

(List types and locations of energy isolating devices.)

Step 5:

Lock out the energy isolating devices with assigned individual locks

(List any additional procedural requirements, such as putting on a tag with amplifying information, necessary for the authorized employee to know):

Step 6:

Dissipate or restrain stored and residual energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, using methods such as grounding, repositioning, blocking, or bleeding down.

(List the types of stored and residual energy and the methods to dissipate or restrain them.)

(List any actions necessary to prevent stored energy from re-accumulating to a hazardous level):

Step 7:

Make sure the equipment is disconnected from the energy sources and stored and residual energy has been made safe. Check that no personnel are exposed, then verify the isolation of the equipment by doing the following:

(List the method of verifying machine or equipment isolation, such as operating the push button or other normal operating controls or by testing to make certain the equipment will not operate.)

CAUTION: Return the operating controls to the safe, neutral, or off position, after verifying the equipment is isolated from its energy sources.

Annual Review Information			
Department:		Date:	
Supervisor:		Reviewer:	
		Yes	No
1. Are department personnel who conduct work covered by this manual trained as Lockout Authorized Employees? List those who are trained and those who are not trained but need it.			
2. Are department Lockout Authorized Employees familiar with and follow the General Lockout Procedure?			
3. Have Energy Control Procedures been developed in accordance with the General Lockout Procedure? List Energy Control Procedures needed and whether they have been developed.			
4. Does the department have adequate locks, tags, and lockout devices? List what is needed and whether or not the department has them.			
5. Does the department conduct Group Lockout? Review procedure.			
6. Does the department conduct lockout work across shift/personnel changes? Review procedure.			
7. Does the department have an Emergency Lock Removal procedure? Review key security method and list persons who will implement the Emergency Lock Removal procedure/form.			
8. Have Lockout Authorized Employees demonstrate Energy Control Procedures or General Lockout Procedure as appropriate. List Energy Control Procedures demonstrated and the Lockout Authorized Employee who demonstrated.			

ABANDONED LOCK REMOVAL FORM

Note: Only supervisors can remove abandoned locks.

Name of Person whose lock must be removed: _____

Has an attempt been made to contact him or her? YES NO

Why is it critical to remove this lock now?

Are you sure it is safe to remove this lock? YES NO

Supervisor's

Name:

Signature: _____

Date: _____

Facilities

Management

Representative:

Signature: _____

Date: _____

NFPA 70E (Arc Flash) information

What is arc flash?

An electrical arc is formed when a medium that is normally an insulator, such as air, is subjected to a field of electricity strong enough to cause it to become ionized. The ionization of the medium causes the medium to become a conductor through which electricity can travel. Arc flash is the result of an arcing fault, where the unwanted release of electrical energy arcs, resulting severe skin burns, hearing damage, and eye injuries.

Arc Flash Safety

The requirement for arc flash safety applies to all potential electrical hazards 480 volts or greater. ASU requires that only qualified persons shall be permitted to work on electrical conductors or circuit parts that have not been put into an electrically safe work condition.

Each piece of equipment operating at 50 volts or more and not put into a de-energized state must be evaluated for arc flash and shock protection prior to being serviced or put into service. This evaluation will determine the actual boundaries (i.e. prohibited, limited, restricted etc) and will inform the employee of what PPE must be worn.

Arc flash can be caused by many things including:

- Dust
- Dropping tools
- Accidental touching
- Condensation
- Material failure
- Corrosion
- Faulty Installation

Factors and the severity of an arc flash injury:

1. Proximity of the worker to the hazard; Heat from arc can cause severe flash burns many feet away (temperatures can reach 20,000 K, four times the temperature at the surface of the sun!).
2. Byproducts from the arc, such as molten metal spatter, can cause severe injury.
3. Time for circuit to break.
4. Pressure wave effects caused by the rapid expansion of air and vaporization of metal can distort enclosures and cause doors and cover panels to be ejected with severe force causing injury.
5. Sound levels caused by an electrical arc can damage hearing.

Arc Flash Protective Equipment

ASU's arc flash protective equipment includes a flash suit, including the hood and face shield, or like. All electrical safety equipment shall have an arc rating that is suitable for the arc flash exposure. Contact the [Department of Environmental Health and Safety](#) for more information regarding arc flash safety requirements for employees.

ASU Employee Requirements

Employees must follow the requirements of the Arc Flash Hazard label by wearing the proper personal protective equipment (PPE), use of insulated tools and other safety related precautions.

This includes not working on or near the circuit unless you are a "qualified" worker.

Qualified person: One who has received training in and has demonstrated skills and knowledge in the construction and safe operation of electric equipment and installations and the hazards involved approved by the University and EHS.

Additional requirements for qualified persons: Qualified persons (i.e. those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with the following:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed live parts, and
- The clearance distances specified in 29 CFR 1910.333(c) and the corresponding voltages to which the qualified person will be exposed.

ARC FLASH SAFETY INFORMATION

Flash Protection Boundary (outer boundary): The flash boundary is the farthest established boundary from the energy source.

Limited Approach Boundary: An approach limit at a distance from an exposed live part within which a shock hazard exists.

Restricted Approach: An approach limit at a distance from an exposed live part which there is an increased risk of shock.

Approach Boundaries Image from: Standard for Electrical Safety in the Workplace, NFPA 70E, The National Fire Protection Association, 2015 Edition.

Confined Space Entry Program

APPLICABLE REGULATIONS:

- [29CFR1910.146; General Environmental Controls; Permit-Required Confined Spaces.](#)
- [29CFR1926, Subpart AA; Confined Spaces in Construction.](#)

The Occupational Safety and Health Administration's (OSHA) Permit Required Confined Space Entry Standard, 29CFR1910.146 and 29CFR1926, Subpart AA, requires ASU to develop and implement guidelines for safe confined space entry. The ASU **CSEP** has been developed to protect ASU employees and contractors when working in confined spaces.

Departments and units are required to implement the practices and procedures outlined in this program including the Confined Space Pre-Entry Checklist (Appendix B) and the Confined Space Entry Permit (Appendix C) prior to conducting confined space entry operations. Confined spaces shall be considered permit-required confined spaces until the information obtained from the Confined Space Pre-Entry Checklist demonstrates otherwise.

Definition of a Confined Space

A confined space is a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit; and
- Is not designed for continuous human occupancy.

Permit Required Confined Space

A permit-required confined space means a confined space that has one or more of the following characteristics and therefore requires a permit:

- Contains or has the potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor, which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazard.

Non-Permit Confined Space

A non-permit confined space means a confined space that does not contain, nor has the potential to contain, any uncontrolled hazard capable of causing death or serious physical harm.

Permits

When a confined space must be entered, a permit shall be completed and authorized by department heads, supervisors, or their designated representatives prior to entry of the confined space. This permit shall serve as certification that the space is safe for entry. The permit shall contain the date, the location of the space, and the signature of the person providing the certification.

A permit shall not be authorized until all conditions of the permit have been met. The permit to be used by Arizona State University personnel can be found in at the end of this document.

Responsibilities

Environmental Health and Safety shall:

- Provide the Confined Space Entry Program to departments that make entry into any confined space.
- Provide guidance for the proper selection and use of appropriate air monitoring equipment, respiratory protection and personal protective equipment to meet the requirements of this program.

Department supervisors shall:

- Implement all provisions of the [CSEP](#) for work or research areas under their control.
- Identify and report job areas and locations that are or may be confined spaces, when a new confined space is created or an existing confined space changes in configuration, use or hazard potential submit a list of identified confined spaces to EHS.
- This responsibility may be delegated to a competent person within the department provided he/she is qualified.
- The list should include department name, location of the space, description of space, atmospheric hazard, physical hazard, unusual hazards, orientation (vertical or horizontal), number of entry points, reason for entry, potential energy hazard, entry action, entrant title/specific job hazard, frequency of entry, comments, surveyors name and a date.
- The attached Permit-Required Confined Space Decision Flow Chart should be used to assist in determining if a space is consider permit required.
- Identify authorized confined space entrants and assure that each entrant attends an approved confined space entry training course.
- Provide site-specific training to authorized confined space entrants regarding the specific equipment and practices used during entry for the spaces each entrant is authorized to enter.
- Identify individuals that are authorized to sign the ASU permit for permit-required confined space entry.
- Assure that warning signs are posted immediately outside of entrances to confined spaces, and that such signs are secured. (Underground utility access vaults may not be posted. Employees will be informed of the confined space classification of these spaces during confined space training.)
- Interface with confined space supervisors where enforcement of this program is required.

The following hazards shall be identified prior to entry into a confined space:

- **Atmospheric hazards**

- Asphyxiating atmospheres
- Flammable atmospheres
- Toxic atmospheres
- Burn hazards
- Heat stress hazards
- Mechanical hazards
- Engulfment hazards
- Physical hazards (falls, debris, slipping hazards)
- Electrocutation
- Danger of unexpected movement of machine

It is the responsibility of the department or unit supervisors to evaluate potentially hazardous spaces within facilities or areas under their control and ensure that the proper precautions are taken for safety. Departments and units requiring assistance are responsible for contacting EHS to schedule an evaluation 48 hours prior to conducting confined space entry to determine whether a permit is required. In addition, the department shall provide the proper protective equipment when such equipment is necessary to protect the health and safety of the employee.

Entry Supervisor

Confined Space Entry Supervisor(s) shall:

- Adhere to all requirements of the CSEP and supplemental entry procedures
- Complete all safety training requirements, request further instruction if unclear on any part of the training and comply with documentation procedures
- Knows the hazards that may be faced during entry including information on the mode, signs or symptoms, and consequences of exposure
- Ensures that entry, standby, and backup employees are properly trained and authorized for their designated functions
- Verifies the Permit-Required Confined Space Entry Permit has been completed prior to entry and verifies that all precautions and pre-entry procedures have been fulfilled prior to entry
- Terminate the entry and cancels the permit when entry operations covered by the entry permit have been completed or a condition that is not allowed under the entry permit arises in or near the permit space
- Verifies the rescue services are available and that the means of summoning them operable
- Assure that appropriate personal protective equipment is available and used by entrants
- Assure that unauthorized people do not enter the confined space during the time that authorized entry is in progress. If an unauthorized person is located in a confined space, ASU Police shall be called to enforce trespass prohibitions;
- Report all accidents or near misses as a result of a confined space entry or an aborted entry attempt to EHS
- Assure that original entry permits are forwarded to EHS upon completion or termination of a Permit-Required Confined Space Entry

Planning a Confined Space Entry

The first step towards conducting a safe confined space entry is planning. This will allow for the identification of all hazards, and for the determination of all equipment necessary, to complete the project. The Confined Space Pre-Entry Checklist and the Confined Space Entry Permit found at the end of this document shall be used to assist in determining the specific requirements of the permit.

Quick reference to the ASU Confined Space Entry Program:

- Confined Space Hazards See Pg 3
- Identification of Confined Spaces..... See Pg 8

- Identifying the Hazards..... See Pg 9
- Ventilation of the Confined Space..... See Pg 12
- Training See Pg 13
- Emergency rescue See Pg 15
- Appendix B: Confined Space Pre-Entry Checklist See Attached
- Appendix C: Confined Space Entry Permit Procedures See Attached
- Appendix D: Permit-Required Confined Spaces/Hazards Identification See Attached
- Appendix E: Permit-Required Confined Space Decision Flow Chart See Attached

CONFINED SPACE PRE-ENTRY CHECKLIST

Pre-Entry Checklist

ARIZONA STATE UNIVERSITY Confined Space Pre-Entry Checklist

Job Location _____
 Entry Supervisor _____ Signature _____
 Date _____ Time _____

This checklist must be used prior to entering any confined space to determine whether a confined space permit is required.

- | | <u>Yes</u> | <u>No</u> |
|---|------------|-----------|
| Did your survey of this surrounding area indicate hazards such as drifting vapors from tanks, vehicles, motors, piping, sewers, combustible materials/debris, etc.? | () | () |
| Did this confined space contents, (for example- industrial or other discharges, mechanical or electrical systems) indicate this area may contain dangerous air contaminants and other hazards while occupied? | () | () |
| Will work being performed in this confined space create a hazardous atmosphere or condition? | () | () |

Atmospheric Monitoring

Record Initial and Continuous Monitoring Results every Hour

Gas Monitor Make: _____ Gas Monitor Model: _____ Gas Monitor Serial No.: _____

Time							
Oxygen (Acceptable 19.5% thru 23.5%)							
LEL (Acceptable <10%)							
CO (Acceptable <35ppm)							
H₂S (Acceptable <10ppm)							

If you answered "Yes" to any one of the above statements, you must complete the bottom portion of this checklist and obtain a confined space permit, and inform your supervisor before proceeding. "No" responses to all statements indicates this is a "Non-Permit Required Confined Space" and you may proceed with the entry.

