THE UNIVERSITY OF ARIZONA

Department of Astronomy, Steward Observatory

TRAINING DOCUMENT:

Steward Observatory On-Line Safety Manual: Training for review of the Steward Observatory Safety Manual located at website:

http://www.as.arizona.edu/Resources/safety/safety.html

Level: General Awareness of Safety Policies and Procedures

Frequency: ☐ New Hire

☐ Review

Description: Review of policies and procedures in the Steward Observatory Safety Manual.

Document: Steward Observatory Safety Manual

I have read, understand, and have had the opportunity to ask questions and they have been satisfactorily answered by my Supervisor or a SOSC member regarding **The Steward Observatory Safety Manual.**

Employee Name (Print): _____ **Date:** _____

Employee Signature: _____

Supervisor Signature: _____ **Date:** _____

Work Section: _____

QUESTONS:

Received: _____

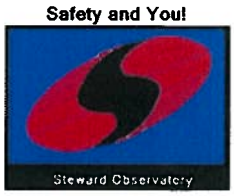
Date: _____

Please submit this completed form to your Supervisor. A copy will be placed in your personnel file.

ENVIRONMENT, HEALTH & SAFETY MANUAL

STEWARD OBSERVATORY

UNIVERSITY OF ARIZONA



Steward Observatory Environment, Health & Safety Manual

This manual was prepared by Dale A. Webb with assistance from Karen Kenagy, Sharon Thomas, Cathi Duncan, Paul Hart and other Steward Observatory Safety Committee Members. It is designed to be an on-line, web based document which may be updated on a quarterly basis. This document may be copied or printed at any time and it will contain a date and version number.

Prepared By:

Dale A. Webb
Safety Manager

Karen Kenagy
Assistant Safety Manager

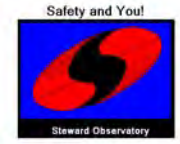
Approver:

Peter A. Strittmatter
Director

Jeffrey S. Kingsley
Associate Director

Approver:

Steven C. Holland
Director
Department Risk Management and Safety



Environment, Health,
& Safety Manual

TABLE OF CONTENTS

TABLE OF CONTENTS

FORMS

APPENDIX

TABLE OF CONTENTS

FUTURE SECTIONS

Site or Telescope Specific

Imaging Technology Laboratory (ITL)

Kitt Peak Telescopes (KP)

Large Binocular Telescope Observatory (LBTO)
To Secure LBTO Enclosure Against Forest Fire
LBTO Forest Fire Contingency Plan
In the Event of Structure Fire within LBTO
Safety Briefing for All Work Performed at LBTO
Telescope Chamber Regulations
Safety Concerns on Mount Graham
Acknowledgment of Safety Procedures
24-Hour Emergency Numbers

Mount Graham International Observatory (MGIO)
MGIO Emergency Response Contingency Plan
MGIO Orientation Package

Steward Observatory Mirror Lab (SOML)
Lifting the Mirror from Hearth to Handling Ring
Furnace to Handling Ring
Tile Removal
Washout
Polishing–Large Optics Generating/Partial Silvering
Integration–Puck Gluing Operation/Spot Painting/Gas Welding
Integration-Cleaning in M-1; Confined Space Welding
Hazard Communication Program
Protective Footwear Policy Approval
Emergency Action Plan

Mount Lemmon Observatory (MLO)
Hantavirus Procedures
Mount Lemmon Fire Prevention

MMT Observatory (MMTO)

Radio Telescopes

TABLE OF CONTENTS

APPENDICES AND FORMS

Applicable Safety Program Elements

Mandatory Safety Programs	Imaging Lab	Kitt Peak	LBT	MGIO	Mirror Lab	MMTO	Mount Lemmon	Radio Telescopes	Sunnyside Coating	Vatican	Steward Main Bldg
Mandatory Safety Programs:											
Accident Recordkeeping	x	x	x	x	x	x	x	x	x	x	x
Asbestos Management Plan							x				
Bloodborne Pathogens Program		x		x							
Confined Space Program			x	x	x						
Electrical Safety Program	x	x	x	x	x	x	x	x	x	x	
Emergency Response/Action Plan		x		x		x	x				x
Fire Prevention Plan	x	x	x	x	x	x	x	x	x	x	x
Forklift Safety Training			x	x	x	x	x	x			x
Hazard Communication Program	x	x	x	x	x	x	x	x	x	x	x
Hearing conservation Program						x					x
Laboratory Standard	x					x					x
Lockout Tagout Program	x	x	x	x	x	x	x	x	x	x	x
Medical Surveillance Program	x			x	x	x			x		x
Respiratory Protection	x	x	x	x	x	x	x		x		x
Used Oil Management Plan		x	x	x		x	x		x		