- | | <u>Yes</u> | <u>No</u> |
|---|------------|-----------|
| Have you been trained in the operation of the gas monitor to be used? | () | () |
| Has the gas monitor been calibrated today prior to use for this job? | () | () |
| Did you test the atmosphere of the confined space prior to entry? | () | () |
| Did the atmosphere check as acceptable (no monitor alarms)? | () | () |
| Will the atmosphere be continually monitored while the space is occupied? | () | () |

If you answered "No" to any one of the statements above, DO NOT ENTER. Contact your supervisor for further instruction. If you answered "Yes" to all statements above, proceed to completing the "Confined Space Entry Permit". Dial 911 and ask for ASU Police or directly 480-965-3456.

CONFINED SPACE ENTRY PERMIT PROCEDURES

Confined Space Entry Permit

ARIZONA STATE UNIVERSITY Confined Space Entry Permit

Permit Valid for Issued Work Shift only. This permit shall remain on site until job is completed.

Date & Time Permit Issued: _____ Date & Time Permit Expires: _____

Job Location: _____

Supervisor(s) in charge of crew: _____ Phone Number: _____

Entry Supervisor: _____

Attendant: _____

Authorized Entrant(s): _____

Equipment to be worked on: _____

Communication Procedures: _____

Rescue Procedures: Dial 911 and ask for ASU Police or call ASU Police direct at 480-965-3456

Entry Checklist to be Completed and Reviewed Prior to Entry

Requirements Completed	Yes	No	Item does not Apply (N/A)
Lock Out/De-energize/Try-Out	()	()	()
Line(s) Broken-Capped-Blank (utility pipes)	()	()	()
Cleaning, Purging, Flushing or Ventilation (special ventilation procedure if needed)	()	()	()
Ventilation (forced air ventilation)	()	()	()
Secure Area (mark off area from non-authorized entrants)	()	()	()
Respirator(s) (Air Purifying)	()	()	()
Standby Safety Personnel	()	()	()
Full Body Harness with "D" ring	()	()	()
Emergency Escape Retrieval Equipment	()	()	()
Lifelines (cable, rope, ect.)	()	()	()
Protective Clothing	()	()	()
Burning and Welding Permit (Hot Work Permit)	()	()	()
Direct Reading Gas Monitor (Calibrated)	()	()	()

Atmospheric Monitoring

Record Initial and Continuous Monitoring Results every Hour

Gas Monitor Make: _____ Gas Monitor Model: _____ Gas Monitor Serial No.: _____

Time								
Oxygen (Acceptable 19.5% thru 23.5%)								
LEL (Acceptable <10%)								
CO (Acceptable < 35ppm)								
H₂S (Acceptable <10ppm)								

Rescue Procedures: Dial 911 and ask for ASU Police or call ASU Police direct at 480-965-3456

Entry Supervisor (Print & Sign Name) _____

Attendant (Print & Sign Name) _____

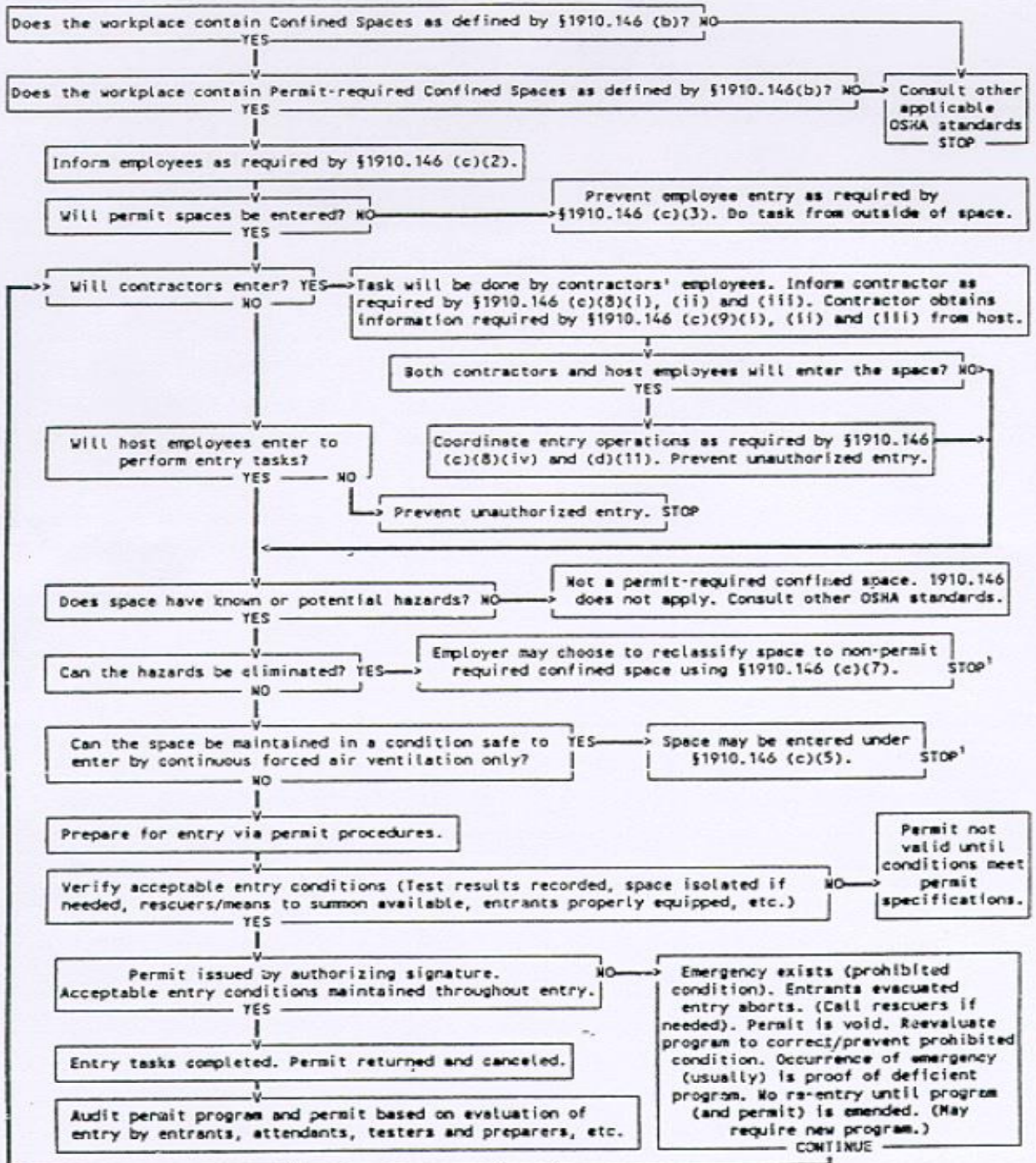
EXAMPLE PERMIT-REQUIRED CONFINED SPACES AND HAZARD IDENTIFICATION

**ARIZONA STATE UNIVERSITY
 CONFINED SPACE OVERVIEW AND HAZARD IDENTIFICATION**

Permit Required Confined Spaces	Potential Hazards							
	Oxygen Deficiency	Mechanical	Biological	Suffocation	Hydrogen Sulfide Gas	Methane Gas	Chlorine Gas	Products of Work Activities
Sewer Manholes	X		X	X	X	X		X
Swimming Pool Tanks at Mona Plumber	X	X		X	X		X	X
Sump Pits	X		X		X	X		X
Air Handlers		X						X
Drywells Pits	X		X		X	X		X
Water Tanks under the Soccer Field	X			X				X
Boiler Tanks	X			X				X
Tunnels - normally non-permit required, certain areas may contain:	(as a result of work activities)							X

PERMIT REQUIRED CONFINED SPACE DECISION FLOW CHART

APPENDIX A TO §1910.146—PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART



¹ Spaces may have to be evacuated and re-evaluated if hazards arise during entry

[\[osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9798\]](https://osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9798)

EXCAVATIONS

ASU Does Not Perform Excavation Activities Deeper than 4 feet. Should the Need for Excavations Deeper Than 4 Feet Occur [EHS SHALL BE CONTACTED AT 5-1823.](#)

Cranes, hoists, AND slings

APPLICABLE REGULATIONS:

- [29 CFR § 1910.179-184; Subpart N, Materials Handling and Storage.](#)

For site specific questions concerning overhead/gantry Cranes, Hoists, and Slings requirements

All cranes lifts at ASU controlled facilities require a lift plan. Contractors and vendors may develop their own but it must be provided to the project manager. All crane lifts managed by ASU must be approved by the ASU Facilities Safety Manager or designee. Contact the ASU FM Safety Office at (480) 727-089 or the EHS Office at (480) 965-1823 for assistance, or with any questions related to overhead/gantry cranes or sling requirements. A crane lift and landing plan is available in Appendix D.

General Safety

- ✓ Keep all body parts inside the platform during raising, lowering, and positioning.
- ✓ Make sure a platform is secured to the structure where work is to be performed before entering or exiting it, unless such securing would create an unsafe condition.
- ✓ Wear a body belt or body harness system with a lanyard. The lanyard must be attached to the lower load block or overhaul ball or to a structural member within the personnel platform.
- ✓ Stay in view of, or in direct communication with, the operator or signal person.
- ✓ Never leave crane or derrick controls when the engine is running or when the platform is occupied.
- ✓ Stop all hoisting operations if there are indications of any dangerous weather conditions or other impending danger.
- ✓ Do not make any lifts on another load line of a crane or derrick that is being used to hoist personnel.

Cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer

- ✓ Rated load capacities, and recommended operating speeds, special hazard warnings, or instructions, shall be posted on all equipment.
- ✓ All machinery and equipment shall be inspected prior to each use, and during use, to make sure it is in safe operating condition.
- ✓ All equipment deficiencies shall be repaired; defective parts shall be replaced, before continued use.
- ✓ Instructions or warnings shall be visible to operators while they are at their control stations.
- ✓ Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use.
- ✓ An illustration of the signals shall be posted at the job site.

Hammerhead Tower Cranes

Remember each employee required to perform duties on the horizontal boom of hammerhead tower cranes shall be protected against falling by guardrails or by a personal fall arrest system in conformance with.

Crawler, Locomotive, and Truck Cranes

Remember all jibs must have positive stops to prevent their movement of more than 5° above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.

Overhead and Gantry Cranes

Ensure the rated load of the crane is plainly marked on each side of the crane, each side of the hoist, or the load block; ensure the load marking is clearly legible from the ground or floor. Except for floor-operated cranes, a gong or other effective audible warning signal shall be provided for each crane equipped with a power traveling mechanism.

MATERIAL HOISTS, PERSONNEL HOISTS

Each employee in a hoist area shall be protected from falling 6 feet or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, that employee must be protected by a personal fall arrest system.

All rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posted on cars and platforms.

- ✓ In hoisting ropes, if six random broken wires are noticed in one rope lay or three broken wires in one strand in one rope lay; the wire rope shall be removed from service.
- ✓ If abrasion, scrubbing, flattening, or peening has compromised the outside wires; the wire rope shall be removed from service.
- ✓ If evidence of any heat damage resulting from a torch or any damage caused by contact with electrical wires is identified; the wire rope shall be removed from service.

Hoisting ropes shall be installed in accordance with the manufacturer's specifications.

- ✓ The installation of live booms on hoists is prohibited.
- ✓ The use of endless belt-type man lifts on construction shall be prohibited.

Material Hoists

Operating rules shall be established and posted at the operator's station of the hoist.

Rules and notices shall be posted on the car frame or crosshead in a conspicuous location, including the statement "No Riders Allowed."

- ✓ No person shall be allowed to ride on material hoists except for the purposes of inspection and maintenance.
- ✓ Car arresting devices shall be installed to function in case of rope failure.
- ✓ All material hoists shall conform to the requirements of ANSI A10.5-1969, Safety Requirements for Material Hoists.

Personnel Hoists

- ✓ Hoist towers outside the structure shall be enclosed for the full height on the side or sides used for entrance and exit to the structure.
- ✓ Towers inside of structures shall be enclosed on all four sides throughout the full height.
- ✓ Hoist doors or gates shall be not less than 6 feet 6 inches high and shall be provided with mechanical locks which cannot be operated from the landing side, and shall be accessible only to persons on the car.
- ✓ Overhead protective covering of 2-inch planking, ¾-inch plywood or other solid material or equivalent strength shall be provided on the top of every personnel hoist.
- ✓ Doors or gates shall be provided with electric contacts which do not allow movement of the hoist when door or gate is open.
- ✓ Cars shall be provided with a capacity and data plate secured in a conspicuous place on the car or crosshead.
- ✓ An emergency stop switch shall be provided in the car and marked "Stop."

OVERHEAD HOISTS

- ✓ The safe working load of the overhead hoist, as determined by the manufacturer, shall be indicated on the hoist, and this safe working load shall not be exceeded.
- ✓ The supporting structure to which the hoist is attached shall have a safe working load equal to that of the hoist.
- ✓ The support shall be arranged so as to provide for free movement of the hoist and shall not restrict the hoist from lining itself up with the load.

- ✓ The hoist shall be installed only in locations that will permit the operator to stand clear of the load at all times.
- ✓ Air hoists shall be connected to an air supply of sufficient capacity and pressure to safely operate the hoist.
- ✓ All air hoses supplying air shall be positively connected to prevent their becoming disconnected during use.
- ✓ All overhead hoists in use shall meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer.

Sling Safety - Safe Lifting Practices

Once the sling has been selected based on the load requirements and inspected prior to use, there are four primary factors to take into consideration when safely lifting a load.

They are:

- (1) The size, weight, and center of gravity of the load;
- (2) The number of legs and the angle the sling makes with the horizontal line;
- (3) The rated capacity of the sling; and
- (4) The history of the care and usage of the sling.

Inspections - At the beginning of each work day all slings, lifting fasteners, and attachments shall be inspected for damage or defects by a competent person designated by ASU's Department of Environmental Health and Safety.

- ✓ Damaged or defective slings shall be immediately removed from service.
- ✓ Before making a lift, check to be certain that the sling is properly secured around the load and that the weight and balance of the load have been accurately determined.
- ✓ Keep all personnel clear while the load is being raised, moved, or lowered.
- ✓ Crane or hoist operators shall watch the load at all times when it is in motion.

Remember the following

- Never allow more than one person to control a lift or give signals to a crane or hoist operator; except to warn of a hazardous situation.
- Never raise the load more than necessary.
- Never leave the load suspended in the air.
- Never work under a suspended load or allow anyone else to.

TABLE N-184-1. - MINIMUM ALLOWABLE CHAIN SIZE AT ANY POINT OF LINK

Chain size in inches	Minimum allowable chain size in inches
1/4	13/64
3/8	19/64
1/2	25/64
5/8	31/64
3/4	19/32
7/8	45/64
1	13/16
1 - 1/8	29/32
1 - 1/4	1
1 - 3/8	1 - 3/32
1 - 1/2	1 - 3/16
1 - 3/4	1 - 13/32

FALL PROTECTION

One of the leading causes of work-related injuries is falls from elevations. In an effort to reduce these incidents, Occupational Health and Safety Administration (OSHA) implemented 29 CFR 1926 Subpart M the "Fall Protection" standard for the construction industry requiring employers to ensure fall restrictive or limiting devices are used to prevent inadvertent falls. Any and all work above "six feet" (6') requires some type of fall prevention or limiting device to reduce injuries. Typical coverage for fall protection includes the following:

- Scaffolding and elevated work platforms
- All baskets and powered man-lifts
- Walkways, stairways, ladders and floor openings
- Rooftops and all leading edge locations

Applicable Regulations

- 29 CFR 1926 Subpart M – Fall Protection
- 29 CFR 1910 Subpart D – Walking and Working Surfaces
- 29 CFR 1910 Subpart F – Powered Platforms, Man lifts, Vehicle Mounted Platforms
- 29 CFR 1926 Subpart E – Personal Protective and Life Saving Systems
- 29 CFR 1926 Subpart L – Scaffolding

Summary of Requirements

- Stairways and work areas exposed greater than 6 feet must be guarded with railing.
- All floor openings greater than 30" by 18" must be appropriately guarded or covered.
- Open sided floors or platforms 4 feet or more above adjacent surfaces must be appropriately guarded.
- Ladders and scaffolding must be designed, constructed and used as designed.
- Elevator doors must not open between floors.
- Wall openings must be appropriately guarded.
- Employees must be protected from hazards associated with "unprotected" roof surfaces either by distance through the use of a "Hazard Zone" or fall restrictive devices.
- Safety harnesses, lifelines, lanyards, and safety nets used for fall protection must be designed, constructed and used in compliance with applicable regulations. Only full body harnesses and locking snap hooks are permitted. (29 CFR 1926).
- Every floor, working place and passageway must be kept dry and free of obstructions.
- Training must be provided to everyone working or exposed to fall risks.
- All ASU employees accessing building roofs must complete either FDM annual OSHA training or Roof Access and Authorization Training available on the EHS training web site through Blackboard.

Training

Employees must be trained and equipped in the prevention of injuries associated with slip, trip and fall hazards. Employees assigned to train other employees ("competent person") must be trained through a qualified fall protection training program.

Roof Access

Roof access is limited to authorized employees only. All FDM employees are considered authorized and trained through the annual OSHA training conducted by OHS. All other employees who need access to ASU Building Roofs must complete a Blackboard Training Class to ensure awareness of potential safety hazards. To register for the [Roof Access and Authorization](#) class, please go to the link listed below. We recommend you log into the course using either Google Chrome or Firefox as your browser (Blackboard has issues with Internet Explorer).

Reporting - In the event of any incident resulting in the near-miss, minor or serious injury of any person or property damage ASU EHS must be notified immediately.

Inspections - Work areas and equipment associated with fall protection (ropes, harnesses, ladders, scaffolding, etc.) must be inspected prior to use and removed from service if damaged or defective. Walking and working surfaces must be inspected daily to identify, correct potential slip, trip and fall hazards.

Recordkeeping - Training and certification records must be maintained for employees that receive fall protection training. Inspection certification records must be maintained for power lifts, working platforms and scaffolding.

Written Program - A written fall protection program is required and a specific fall protection plan must be prepared by a qualified person in situations where the requirements of the standard fall protection plan cannot or would not be practical and could create a more hazardous situation.

Contractor Safety/project management

Any ASU employee who oversees contractors or vendors involved in construction, renovation, or demolition activities must ensure that each contractor or vendor has completed a Service Provider Acknowledgement Agreement (see Appendix C). In addition, any supervisor overseeing contractors or vendors should be aware of the following information and notify the contractor to address any inconsistencies noted related to the following.

Contractor Tools and Equipment: All equipment brought to a project site by Contractors must be in safe operating condition. All guards must be in place, and meet or exceed all applicable governmental regulations (OSHA, EPA, DOT, etc).

Transfer of Flammable Liquids to Containers, Equipment, and Vehicles: All small quantities (5 gallons or less) of flammable liquids must be stored in an approved UL listed safety can in approved storage areas at the project site. Equipment refueling must be accomplished by using vehicles and hoses that are maintained, inspected and in good condition (appropriate bonding and grounding as required). All vehicle engines must be turned off during refueling activities. Using ASU fuel pumps for refueling contractor equipment is prohibited. ABC rated dry chemical fire extinguishers (10-lb. minimum) must be provided in the immediate area of the refueling and chemical storage areas. It is recommended that the transfer of flammable liquids from drums to small containers incorporate the use of grounding and bonding.

Electrical Safety/Lockout/Tagout: Work on ASU electrical systems is prohibited unless contractors, vendors or employees have been given authorization by University Services Management including both the Capital Programs Management Group and Facilities Management (FM). These systems include premise wiring, wiring for connection to supply, installations of other outside conductors on the premises, installations of optical fiber cable where such installations are made along with electrical conductors and work around exposed energized parts. All work on electrical systems must be performed in a "De-Energized" state as required by OSHA unless employees have been authorized to work on systems live and they are trained and certified. Exceptions to the De-Energized rule may be made for work where it can be demonstrated that de-energizing introduces additional or increased hazards or when troubleshooting or maintenance can only be performed on a live system. Only authorized/qualified persons may work on electric circuit parts or equipment that has not been de-energized. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials and insulated tools. ASU employees who are authorized to work on ASU systems are the authorized Facilities Maintenance staff and licensed/bonded electrical contractors and sub-contractors, working from designs that have been reviewed and approved through the University Services permit review process. For systems that are de-energized and subsequently locked and tagged out, ASU personnel and contractors must inform each other of their respective lock-out tag-out procedures and shall

understand and comply with the applicable restrictions and prohibitions. ASU employees are required to perform lockout - tagout in accordance with the ASU policy and programs.

Confined Space Entry: Project Managers are responsible for the following:

- Overseeing contractors requiring confined space entry;
- Identifying requirements for compliance with applicable confined space entry regulations and applicable portions of this plan in contract specifications;
- Notifying the contractor of the locations of permit-required confined spaces (as identified by the confined space inventory) where contractors will require access to inventoried confined spaces in order to complete work under the scope of a contract;
- Providing EHS with the information necessary to update the confined space inventory when confined spaces are created or modified during campus constructions and renovation projects; and
- Interfacing with contractors where enforcement of confined space contract provisions is required.

If a contractor is performing work that requires a confined space entry, the contractor must provide employees who are trained and qualified as required by 29 CFR 1910.146 (i.e. Authorized Entrants, Attendants, Entry Supervisor/Competent Person, Rescue and Emergency Services, etc.). Reference the ASU Confined Space Entry Plan for additional information

Excavation Safety: All excavations on ASU property must be performed in accordance with applicable OSHA regulations (shored, sloped, shielded, barricaded, acceptable egress, etc.). The contractor is responsible for providing a competent person at every excavation site. This individual must be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them. Also he/she must be able, through experience or training, to determine the suitability of equipment or materials used for support systems, shield systems, and other protective systems. Prior to starting the actual excavation, the contractor must ensure that all underground utility installations in the area (such as electrical, phone, gas, sewage, water, irrigation and fuel lines) have been identified (blue staked, coordinated through Facilities Planning and Development at 480-965-3633).

Hot Work Operations: EHS and Capital Programs Management Group have an established hot work policy and permit. No hot work is allowed without a permit. A copy of the policy may be obtained from Capital Programs Management Group or EHS. A hot work permit can be completed online at the following website (policy and links for permit in the policy): <https://cfo.asu.edu/fdm-bldg-permit-requirements>.

Hazard Communication, or HAZCOM Standard: OSHA requires that contractors train their employees in basic chemical safety precautions for chemicals they work with, so as not to cause a hazard for themselves and others in the vicinity. The contractors must manage all necessary PPE for their employees. ASU expects that all contractors will comply with OSHA's HAZCOM Standard requirements. Project Manager's must ensure that contractors make SDS's available for chemicals used in areas where EHS faculty, students, and staff may be exposed.

Personal Protective Equipment, or PPE: Contractors must not create hazards for ASU employees, students and visitors. Hazardous areas should be properly secured and signage should be posted to identify PPE required at the project site and hazards posed by site activities. If non-contractor persons need to enter or pass directly through the work area, the contractor may be expected to provide appropriate PPE for such visitors at any time. The PPE to be made available is dependent on the hazards posed by construction activities. Typically, hard hats and safety glasses are required. Safety equipment supplied and used by contractors is expected to comply with OSHA requirements.

Hazard Signage: Contractors must not create hazards for ASU employees, students and visitors. Hazardous areas should be properly secured and signage should be posted to identify PPE required at the project site and hazards posed by site activities.

Hazardous Materials: There are many hazardous materials at ASU. These materials are typically found in laboratories in the form of chemicals, biological agents, and radioisotopes. Contractors must avoid creating an unsafe work environment or cause disruption of any lab activity when working in these areas. The following precautions should be followed by the contractor before working in a laboratory or hazardous material storage area:

- Advise the laboratory supervisor or primary researcher of the work that will be completed;
- Avoid contact with any lab equipment left in the work area;
- Ensure compressed gas cylinders are clearly labeled to identify their contents and chained or otherwise secured to a fixed object, such as a wall, to prevent them from falling and releasing their contents;
- Stage portable fuel tanks way from storm drains and any body of water and ensure the tanks are properly labeled and have secondary containment to contain any spills or leaks: and
- Do not allow the disposal of chemicals or hazardous materials via sinks, drains, ground disposal or by evaporation;

Note: Nothing may be poured down building floor drains or storm drains including, but not limited to, chemicals, chlorinated water, detergents, glycols, and oils/fuels.

Safety Data Sheets for all chemical compounds used at the job site should be immediately available on-site or off-site. Contractors must be capable of providing a SDS within 1 hour of an incident. Contractor employees should carefully read container caution labels and be able to provide information concerning the hazardous materials they are using or storing.

Hazardous and Regulated Waste: ASU requires that materials or substances classified as hazardous or regulated waste is handled carefully and receive proper disposal. Examples include, but are not limited to: paints, thinners, glues, solvents, gas cylinders, cathode ray and television tubes, all electronic lamps, lamp ballasts, batteries, ACM, LBP debris, oils/fuels, Freon, glycols, corrosives, and CFCs.

Shipments of hazardous and regulated waste must be processed through EHS. Disposal costs for these materials will be charged back to the project. The University is only responsible for university generated waste. Hazardous waste generated by the contractor will be the contractor's responsibility and will not be processed by the university.

Hazardous waste generated by contractors may not be stored on-site during construction and renovation projects, except ACM and LBP abatement projects. Storage related to these projects must be in a secured indoor area in containers or outdoors in a covered roll-off that are marked with the words hazardous waste and a description of the waste, and the date waste was first placed in the container. All containers must be in good condition and closed when waste is not being added to the container.

All electronic lamps are to be removed from fixtures with care and placed in special cartons provided by EHS. Since these lamps contain mercury it is important that they are not broken, releasing toxic mercury dust and vapor into the environment. Coordinate the removal and disposal of these materials with EHS. All fluorescent lamp ballasts, both PCB (polychlorinated biphenyls) and non-PCB must be removed from fixtures and placed in pails or drums for disposal by EHS.

Batteries (any type) may not be disposed of in trash containers. EHS collects these batteries for proper disposal or recycling. Batteries used by contractors are the contractor's responsibility and are to be removed from university premises when spent.

Asbestos removal from university buildings is considered regulated waste and is the responsibility of the asbestos abatement contractor to properly remove and dispose as required by their contract and applicable regulations. CPMG Services and EHS coordinate the assessment and removal of asbestos in existing structures.

Lead-based paint removed from structures or their components is considered hazardous waste and must be properly disposed of. Coordinate the disposal process, including manifesting and scheduling of any containers or roll-off dumpsters with EHS and CPMG (ASU's controlled waste vendor requires at least 3 days advance notice to deliver a roll-off container). EHS will assist in determining if paint or painted material contains lead and if it requires special handling or disposal as a hazardous waste.

Tritium gas-containing exit signs, when removed under renovation work, must be collected and disposed properly. Contact EHS to evaluate and assist with this process.

Spills and Releases: Regulatory agencies require containment and remediation of all spills or releases of hazardous materials, including fuels, oils and anti-freeze. Contractors who spill, or detect a release, of a hazardous material on ASU property must report it immediately to EHS or the campus police. Cleanup costs resulting from a spill or release caused by a contractor are the contractor's responsibility. Depending on the substance and quantity, EHS may notify regulatory agencies. Cleanup and restoration of the contaminated area must be performed to regulatory and ASU acceptable levels. EHS will coordinate analytical testing to determine the extent of the contamination and the acceptable cleanup level. EHS, at its discretion, may elect to conduct the cleanup and charge associated costs to the project or allow the contractor to conduct the cleanup based on the material released and site conditions. If the contractor conducts the cleanup, proper documentation, including manifests, for the disposal of the hazardous material, contaminated soil, and any other materials contaminated during the spill or release must be provided to EHS.

SECTION TWO

Ergonomics

APPLICABLE REGULATIONS:

➤ [1970 OSHA Act: Section 5\(a\)\(1\), General Duties Clause.](#)

The General Duty Clause, as it applies to ASU employees, describes the employer's obligation to furnish to each employee a place of work that is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees, ([29 USC 654](#)). This clause from the OSH Act is utilized to cite serious hazards where no specific OSHA standard exists to address the hazard, as is the case with ergonomic stressors.

How can I get a workstation evaluation?

Evaluations can be conducted by contacting EHS. However, office furniture and related evaluations are a specialized skill and are conducted for a fee by outside contractors. Please see the EHS Ergonomics website for more information.

How do I access training resources available at ASU?

Environmental Health and Safety provides training classes specifically for office workers, and for targeted audiences with specific ergonomic risks. Contact your Facilities Safety Program Manager with any specific concern related to ergonomics including awkward body postures during routine tasks.

Special Populations

Accommodations to workstations can be made to assist persons with special needs. These include but are not limited to the elderly, expectant women, small and big persons, and the disabled. For any questions regarding accommodations under the ADA, please contact your Human Resources Representative.

Indoor Air Quality

APPLICABLE REGULATIONS:

- [29CFR1910.1000; Toxic and Hazardous Substances](#)
- [Environmental Protection Agency \(EPA\) Building Air Quality Manual, 1991](#)
- [American Society of Heating, Refrigeration, and Air Conditioning Engineering \(ASHRAE\) 62-1989](#)

Indoor Air Quality Management Program

As Facilities Manager your job requires the undertaking of construction and remodeling activities. Below you will find the ASU Indoor Air Quality Management Program requirements.

GUIDANCE DOCUMENT

When performing or coordinating construction or remodeling activities, be aware of what activities will impact occupant indoor air quality and follow these common sense guidelines to minimize indoor air quality complaints.

INITIAL PLANNING

- Identify how contaminants may spread through the building. Contaminants move from high-pressure areas to low pressure areas via conduits, such as HVAC returns, HVAC system intakes, open doors, utility chases, wall penetrations, elevator shafts, etc.
- Identify how building occupants may be affected by the spread of contaminants.
- Identify available control options, such as containing the work area with sheets of polyethylene plastic, modifying HVAC operation, reducing emissions, intensifying housekeeping, rescheduling work hours, moving occupants, defining re-occupancy criteria.
- Design specific control measures into the project to keep dusts, odors and hazardous volatile substances out of occupied areas (consult SMACNA guidelines for details).

ISOLATE MAJOR CONSTRUCTION AREAS

- Construction areas in occupied buildings must be isolated from adjacent non-construction areas using temporary walls, plastic sheeting, or other vapor retarding barriers.
- Construction areas must be maintained at a negative air pressure to surrounding non-construction areas.
- Re-circulating air ducts must be temporarily capped and sealed (appropriate filters may be used if nuisance particulates are the only contaminant of concern).

PROTECT THE VENTILATION SYSTEM FROM DUST AND MOISTURE

- Do not operate supply air systems without filters in place (minimum 60% efficiency for a 3Fm particle).
- Building materials subject to degradation from ambient environmental exposure must be protected or replaced if damaged.
- Duct-work and air handling equipment must be stored in a clean, dry location prior to installation and openings must be securely covered to prevent entry of dust, moisture, general construction debris/dirt and vermin.
- Utilize the air handling units (AHUs) to "flush" the building to reduce off-gassing of interior furnishings and finishes at least 48 hours prior to occupancy. Fully open outside air intakes and fit AHUs with temporary filters during this period. Replace filters after system flushing.

NOTIFY OCCUPANTS

- Prior to the commencement of work, notify potentially affected building occupants (through the construction project manager and building monitor) with a brief description of the planned work, expected dates and times, and precautions taken to protect air quality. Advanced notice of construction or renovation should be given so employees may take necessary actions in anticipation of the work.

ONGOING MANAGEMENT

- After work has begun, monitor and enforce plan specifications for keeping dusts, odors, and hazardous volatile substances out of occupied areas.
- Provide periodic progressive updates to building occupants through the construction project manager and building monitor.

Request for Asbestos Services

- Asbestos Review for Flooring/Window Covering/Suspect Paint is required before placing an order with ASU Stores
- University building occupants who suspect that an office, laboratory, or classroom may have an indoor air quality problem may be asked to submit to EHS a completed [Indoor Air Quality Questionnaire](#).

Personal Protective Equipment

APPLICABLE REGULATIONS:

- [29CFR1910.132; Personal Protective Equipment](#)
- The Personal Protective Equipment (PPE) requirements at ASU were developed to protect the employee from hazards that exist in the work environment. University supplied PPE meets the requirements for protection from work hazards, including physical hazards, chemical hazards, radiological hazards, or mechanical irritants.
- Personal Protective Equipment combined with administrative and engineering controls are intended to prevent injury or impairment to the function of any part of the body through absorption, inhalation or physical contact.

The intent of ASU's Personal Protective Equipment requirements are to provide supervisors with guidelines for managing a safe work environment through the use of Personal Protective Equipment.

Design

- All personal protective equipment shall be of safe design and construction for the work to be performed.

Hazard Assessment

- The supervisor shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE).
- [PPE Hazard Analysis](#) forms may be downloaded from EHS [Forms and Required Permits](#) web page.

Equipment Selection

- Select and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;
- Select PPE that properly fits each affected employee.

ASU EYE AND HEAD PROTECTION

- Supervisors are responsible for ensuring proper eye protection is used in all areas where there is the potential for eye exposure to compressed air, chemicals, welding, torching, and cutting, or any operation that may pose eye injury hazards.

- Eye protection is required in all chemical storage areas and areas in which particles are being generated and/or hot work is conducted. It is also required whenever identified on a PPE hazard assessment form.
- Employees may voluntarily wear eye protection during any operation or activity. However, ASU is not required to provide prescription safety glasses. Employees may purchase prescription eye wear that meets ANSI Z87.1 and use that in place of standard safety glasses so long as the prescription eye wear has side shields. Alternatively, ASU will provide safety glasses or goggles that will fit over prescription eye wear.
- Hardhats are not required in all areas, hardhats should be worn in all areas where there is a potential of falling objects, impact against fixed objects, or exposed electrical conductors.
- Protective headgear must meet the most current ANSI Standard Z89.1-1986 (Protective Headgear for Industrial Workers) or provide an equivalent level of protection.
- Safety glasses and hardhats should be inspected daily to ensure they are not in need of replacement (not cracked, lenses have clear visibility).

FOOT PROTECTION

- Supervisors shall ensure approved foot protection is worn for employees who are exposed to potential foot injury.
- Shoes are required to be closed toe, closed heel and closed side. Heels cannot be more than 2 inches in height, measured from the top of the heel.
- Steel-toed boots are preferred but are not required.
- Supervisors shall ensure employees conducting hot work activities wear high boots fully laced; and use fire-resistant boot protectors or spats.
- Foot protection should be inspected on a daily basis before use.

HAND PROTECTION

- Chemical resistant gloves will be worn when handling or managing chemicals.
- Gloves will also be worn while handling hazardous or toxic chemicals that can be absorbed through the skin.
- Latex or equivalent gloves will be worn by anyone administering first aid.
- All gloves, chemical resistant, hot work or latex, should be inspected on a daily basis prior to use.

PROTECTIVE CLOTHING

- A high visible vest or suitable shirt shall be worn at all time to reduce the potential for accidental injury from a collision accident.
- Employees who conduct hot work activities should wear clothing made from heavyweight, tightly woven, 100% wool or cotton.

HEARING PROTECTION

- Hearing protection and devices such as earmuffs or earplugs may be necessary to maintain employee exposure to noise below OSHA's permissible exposure limits.
- Hearing protection is required in areas and activities where the noise level is 84 dBA or greater.
- Noise abatement will be attempted in any area that exceeds 80 dBA.
- Departments may request a noise evaluation by contacting EHS.
- Any employee using hearing protection devices must comply with the [ASU Hearing Conservation Program](#).

RESPIRATORS

- All processes should be evaluated at each work area to determine respirator necessity.
- [EHS](#) can help you determine the necessity for respirator use by evaluating your individual circumstances.
- Employees may request an evaluation by contacting EHS or your department's safety committee.

- Respiratory protection users must comply with the [ASU Respiratory Protection Plan](#) and includes compliance related to all types of respirators and dust masks.
- Respirator equipment will be provided at no cost to employees by the specific department.

Hearing Conservation Program

APPLICABLE REGULATIONS:

➤ [29CFR1910.95; Occupational Noise Exposure.](#)

The ASU Hearing Conservation Program is intended to provide proper personal protective and safety control devices for employee's exposed to occupational noise; conserve employee hearing ability; and prevent occupational hearing loss. The purpose of this program is to establish procedures that ensure that all ASU employees are protected from noise exposure through engineering controls, PPE, and occupation noise hazard elimination.

This program shall apply to all Arizona State University (ASU) employees whose noise exposures equals or exceeds an 8-hour time weighted average (TWA) sound level of 85 decibels (dB), otherwise known as the action level, while performing their work activities. These employees must be enrolled into the [ASU hearing conservation program](#).

Hearing Protection

The primary means of reducing or eliminating personnel exposure to hazardous noise is through the application of **engineering controls**.

- Engineering controls are defined as any modification or replacement of equipment, or related physical change at the noise source or along the transmission path that reduces the noise level at the employee's ear.
- Administrative controls are defined as changes in the work schedule or operations which reduce noise exposure.

If engineered solutions cannot reduce the noise, then administrative controls such as increasing the distance between the noise source and the worker or rotation of jobs between workers in the high noise area should be used if possible.

- The use of engineering and administrative controls should reduce noise exposure to the point where the hazard to hearing is eliminated or at least more manageable.
- Hearing protective devices (ear plugs, muffs, etc.) shall be the permanent solution only when engineering or administrative controls are considered to be infeasible or cost prohibitive.
- Hearing protective devices are defined as any device that can be worn to reduce the level of sound entering the ear.

The Occupational Safety and Health Administration (OSHA) requires ASU to comply with the following:

- Monitor facilities and employees to determine noise overexposure situations,
- Develop and implement a written hearing conservation program that identifies the methods used to comply with regulatory requirements,
- Implement an audiometric testing program for employees with high noise exposures to determine if exposure impacts hearing ability,
- Provide appropriate hearing protection to employees with high noise exposures if other methods of noise control are not feasible or during installation of such controls,
- Provide annual training for employees with high noise exposures, and
- Maintain medical and monitoring records pertaining to the hearing conservation program.

To meet these requirements, Arizona State University has established the [Hearing Conservation Program](#). For access to the ASU Hearing Conservation Program electronic document please select the hyperlink above.

Program Administrator – Environmental, Health and Safety (EHS)

The Program Administrator is responsible for administering the Hearing Conservation Program and has the authority to make decisions and implement changes, as necessary. A Program Administrator must be designated by each department or unit with employees exposed to noise hazards.

Supervisors – Department Dean, Chair, Director, or designee

Supervisors are responsible for ensuring that the Hearing Conservation Program is implemented in their particular areas.

- Supervisors shall also be knowledgeable in the Hearing Conservation Program requirements for their own protection from noise exposure.
- Supervisors shall ensure that the program is understood and followed by the employees under their charge.
- Supervisors will maintain surveillance of work conditions in all places where employees for whom they are directly responsible work, as well as employee exposures and stress, in order to determine if any additions to, or changes in, hearing protection use requirements are needed.
- The Supervisor shall promptly notify employees of changes whenever they are needed.

As a Supervisor your duties include:

- Ensure that employees under their supervision (including new hires) have received appropriate training and medical surveillance;
- Determine appropriate type(s) of hearing-protective devices necessary to protect employees' hearing;
- Ensure the availability of appropriate hearing-protective devices;
- Monitor and enforce the use of hearing protective devices when required and ensure those only properly trained and medically evaluated employees use the devices;
- Continually monitor work areas and operations to identify noise hazards; and
- Coordinate with the Program Administrator on how to address hearing hazards or other concerns regarding the program.

For employees exposed to TWA noise exposures at or over 85 decibels (dBA):

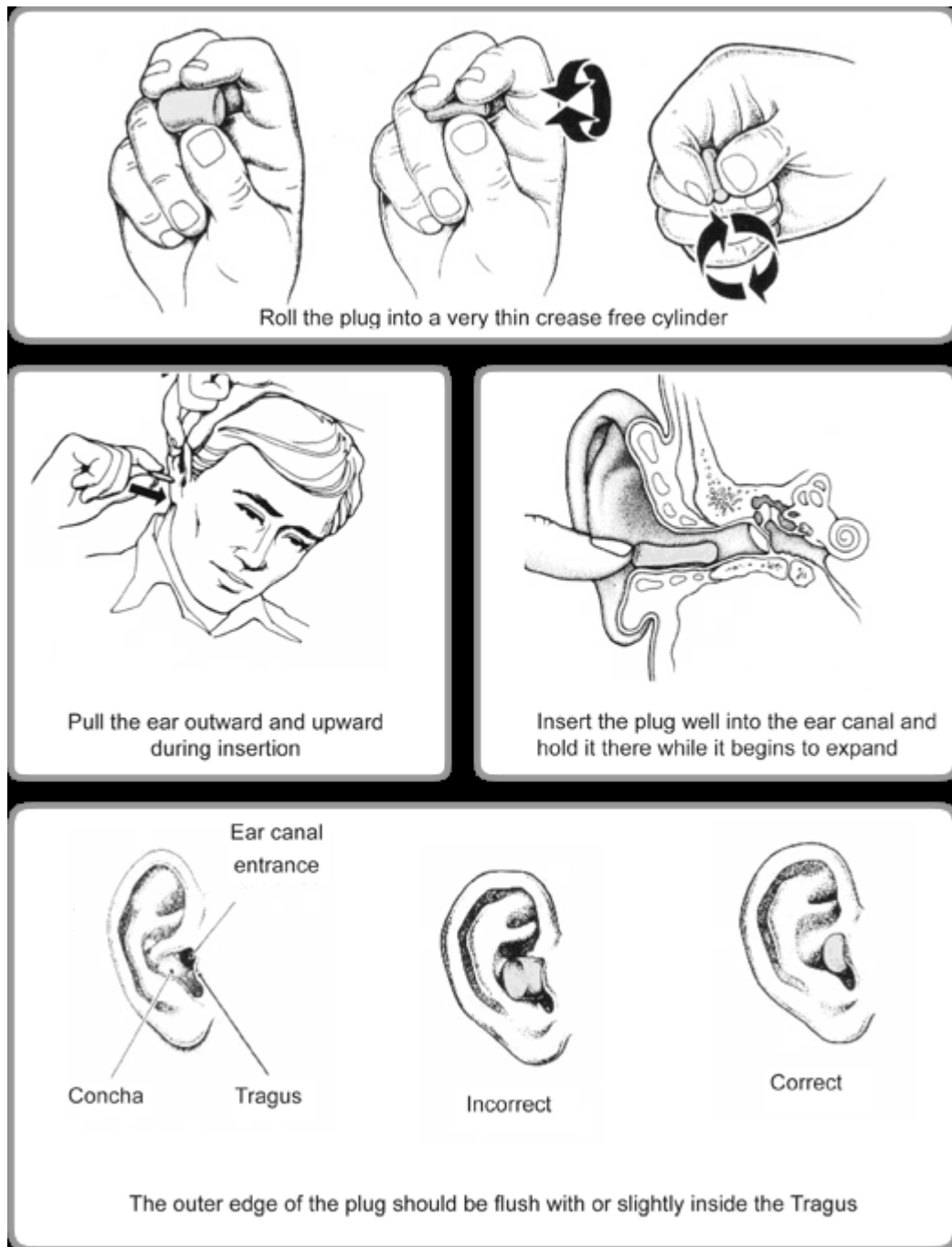
- Use safe work practices;
- Wear and maintain appropriate hearing protective devices as instructed while performing job functions;
- Attend annual training on noise and hearing protection;
- Participate in annual audiometric testing;
- Use only those brands/types of hearing protection devices which are appropriate for the noise exposure, and for which the employees have been trained and fitted;
- Report to their supervisor changes in the workplace or “noisy” conditions; and
- Comply with all provisions of the Hearing Conservation Program.

For employees with episodic exposure to high noise and whose TWA noise levels are below 85 decibels dBA:

- Wear and maintain hearing protective devices as instructed; and
- Report to their supervisor any changing conditions that may impact personal noise exposures.

Quick reference to the ASU Hearing Conservation Program:

• Monitoring Requirements.....	See Pg 4
• Medical Surveillance/Audiometric Testing Requirements.....	See Pg 6
• Types of Hearing Protective Devices.....	See Pg 7
• Training Requirements.....	See Pg 9
• Appendix A: Definitions	See Pg 11
• Appendix B: OSHA Noise Exposure Standard	See Pg 13
• Appendix C: Sound Level Survey	See Attached



Ear Plugs

Correct Insertion of Ear Plugs; Tinnitus; 2012 [tinnitus.org.au/TAV/media/Images/fittingearplugs.gif]

Respiratory Protection Program

APPLICABLE REGULATIONS:

- [29CFR1910.134; Respiratory Protection.](#)

The ASU Respiratory Protection Program was developed to prevent employee exposures to hazardous air borne contaminants. The purpose of this program is to establish procedures that ensure that all ASU employees are protected from exposure to identified respiratory hazards.

The ASU Respiratory Protection program applies to all ASU employees who are or may be required to wear respirators during routine work operations, and non-routine, or emergency operations. In addition, requirements for voluntary use of respiratory protection for ASU employees are identified within the program.

Program Administrator – Environmental, Health and Safety (EHS)

The EHS Director or designee is the Program Administrator and responsible for administering the respiratory protection program and has the authority to make decisions and implement changes, as necessary.

Supervisors – Department Dean, Chair, Director, or designee

Each Department Head Official or designee is responsible for ensuring the respiratory protection program is implemented for their respirator program participants.

Duties include:

- Ensure department specific standard operating procedures (SOPs) are developed and approved by the Program Administrator;
- Ensure the availability of respirators and accessories identified in department SOPs;
- Ensure employees under their supervision (including new hires) have received appropriate medical evaluations, training, and fit testing;
- Supervisor or designee attend respirator training and ensure program requirements are met;
- Be aware of tasks requiring hazard evaluation and the use of respiratory protection and ensure SOPs related to respirator use are being followed;
- Monitor and enforce proper use of respiratory protection;
- Ensure that respirators are properly cleaned, maintained, and stored as identified in department SOPs;
- Ensure respirators fit employee well and do not cause discomfort;
- Notify employees of respiratory protection changes whenever they are needed;
- Coordinate with the Program Administrator to address respiratory hazards or other concerns regarding this program; and
- Determine appropriate discipline for employees who fail to observe any portion of the ASU Respiratory Protection Program

ASU's Respiratory Protection Program requires supervisor be trained and knowledgeable on 7 specific standard operating procedures (SOP).

They are:

- (1) Selection of Respirators;
- (2) Medical Evaluations;
- (3) Fit Testing;

- (4) Respirator Use;
- (5) Maintenance and Care;
- (6) Training; and
- (7) Record keeping.

Each of the SOP's for the ASU Respiratory Protection Program can be found within the [ASU Respiratory Protection Program.pdf](#).

Additionally Supervisors are required to **implement, maintain** and **ensure** the success of ASU Respiratory Protection Program.

- ✓ Supervisors should be familiar with the ASU Respiratory Protection program and their specific respiratory protection device(s).
- ✓ Supervisors must attend training and fit testing prior to initially using a respirator as required by department SOPs.
- ✓ Supervisors are responsible for the use, care, and maintenance of the respirators in there department.
- ✓ Supervisors shall ensure respirators are stored as per their training and department SOP.
- ✓ When informed an employee respirator no longer fits well or is damaged or compromised, it is the Supervisors responsibility to ensure a new respirator is available.
- ✓ Supervisors are instruct employees on how to complete Medical Evaluation Questionnaires and participate in hazard evaluation as required prior to initial use of the respiratory protection device.
- ✓ Supervisors are to address employee concerns regarding unsafe working conditions immediately. Request the employee stop working until the concern is address and resolved.



Example of N-95 Filtering Facepiece Respirator



Example of typical Half Mask Respirator

SECTION THREE

Asbestos Management Program

APPLICABLE REGULATIONS:

- [29CFR1910.1001; Toxic and Hazardous Substances; Asbestos.](#)

Many of ASU University's buildings constructed prior to 1985 contain asbestos, including floor tiles, mastics, HVAC duct tape, pipe insulation, roofing, spray-applied ceiling textures, ceiling tiles and drywall taping compounds; therefore asbestos management is a major concern. The current ASU asbestos policy is to manage asbestos containing materials in place.

Management in-place means that asbestos containing materials are disturbed or removed only when necessary. Typically this is prior to building renovations or demolitions, when the material could be disturbed or when the material becomes damaged.

Federal, state and county agencies regulate asbestos-related activities at ASU. Only state-approved asbestos contractors and consultants are utilized for asbestos-related work.

ASU's [Asbestos Management Program](#) was developed jointly by Environmental Health and Safety and the [Capital Programs Management Group, or](#) CPMG.

The major components of the program are:

- **Training-** Training is required for Employees who may contact or disturb building materials suspected of containing asbestos and employees whose duties require entry to the ASU tunnel system. EHS offers a 2-Hour Asbestos Awareness Training class. For [class information](#) and [registration](#) logon using your ASUrite user name and password then search for Asbestos Awareness.
- **Inspections of buildings or areas to be renovated-** All asbestos containing materials (ACM) are identified prior to demolition, renovation or other activities that may cause disturbance to these materials. Building surveys that include material sampling and analysis are performed in accordance with [EPA](#) and [OSHA](#) requirements.
- **Hazard evaluations-** Known asbestos containing materials are periodically inspected for any changes in condition. If materials are found to have become damaged, the materials are repaired or removed.
- **Air monitoring-** Periodic air monitoring is conducted in the ASU Utility Tunnel system and in buildings which are known to contain friable asbestos-containing materials (fireproofing, sprayed-on ceilings, ceiling tiles, etc.). Air monitoring is also conducted for ASU personnel whose work duties require them to enter the tunnel system.
- **Asbestos abatement or repair-** Asbestos abatement is the removal, repair, encapsulation, enclosure, or clean-up of asbestos containing material. Abatement is performed in academic and non-academic buildings and utility tunnel systems to assist departments with planned renovation or maintenance activity and to ensure compliance with federal, state and local regulations. Unplanned emergency abatement is performed to remove asbestos materials from mechanical equipment to allow critical repairs to be performed, or clean up an area contaminated by asbestos when a building system suddenly fails (e. g. roof leaks, steam system failures).

ASU Building Permit

- Construction may not begin without a [Building Permit Application](#).
- If this Asbestos Service Request results in proceeding with your project (estimate, work order, p-card purchase, etc.), an ASU Building Permit Application is required by CPMG Building Construction Support Services for Plan Review.
- The Building Permit Application is located at http://uabf.asu.edu/us_forms.
- After plan review, subsequent plan review issues addressed and asbestos and/or lead clearance received, Building Construction Support Services will issue and Building Permit.

For Asbestos Questions: Contact: EHS, Asbestos and Environmental Safety Specialist

To Report Possible Exposure: Please select the [Employee](#) and [Non-employee](#) hyperlink.

[Current Tempe Campus Asbestos Inventory](#)

REQUEST FOR ASBESTOS SERVICES

UNIVERSITY SERVICES

CAPITAL PROGRAMS MANAGEMENT GROUP

To: Pam Walrath 480-965-7739 / office 480-965-7535 / fax 602-818-6575 / cell phone

Date of Request: _____ Requestor: _____

Department: _____ Phone No: _____

Request For: (circle)

REMOVAL / REPAIR / ENCAPSULATION / TESTING / EVALUATION

OTHER: _____

Location of ACM

BUILDING: _____ (or) TUNNEL: _____

ROOM NO: _____ ENTRANCE: _____

SPECIFIC LOCATION: _____ STATION MARKER: _____

Condition of Material: (circle)

Good / Damaged / Deteriorated

Type of Material

THERMAL SYSTEM INSULATION (TSI) SURFACING OR MISC. MATERIAL (check)

_____ L.F. of pipe

_____ Duct tape

_____ Floor tile

_____ L.F. of valve

_____ Sheet flooring

_____ Acoustic Ceiling

_____ L.F. of joint/elbow

_____ Ceiling tile

_____ Wall

_____ L.F. of

Qty. Surf/Misc.: _____

Line type: HW / CHW / STEAM / COND

Painted green (circle): Yes No

Line active (circle): Yes No

Line pressure (circle): High Med Low

Line size: _____ Line Temperature: _____

Date by which work must be completed: _____

CPMG USE ONLY
Project No.: _____
Date work scheduled/performed: _____

Contractor: _____
Consultant: _____
Comments: _____
REQFORASBESTOSSVCS2.DOC - REV. 2006-09-12

Universal Waste Management

Arizona State University (ASU) uses a large amount and variety of electronic lamps. The spent lamps are considered by the Environmental Protection Agency, or EPA to be hazardous and used lamps are known as universal wastes. Examples of common electronics lamp that are universal wastes include intact fluorescent, high intensity discharge, neon, mercury vapor, high-pressure sodium, metal halide lamps, and incandescent lamps. The hazardous constituents of concern in electronic lamps are the heavy metals used in manufacture, e.g. mercury and lead. The EPA regulates universal wastes under the Resource Conservation and Recovery Act, which is the same law that defines hazardous waste. This rule streamlines the hazardous waste regulation requirements for hazardous waste lamps. Handlers of universal wastes are subject to less stringent standards for storing, transporting, and collecting these wastes than those handlers of chemical hazardous wastes. The EPA has concluded that regulating spent electronic lamps as a universal waste under 40 CFR Part 273 will lead to better management of these lamps and will facilitate compliance with hazardous waste requirements. If electronic lamps are not handled correctly, EPA and state regulators will consider unmanaged lamps to be a hazardous waste.

Universal Waste Used Lamps Handling and Employee Training (40 CFR 273.16)

- **Proper Handling of Mercury Containing Lamps**
 - Carefully remove lamp from light fixture.
 - Place the lamp into the cardboard box or sleeve from which it arrived. (Cardboard drums are also provided for this purpose.)
 - Fold over end flaps and close with appropriate tape.
 - Mark the container appropriately with the words **“Used Mercury Lamps”** and generation date.
 - Carefully move the filled and labeled container to the campus accumulation point for this waste in a manner designed to prevent breakage of lamps (Call Hazardous Waste Management at 480.965.3899 or 480.965.8554 for pick up of container)
- **Emergency Procedures** - Immediately upon breakage, all lamp debris must be properly collected, packaged and disposed of as hazardous waste.
 - Don proper personal protective equipment (Latex gloves).
 - Using appropriate technique to minimize dust generation, collect all glass, metal, and phosphor (white dust) debris into a sturdy plastic bag.
 - Decontaminate all surfaces with a rag wet with vinegar and place used rag into the sturdy plastic bag.
 - Place plastic bag into an rigid container.
 - Seal container
 - Label and mark container with an ASU Hazardous Waste tag.
 - Call Hazardous Waste Management at 480.965.3899 or 480.965.8554 for pick-up of container

HAZARDOUS WASTE MANAGEMENT

Arizona State University's academic and research laboratories, along with other university operations, e.g., Facilities Management, generate a variety of hazardous chemical wastes. ASU is classified as a hazardous waste generator by the U.S. Environmental Protection Agency and the Arizona Department of Environmental Quality, or ADEQ. As a hazardous waste generator facility, ASU is required to comply with a number of hazardous waste laws and regulations. Environmental Health and Safety is responsible for coordinating an effective hazardous waste management program for university facilities. The primary objectives of the program are to protect human health and the environment and insure compliance with university, local, state, and federal hazardous waste regulations. University personnel and facilities involved in activities that generate hazardous waste are also subject to a number of requirements designed to protect personnel, property, and the environment.

University hazardous waste management programs can be somewhat complex and confusing because of the enormous variety of hazardous waste generated; it is the responsibility of each individual university generator to comply with accumulation requirements. The following guidelines have been prepared for university personnel to facilitate proper hazardous waste management and insure compliance with applicable hazardous waste laws and regulations, particularly individual site accumulation requirements.

For your convenience, **consider all waste chemicals and chemical formulations (abandoned, used, out dated, or otherwise waste-like chemicals and formulations) as a hazardous waste unless the particular waste has been determined not a hazardous waste by EHS.** Contact EHS for technical assistance at 480.965.8554.

Disposal Containers

Containers holding hazardous waste must be in good condition, non-leaking and compatible with the waste being stored. The container must always be closed during storage, except when it is necessary to add or remove waste. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material. Incompatible wastes must not be mixed or stored in the same container. If a container holding hazardous waste is not in good condition, or if it begins to leak, the generator must transfer the waste from this container to a container that is in good condition, or manage the waste in some other way that prevents a potential for a release or contamination. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in containers must be separated from the other materials or protected from them by means of a partition, wall, or other device. One gallon glass hazardous waste containers with screw top lids are available at no charge to university personnel from EHS. Also, the original chemical container can serve as a waste container as long as the above requirements are met. Containers may exceed one-gallon as long as they meet the above stated requirements. However, containers in excess of five gallons must have prior approval from EHS before being used as a hazardous waste storage container. Contact EHS to check the availability of larger containers.

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Container Labeling

While hazardous waste is being accumulated, the container holding the waste must be marked with the words "**HAZARDOUS WASTE**" and with words that identify the contents of the container. For the purpose of waste determination, a complete inventory of wastes being accumulated in the container must be kept with the container. This can be accomplished by using hazardous waste tags and labels available through EHS. If the original container is to be used for waste disposal, the words "**HAZARDOUS WASTE**" shall be legibly written with a permanent marker above or next to the chemical name. If the container is to be used for a waste different from the original contents, the original label must be removed or rendered illegible and a new label placed on the container. Again, hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material. The container must also be marked with the hazard associated with the waste e.g., flammable, corrosive, toxic, etc.

Hazardous Waste Tags

Hazardous waste tags must be filled out by the waste generator. The waste tags are used by EHS personnel to identify waste containers and determine waste compatibilities. Improper or inaccurate tagging could present a serious safety threat to EHS personnel handling these wastes. EPA and ADEQ review the tags to determine the university's compliance with hazardous waste regulations. Inadequate or incorrect information on waste tags may result in the container not being picked up. Therefore, in the interest of efficiency, please make certain the waste tags are complete, accurate, and legible to avoid having to reschedule a pick-up. The following information must be included on the tags:

- **Chemical Name:** Use full chemical name, not formulas. Product names or trade names are acceptable if the manufacturer's name and address or a material safety data sheet can be supplied with the material. Also, indicate the concentration of the chemical used in percent, molarity, ppm, etc.
- **Amount:** Give total volume or weight of each chemical in the container.
- **Volume %:** List percentage of the total volume of each chemical contained if more than one compound is being accumulated in the waste container.

- **Generator:** List name of the individual responsible for preparing the waste and completing the waste tag. **Phone:** Supply a telephone number at which the generator can be reached during normal university hours (8am - 5pm). **Date:** Mark the date on which the waste container is ready for pick-up.
- **Department:** Identify the university department with which the generator is affiliated.
- **Building/room:** List physical location in which the waste is being held for collection.
- **Category:** Choose the appropriate category (hazard) descriptions from the list below and write it in the category block. Include other hazards (e.g., "carcinogen") as well.
 - Radioactive material
 - Corrosive material (solid)
 - Poisonous compressed gas
 - Poison
 - Flammable gas
 - Non-flammable gas
 - Combustible material
 - Flammable liquid
 - Pyrophoric
 - Oxidizer
 - Self-reactive
 - Flammable solid
 - Spontaneously combustible
 - Corrosive material (liquid)
 - Water-reactive
 - Explosive
 - Irritant
 - Biohazard/infectious

If the waste material has more than one hazard, it should be classified according to the order of hazard as listed above. If the material is an explosive, etiologic agent, cyanide, mercury, or an organic peroxide, it will require special handling and you should contact EHS as soon as possible.

pH: The pH of the solution is required for aqueous wastes. pH can be taken using pH paper or a pH meter. [return to top](#)

Segregation

As previously stated, all chemicals are to be considered hazardous waste when disposed. It is the policy of the university that no waste be disposed or discharged into the sanitary sewer. Whenever possible, chemical wastes should be collected and segregated by the following categories to ensure safe handling and to expedite disposal:

- Bases, caustics and cyanides
- Explosive and shock sensitive materials - Examples: picric acid, perchloric acid, dinitrophenyl hydrazine
- Flammable liquids - non-halogenated organic solvents
- Flammable solids - Examples: camphor, naphthalene
- Gases - Examples: lecture bottles, small non-returnable cylinders
- Inert materials - Examples: asbestos and silica
- Inorganic acids - Examples: hydrochloric acid, hydrofluoric acid (collect separately in plastic container), sulfuric acid, nitric acid, phosphoric acid
- Metal salts and heavy metals, (collect heavy metals separately)
- Non-flammable organic compounds - Examples: halogenated organic solvents, glycerol, aniline;
- Organic acids - Examples: formic acid, acetic acid
- Oxidizers - Examples: nitrates, permanganates, perchlorates, nitric acid over 40% (collect separately), chromic acid "cleaning solution" (collect separately)
- Peroxidizers, including peroxidizable solvents
- Pesticides and herbicides
- Polychlorinated biphenyls (PCB's) and dioxins - accumulate separately
- Polymerizables
- Radioactive materials - these are handled by the Office of Radiation Protection 480.965.6140
- Reactive materials (react when exposed to water, air, or friction), Examples: alkali and alkaline earth metals, acid halides, phosphorous pentoxide, thionyl chloride

SCHEDULING AND WASTE PICK-UP

When the waste container is ready for pick-up (Note: Do not fill waste container beyond the bottom of the neck of the container) and the waste tag has been completed, use the on-line hazardous [waste pickup request](#) or the link located on our [website](#). This will initiate the waste pick-up process. Waste is routinely picked up throughout the campus Monday through Friday. If you have waste in one location which totals more than 55 gallons in overall amount, or if you have a total of one quart of all acutely hazardous waste, please note that in the comments section of the request. Include the hazardous waste tag numbers on the pickup request.

WASTE OIL

Waste oil is collected and recycled. However, waste oil must be kept as uncontaminated as possible. EHS requires oil to be kept separate from other chemicals, particularly solvents, metals, and pesticides. If the oil is contaminated, indicate so on the hazardous waste tag and it will be managed and disposed of in an approved manner.

PENALTIES

Severe civil and criminal penalties can be imposed upon the generator and university for irresponsible and illegal hazardous waste management and disposal practices. These procedures have been designed to properly and economically manage the university's hazardous waste while complying with all applicable federal, state and local regulations. EHS is available for technical assistance and encourages all university personnel to utilize the service. Please contact EHS if you have any questions regarding responsible hazardous waste management or need additional information or assistance in managing your hazardous waste.

APPLICABLE REGULATIONS

40 CFR Parts 260 through 271
A.A.C. R18-8-260 et seq.

APPENDIX A

FACILITIES DEVELOPMENT AND MANAGEMENT

SAFETY MEETING TOPICS

- Heat Stress
- Tobacco Free Campus
- Radio Protocol
- Labeling of secondary containers

Heat Stress Prevention

EHS CO PROGRAM SAFETY MEETING TOPICS

Phoenix is the Hottest Major City in the U.S.

- The all-time hottest temperature ever recorded in Phoenix is 122 degrees.
- Phoenix, Arizona averages 110 days a year when the temperature rises to 100 degrees or above.
- In addition, the rapid expansion of major urban areas in Phoenix has caused a significant urban heat island (UHI) to develop - causing low temperatures to be abnormally high.

Heat Wave Safety Tips

- **Slow down.** Reduce, eliminate or reschedule strenuous activities until the coolest time of the day. Children, seniors and anyone with health problems should stay in the coolest available place, not necessarily indoors.
- **Dress for summer.** Wear lightweight, light-colored clothing to reflect heat and sunlight. Be aware that protective clothing or personal protective equipment may increase the risk of heat stress.
- **Put less fuel on your inner fires.** Foods, like meat and other proteins that increase metabolic heat production also increase water loss.
- **Drink plenty of water.** Your body needs water to keep cool. Drink enough water that you never become thirsty. Approximately 1 cup every 15-20 minutes. Persons who have epilepsy or heart, kidney or liver disease, are on fluid restrictive diets or have a problem with fluid retention should consult a physician before increasing their consumption of fluids.
- **Avoid alcohol, and drinks with large amounts of caffeine or sugar.** By eating a healthy, balanced meal after strenuous work, you can work to ensure you're not consuming excess sugar through sports drinks and can instead properly hydrate with a cool glass of water.
- **Take more breaks in extreme heat and humidity.** Take breaks in the shade or a cool area when possible. Air conditioning in homes and other buildings markedly reduces danger from the heat. If you cannot afford an air conditioner, go to a library, store or other location with air conditioning for part of the day.
- **Don't get too much sun.** Sunburn reduces your body's ability to dissipate heat.
- **Do not take salt tablets unless specified by a physician.**

EHS has developed heat stress prevention training that is web based and is available at asu.edu/go/blackboard/selfenroll/?cid=207384.

Tobacco-Free Campus

As of August 1, 2013 all ASU campuses have been tobacco-free. Use of tobacco products with exception of designated areas in leased university housing and private vehicles is strictly prohibited. For more information please see [ACD 804: Tobacco-free Campus](#). Contact the Student Rights Coordination Office at (480) 965-1654 if you observe a violation of this policy by a student or guest on an ASU Campus. There is a student enforcement group that can assist with students and guests. ASU employees observed violating this policy are to be reported to their immediate supervisor.

ASU RADIO PROTOCOL

The ASU Radio Protocol; ASU FDM Policy 502 was written in accordance with: [47 CFR 90.403](#) and [18 CFR CH. 1 – 1464](#).

ASU Radio Protocol Call Letters

A = ALPHA	N = NOVEMBER
B = BRAVO	O = OSCAR
C = CHARLIE	P = PAPA
D = DELTA	Q = QUEBEC
E = ECHO	R = ROMEO
F = FOXTROT	S = SIERRA
G = GOLF	T = TANGO
H = HOTEL	U = UNIFORM
I = INDIA	V = VICTOR
J = JULIET	W = WHISKEY
K = KILO	X = X-RAY
L = LIMA	Y = YANKEE
M = MIKE	Z = ZULU

ASU requires certain employees to use portable hand held radios for university wide communication.

- The most important rule to remember while using an ASU issued portable hand held radio is inappropriate language will not be tolerated and should never be used during communication attempts through the hand held radio.
- Always ensure you identify yourself so that the responder knows who the person making the request is.
- When speaking into the radio ensure you speak clearly so that the responder can identify the needs of the person making the request.
- When completing your request through the radio ensure you say, "Over," this information the listener that you have finished.
- Be sure to stop all communications when someone is calling out an emergency transmission. Do not transmit until the emergency has been cleared.
- When signing off remember to say the radio call number (call sign), and say, "clear."

GHS Labeling Soon to be a Requirement

Hazard Communication Training is required for anyone at ASU that works with Hazardous Materials such as chemicals, cleaning products, or paints. Those of you working in labs receive this training annually as part of laboratory safety training. Others receive it as part of New Employee Orientation Safety Training while others such as Facilities Development and Management, ASU Police, and the School of Arts have hazard communication training programs specific to their applications. Also, there is a general Hazard Communication Training Program available to all ASU employees. Many of you will recall that in March, 2012, the Occupational Health Safety Administration (OSHA) revised the Hazard Communication Standard to align the regulation with the provisions of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). These changes impacted ASU's operations and we updated our training accordingly. We want to take this opportunity to remind everyone that changes affecting Safety Data Sheets and chemical labeling were phased in. Please review the following reminders and contact EHS if you have questions.

Safety Data Sheets (SDS):

The Material Safety Data Sheet (MSDS) were replaced with a "Safety Data Sheet" (SDS) which will have 16 sections in an established format. This change was required no later than June 1, 2015. While many suppliers made the change prior to June 1, the new SDS format is now mandatory and you should see that format on any new SDS.

Required no later than December 1, 2015, the new labeling format for chemical manufacturers is required to provide not only the chemical name, but also a harmonized signal word indicating the relative degree of severity of a hazard (such as "danger" and "warning"), pictograms and hazard statements for each hazard class and category. Precautionary statements must also be used. The manufacturer name, address and phone number must be included and all this must be in a consistent format. Please see an [example](#) of the pictograms and a generic [label](#). Also, **please be aware that the numbering system used in the new GHS rating system is exactly the opposite of the traditional NFPA 704** Diamond Hazard Warning System that will remain in use. The NFPA Diamond required by local fire authorities numbers its hazard ranking from 0 to 4 with 4 being the highest hazard. The GHS ranks hazards from 1 to 4 with 1 being the highest hazard. A [comparison chart](#) is available and may be useful as we transition to the new label.

Fortunately for ASU, the revised standard does not change the way we label secondary chemical containers. We may continue to use the NFPA 704 diamond, or label with container with the chemical name in English and identify the primary hazard (i.e. flammable, toxic, corrosive, etc.). If you have questions about how to label a container you transfer a chemical into, please see your supervisor or contact EHS@asu.edu or (480) 965-1823.



APPENDIX B

FACILITIES DEVELOPMENT AND MANAGEMENT

HOT WORK PROCEDURE

IAW 29CFR1910, Subpart Q

GENERAL DEFINITIONS

Hot Work - Work involving burning, welding, brazing, polishing, grinding or a similar operation that is capable of initiating fires or explosions.

Designated Area - A permanent location designed or approved for hot work operations.

Management - For the purpose of hot work, all persons, including owners, contractors, educators, and so on, who are responsible for hot work operations.

Permit - A document issued by the authority having jurisdiction for the purpose of authorizing performance of a specified activity.

Permit Authorizing Individual (PAI) - The individual designated by management to authorize hot work.

Welding and Allied Processes - Processes such as arc welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

APPLICATION

This procedure shall apply to the following hot work processes:

- Welding and allied processes.

- Heat treating.
- Grinding.
- Thawing pipe.
- Powder-driven fasteners.
- Hot riveting.
- Torch-applied roofing in conjunction with the requirements of NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
- Similar applications producing a spark, flame, or heat.

PERMANENT FDM SHOP DESIGNATED LOCATIONS

FDM departments that perform hot work on a routine basis in a permanent FDM Shop or other designated work site will be exempt from the above permit requirements only if the area is inspected, approved and issued a permit by the designated Hot Work Coordinator (FSM) or ASU Fire Marshal's Office. These permits must be renewed on a yearly basis (old permits should be kept in file for 5 years) or when changes in the shop warrant a repeat inspection. When approved by the inspector a sign will be posted at the work site that reads "Hot Work Approved Area". The FSM will re-inspect these areas during his or her annual fire and/or shop inspection of the approved area. Any deficiencies to the designated hot work area or shop must be corrected to continue the designation of "Hot Work Approved Area".

BASIC PRECAUTIONS

For elaboration of these basic precautions as well as a delineation of the fire protection and prevention responsibilities of welders and cutters, their supervisors (including outside contractors) and those in management on whose property cutting and welding is to be performed, see, Standard for Fire Prevention in Use of Cutting and Welding Processes, NFPA Standard 51B, 1962, which is incorporated by reference as specified in Sec. 1910.6. The basic precautions for fire prevention in welding or cutting work are:

Fire hazards. If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

Guards. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

Restrictions. If the requirements stated in this procedure cannot be followed then welding and cutting shall not be performed.

Special precautions. When the nature of the work to be performed falls within the scope of paragraph (a)(1)(ii) of this section certain additional precautions may be necessary:

Combustible material. Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

Fire extinguishers. Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

Requirements within 35 feet:

- Area within 35 feet of the work area has been properly swept to remove any combustible debris.
- Flammable and ignitable materials and debris have been moved at least 35 feet from the hot work area or covered and protected with fire resistant materials.
- Cracks or holes in floors, walls and ceilings (including ductwork) are covered or plugged.
- Combustible floors covered with fire-resistive material.

Requirements within 50 feet:

- Explosives, compressed gas cylinders or stored fuel have been moved at least 50 feet from the hot work area or have been protected from the hot work.
- Work on walls or Ceilings.
- Construction is noncombustible and has no combustible covering or insulation.
- Areas adjacent to walls being worked on are checked for combustibles and any combustibles are either removed or protected.

Work on walls or Ceilings:

- Construction is noncombustible and has no combustible covering or insulation.
- Areas adjacent to walls being worked on are checked for combustibles and any combustibles are either removed or protected.

FIRE WATCH

- Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:
- Appreciable combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation.
- Appreciable combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks.
- Wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
- Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

AUTHORIZATION

Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. He shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.

Floors. Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet (10.7 m). Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

Prohibited areas. Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management.
- In sprinklered buildings while such protection is impaired.
- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.
- In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.

Relocation of combustibles. Where practicable, all combustibles shall be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impracticable, combustibles shall be protected with flame proofed covers or otherwise shielded with metal or asbestos guards or curtains.

Ducts. Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

Combustible walls. Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

Noncombustible walls. If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

Combustible cover. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

Pipes. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

Management. Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.

Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.

Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.
The Supervisor:

- Shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.
- Shall determine the combustible materials and hazardous areas present or likely to be present in the work location.
- Shall protect combustibles from ignition by the following:
- Have the work moved to a location free from dangerous combustibles.
- If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.
- See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.
- Shall secure authorization for the cutting or welding operations from the designated management representative.
- Shall determine that the cutter or welder secures his approval that conditions are safe before going ahead.
- Shall determine that fire protection and extinguishing equipment are properly located at the site.
- Where fire watches are required, he shall see that they are available at the site.

Fire prevention precautions. Cutting or welding shall be permitted only in areas that are or have been made fire safe. When work cannot be moved practically, as in most construction work, the area shall be made safe by removing combustibles or protecting combustibles from ignition sources.

WELDING OR CUTTING CONTAINERS

Used containers. No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

Venting and purging. All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding. Purging with inert gas is recommended.

CONFINED SPACES

Accidental contact. When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.

Torch valve. In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

HOT WORK PERMIT: ISSUED BY: _____ ; _____

PERMIT DURATION: ___ PROJECT ___ DAY ___ WEEK ^{print} **X** MONTH sign

ISSUED TO: _____ ; **Date:** _____ ; **Time:** _____

CAMPUS: T W P DPC; **BLDG. /ROOM:** _____ / _____

YES / NO

- ___ ___ Cutting or welding permitted in an area that has been made fire safe.
- ___ ___ All movable fire hazards in the vicinity have been taken to a safe place.
- ___ ___ Guards used to contain the heat, sparks and slag if fire hazards cannot be removed.
- ___ ___ Floor or wall openings or cracks, open doorways and windows protected or closed.
- ___ ___ Fire extinguisher available for instant use.
- ___ ___ Fire watch in areas where other than a minor fire might develop such as around combustible material.
- ___ ___ Floors swept clean of combustible material for a radius of 35'.
- ___ ___ Areas adjacent to walls being worked on are checked for combustibles and any combustibles are either
removed or protected.
- ___ ___ Combustible floors have been kept wet, covered with damp sand or protected by fire resistant shields.
- ___ ___ Welding/cutting done only in areas authorized by management. No welding/cutting in sprinkled building when sprinkler system is impaired or in presence of explosive atmosphere, or in area of storage of readily ignitable material.
- ___ ___ Dusts and conveyor systems that might carry sparks to distant combustibles protected or

shutdown.

- Cutter/welder is trained in safe operation of equipment and the safe use of the process.
- Any on-site contractors advised about flammable material or hazardous conditions of which they may not be aware.

WELDING OR CUTTING CONTAINERS:

- Container thoroughly cleaned and ventilated;
- Any pipe lines or connections to containers disconnected or blanked;
- Warning sign posted to warn other workers of hot metal;
- Appropriate ventilation provided;
- When working in confined spaces a permit has been issued as per 1910.146.

WHEN WORK IS COMPLETED

- Work area has been inspected for any fire sources, fire damage, or potential for fire.
- Reactivated smoke / fire detectors that were disabled because of the hot work.

I verify that the above location has been examined and the necessary precautions have been taken to prevent the outbreak of fire due to Hot Work.

EmployeeSignature(Issued): _____ Date: _____ Time: _____

EmployeeSignatureClosed): _____ Date: _____; Time: _____

Supervisor Signature: _____ Date: _____ Time: _____

APPENDIX C

FACILITIES DEVELOPMENT AND MANAGEMENT

Contractor Safety/Service Provider Acknowledgement Agreement

IAW 29CFR1926

Arizona State University is committed to protecting the health and welfare of students, faculty, staff, visitors, and to the environment. Accordingly, it is important that all members of the ASU community recognize and share this commitment and comply with the environmental, health and safety policies, rules, procedures and regulations governing ASU campus activities.

ASU is also looking to the community, including service providers (see definition below), for cooperative and responsible leadership that will help the University implement a safer environment through safer practices and more sustainable solutions.

Towards this end, it is ASU's expectation that all service providers have the responsibility for environmental, health, and safety issues created or otherwise arising from or related to their work under their contract with ASU.

The service provider shall ensure that its employees are properly identified (e.g. officially issued picture ID and/or badge) and have been instructed about the boundaries of their work areas. Service providers will comply with all applicable local, state, and federal rules and regulations, including those related to the Occupational Safety and Health Act of 1970.

Ensure all service providers have completed the ASU Service Provider Acknowledgement Form and return a signed copy to EHS at PO Box 876412 Tempe, AZ 85287-6412 or FAX 480.965.0736. For all service providers, ASU is providing a [general guidelines manual](#) concerning conducting work on ASU Job Sites that may be accessed from ASU's EHS website.

SERVICE PROVIDER -- refers to any individual, company, or corporation who is hired by ASU or an ASU employee to provide construction, repair or maintenance related services on ASU property or facilities.

Arizona State University is committed to protecting the health and welfare of students, faculty, staff, visitors, and to the environment. Accordingly, it is important that all members of the ASU community recognize and share this commitment and comply with the environmental, health and safety policies, rules, procedures and regulations governing ASU campus activities.

ASU is also looking to the community, including service providers, for cooperative and responsible leadership that will help the University implement a safer environment through safer practices and more sustainable solutions.

Towards this end, it is ASU's expectation that all service providers have the responsibility for environmental, health, and safety issues created or otherwise arising from or related to their work under their contract with ASU.

The service provider shall ensure that its employees are properly identified (e.g. officially issued picture ID and/or badge) and have been instructed about the boundaries of their work areas. Service providers will comply with all applicable local, state, and federal rules and regulations, including those related to the Occupational Safety and Health Act of 1970.

For all service providers, ASU is providing a few general guidelines in this document concerning conducting work on ASU Job Sites.

SERVICE PROVIDER -- refers to any individual, company, or corporation who is hired by ASU or an ASU employee to provide construction, repair or maintenance related services on ASU property or facilities.

GENERAL SITE INFORMATION

Failure on the part of the service provider to comply with the following requirements may result in termination of the contract with ASU. Prior to working in areas where site-related hazards might be present, all service providers shall consult with the Project Manager for more information.

- Permission must be obtained from the Project Manager whenever it is necessary for personnel to go to the roof of any building.
- Lunch and break areas are to be coordinated through the Project Manager.
- Pedestrians should use walkways where provided. Shortcuts shall not be taken through operating areas.

- Explosives of any type are prohibited on the site with the **exception of Powder Actuated Tools**.
- Barricading of ASU streets (contacting ASU Police at 480-965-3456 is required prior to any barricades being set).

PARKING -- Park in specified areas only. The proper parking permit must be secured from ASU Parking and Transit Systems (PTS) and displayed appropriately in vehicles. Contact the Project Manager and/or at PTS at 480-965-9297. Do not block entrance ramps, trash docks, and truck doors, etc.

DISCLOSURE OF ASBESTOS, LEAD AND/OR OTHER HAZARDOUS MATERIAL

Arizona State University is informing all service providers of the potential presence of asbestos, lead and or other hazardous materials at ASU. Depending on the location(s) of your work, there may be one or more of these materials present. It is your responsibility to discuss the full scope of your work with the CPMG Project Manager or designee so that you have the appropriate information related to asbestos, lead and/or other potentially hazardous materials. If the scope of your work changes, contact your CPMG Project Manager or designee before proceeding to determine if the change in scope may involve the potential disturbance of asbestos, lead and/or other hazardous materials.

Should there be changes to your scope of work affecting areas outside of your original contract area, or, if unforeseen or unidentified suspect materials be uncovered or discovered during your work, you are required to stop all work which would impact those materials until they can be evaluated and tested by ASU. Immediately upon discovery of any unidentified or unforeseen building material, you must notify the CPMG Project Manager to arrange for ASU to evaluate and test the materials.

Prior to your work taking place, inspections for asbestos, lead and other potentially hazardous materials must be (or have been) conducted by ASU, and identified materials (containing asbestos, lead or other hazardous materials) that would be disturbed by your current scope of work will be (or have been) removed or isolated in such a manner as to prevent potential exposure. Please contact ASU CPMG Asbestos Program Manager at 480- 965-7739 to determine if, based on your current scope of work, there are any remaining materials which are or may be present in adjacent location(s), but should not be disturbed.

Your signature on this document acknowledges you received this disclosure and that you had the opportunity to review your scope of work with the CPMG Project Manager or designee.

The **Service Provider Job-Site Safety Information** Orientation document is meant to serve as a guide for the contractor/vendor, any and all of its supervisors, and any and all of its subcontractors during their performance within the scope of work under their contract with ASU. Although the document sets forth certain guidelines and rules of operations on ASU sites, it is not intended to address every potential safety and health issue that may arise during the scope of the contracted work. **IT DOES NOT COVER EVERY POSSIBLE SITUATION.**

While ASU retains the right to periodically review the work of any service provider, its supervisors, or its subcontractors, ASU does not assume responsibility for any issues identified outside of contract compliance.

TEMPE CAMPUS UTILITY TUNNEL SYSTEM

Asbestos exists in the underground utility tunnel system located on the Tempe Campus of Arizona State University. It is your responsibility to discuss the scope of your work with the CPMG Project Manager or designee in order to provide you with any further information related to asbestos issues which may be encountered during any work in the tunnels.

The gravel or earthen flooring material throughout the tunnel system has become contaminated with

asbestos- containing material from historical damage and repair to pipe insulation. Walking on, or other disturbance to, the flooring material may cause entrained asbestos fibers to become airborne.

In addition, asbestos is present in most thermal system insulation applied to steam, steam condensate, and hot water piping. The disturbance of insulation materials is strictly prohibited.

ASU has determined that persons working in the underground utility tunnel system may be potentially exposed to airborne asbestos fibers at or above the U.S. Occupational Safety and Health Administration (OSHA) permissible exposure limit of 0.1 fibers per cubic centimeter (f/cc).

Vendors are advised that airborne fibers which exist in the tunnel areas may be below the minimum length of five microns capable of being detected by analysis using Phase Contrast Microscopy (PCM) analytical techniques. Airborne fibers within the tunnels are detectable using Transmission Electron Microscopy (TEM) methods. Each service provider is responsible for ensuring proper use of personal protective equipment including respiratory protection at all times while working in the Tempe tunnel system.

It is your responsibility to discuss the scope of work conducted within the tunnel system with your employees, or sub-contracted employees, and to provide the appropriate training, personal protective equipment and air monitoring as required by OSHA.

Accordingly, ASU expects each service provider to supplement the provisions contained in the Service Provider Job-Site Information and Guideline document with proper instructions and work practices that, based on knowledge and experience, will help decrease the likelihood of injury to service provider employees, subcontractors' employees, and to others, as well and prevent damage to property and material on ASU sites.

[Service	Provider	Name]
<hr/>		
Street	Address]	
<hr/>		
[City,	Sate	Zip]
<hr/>		

The above service provider certifies that they, any and all of its subcontractor's, or its supervisors, prior to commencing any work on an ASU site, have reviewed and understand the contents of the Service Provider Job- Site Information a n d Guidelines document and/or have attended the Service Provider Job-Site Information a n d Guidelines orientation program produced by ASU Department of Environmental Health and Safety. By having their representative sign and date this document prior to commencing any work, the service provider accepts, and agrees to the provisions of these Acknowledgement Clauses. The service provider is required to provide the original of this signed document to EHS and a copy to CPMG.

[Name]
<hr/>
[Title]
<hr/>
<hr/>

Employer Representative Signature

Date

APPENDIX D

Crane Lift and Landing Plan

ASU Crane and Rigging Critical Lift and Landing Plan

Location of lift or Job name: _____ Date of Lift: _____
 _____ Description of load: _____

Diagram of lift, CAD or computer drawing attached? Yes _____ No _____

Name of person filling out lift plan: _____

<p>Load condition: New _____ Old _____ Wt. Empty _____ was this confirmed Y / N Wt. of contents _____ Wt of rigging. _____ Wt. of ancillary equipment _____ Wt. of anything else attached to crane or load _____ Other _____ _____ Add all weights to determine gross load *Gross load _____</p>	<p>Crane Placement Is foundation capable of supporting crane and anticipated load? Yes _____ No _____ Are there any power lines or other utilities in the lift area? Yes _____ No _____ Are all obstruction identified? Yes _____ No _____ Has the swinging radius of the superstructure been cleared? Yes _____ No _____ Will a dry run with no load on the hook be made? Yes _____ No _____</p>
<p>Type of crane _____ Radius _____ at pick up point _____ Radius at landing if different _____ Gross capacity at pick point _____ Gross capacity at landing point _____ *Subtract gross load from gross capacity to calculate capacity margin. *Capacity margin _____ Percentage of cranes capacity _____</p>	<p>Special considerations Is the lift greater than 75% of the cranes capacity? Yes _____ No _____ Is the lift a multiple crane lift? Yes _____ No _____ Does the lift involve lifting of personnel? Yes _____ No _____ Is this lift with in 20-ft to a live power line? Yes _____ No _____ Is this a lift of an object out of water Yes _____ No _____ If Yes to any Special Consideration is additional documentation required? Yes _____ No _____</p>

<p>Crane configuration:</p> <p>Boom _____ length _____</p> <p>Boom _____ angle _____</p> <p>Radius _____</p> <p>Parts _____ of _____ Line _____</p> <p>Jib or extension used Yes _____ No _____</p> <p>Hoist used: Main _____ Aux _____</p> <p>Line pull _____</p> <p>Outriggers: Yes _____ No _____</p> <p>Crane set up consistent with drawings? Yes _____ No _____</p>	<p>Pre Lift check list:</p> <p><input type="checkbox"/>Crane inspection performed by the operator</p> <p><input type="checkbox"/>Crane Level</p> <p><input type="checkbox"/>Swing area barricaded</p> <p><input type="checkbox"/>Overhead clearance checked and adequate</p> <p><input type="checkbox"/>Rigging inspected</p> <p><input type="checkbox"/>Load clearance to boom and structures adequate</p> <p><input type="checkbox"/>Signalman identified and qualified <input type="checkbox"/> Wind... maximum allowed _____</p> <p><input type="checkbox"/>Traffic</p> <p><input type="checkbox"/>Weather...Lightning</p>
<p>Rigging:</p> <p>Type of slings used: Wire Rope _____ Synthetic _____ Chain _____</p> <p>Capacity of rigging _____</p> <p>Number of slings used _____</p> <p>Shackles used _____</p> <p>Capacity of shackles _____</p> <p>Additional rigging _____</p> <p>Capacity of any additional rigging _____</p> <p>Have all sling angles been taken into account to determine capacity? Yes _____ No _____</p>	<p>Site _____ Supervision: _____</p> <p>Lift _____ Director _____</p> <p>Signal _____ Person _____</p> <p>Crane Name: _____ Operators _____</p> <p>Rigger: _____</p> <p>Rigger: _____</p> <p>Rigger: _____</p> <p>Use additional sheets for larger crews.</p>

ASU Crane and Rigging Critical Lift and Landing Plan

Travel path:
What quadrant will lift start in: _____

What quadrant will lift finish in? _____

Is there a capacity reduction for landing Quadrant?
Yes _____ No _____

Are Tagline handlers required for this lift?
Yes _____ No _____

Are the taglines long enough to control the load thru the entire lift? Yes _____ No _____

Has the travel path for the tagline handlers been cleared?
Yes _____ No _____

What orientation or side does the load need to be placed? Top, bottom, North, South, East, West.

What happens when the load is landed?

Is any welding required? Yes _____ No _____

Is any blocking or shims required? Yes _____ No _____

Does any utility, power, water or gas need to be secured from the load or attached? Yes _____ No _____

Are there any road closers? Yes _____ No _____

Is there a time limit on the lift? Yes _____ No _____

Does the job site have any special job site warnings for crane lifts such as air horns or whistles? Yes _____ No _____

Will special PPE be required for this lift?
Yes _____ No _____ if Yes has it been provided?

Describe the emergency procedures: This is the "what if" plan.
Include emergency landing or weather .