Applicable Safety Program Elements

General Safety Requirements	Imaging Lab	Kitt Peak	LBT	MGIO	Mirror Lab	MMTO	Mount Lemmon	Radio Telescopes	Sunnyside Coating	Vatican	Steward Main Bldg
Antenna/Telescope Safety		x	x	x		x	x	x		x	x
Back Injury Prevention	x	x	x	x	x	x	x	x	x	x	x
Buses and Shuttle Vehicles		x		x		x	x				
Compressed Gases	x	x	x	x	x	x	x	x	x	x	x
Cryogenic Liquids	x	x	x	x	x	x	x	x	x	x	x
Environmental Protection	x	x	x	x	x	x	x	x	x	x	x
Ergonomics	x	x	x	x	x	x	x	x	x	x	x
Flammable and Combustible Liquids	x	x	x	x	x	x	x	x	x	x	x
Housekeeping	x	x	x	x	x	x	x	x	x	x	x
Laser Safety	x	x	x		x	x		x			x
Machine Guarding/Tools	x	x	x	x	x	x	x	x	x	x	x
Office Safety	x	x	x	x	x	x	x	x		x	x
Personal Protective Equipment	x	x	x	x	x	x	x	x	x	x	x
Safety Signs and Placards	x	x	x	x	x	x	x	x	x	x	x
Two-Person Rule	x	x	x	x	x	x	x	x	x	x	x
Vehicles, Parking and Seat Belt Usage	x	x	x	x	x	x	x	x	x	x	x
Visitors			x	x	x	x					x
Walking Working Surfaces/Ladders/Scaffolds	x	x	x	x	x	x	x	x	x	x	x

Applicable Safety Program Elements

Mandatory Safety Training	Imaging Lab	Kitt Peak	LBT	MGIO	Mirror Lab	MMTO	Mount Lemmon	Radio Telescopes	Sunnyside Coating	Vatican	Steward Main Bldg
Welding, Cutting, Heating	x	x	x	x	x	x	x	x	x	x	x
Working at Elevation		x	x	x	x	x	x	x		x	x
Winter Mountain Travel		x	x	x		x	x	x		x	
Fleet Safety	x	x	x	x	x	x	x	x		x	x
Chemical Safety	x	x	x	x	x	x	x	x	x	x	x
Significant Lifts		x	x	x	x	x	x	x	x	x	x
Safety Training	x	x	x	x	x	x	x	x	x	x	x
Crane Safety		x	x	x	x	x	x	x	x	x	x

Steward Observatory
Directors Office

THE UNIVERSITY OF ARIZONA
TUCSON ARIZONA

933 N. Cherry Ave.
Tucson, Arizona 85721-0065
(520) 621-2288
Fax: (520) 621-1532

HEALTH AND SAFETY POLICY
February 27, 2013

The mission of the University of Arizona is to "discover, educate, serve, and inspire." The Department of Astronomy and Steward Observatory supports this mission by pursuing world leading astrophysical research and sharing the knowledge we gain through our education and outreach efforts. We help everyone understand the Universe in which we live. We have been and will continue to be successful in our efforts because of the dedication, passion, and skill, that the employees of the Department of Astronomy and Steward Observatory bring to our efforts every day. It is our obligation to ourselves and to each other that all of us are able to carry out our work in a safe environment and without negatively affecting our health. This not only protects the health of our individuals, but of our organization as well.

The purpose of this policy statement is to highlight the importance we attach to ensuring that proper safety and health conditions are maintained throughout Steward Observatory.

The Department of Astronomy and Steward Observatory are committed to:

- Promote a work environment in which all employees are involved and have a sense of ownership in the importance of safe and healthy operations.
- Promote the philosophy that safety is a priority with everything that we do.
- Promote an awareness and mitigation of known risks to people, property and the environment.
- Integrate safety, health and environmental considerations into project planning, design, construction and operations to minimize harm or loss.
- Enable compliance with University, State, and Federal laws, regulations, and policies regarding health and safety.
- Provide adequate training that addresses the safety and health responsibilities of all personnel.
- Recognize, reward and reinforce our safety, health and environmental achievements, innovations, and behaviors.

To help us meet these commitments, we:

- Charge all employees with the responsibility and accountability for Health and Safety in their area.
- Appoint Karen Kenagy and Dale Webb as "Safety Representatives" for the Observatory. They will report for this aspect of their responsibilities to the Associate Director for the Observatory.
- Establish a Safety Committee, co-chaired by Karen and Dale, with active representatives from each major project or sub-unit of the Department and Observatory, with the charge to help identify issues or concerns that need to be addressed and to share safety knowledge, experience, and training throughout the Department and Observatory.
- Will ensure that regular safety inspections are carried out and any resulting concerns are addressed to ensure compliance with our safety and health policies.

Safety Committee members will help develop and maintain a Health and Safety Manual outlining appropriate safety rules and procedures and promote these best practices through a Safety Awareness Program.

We expect all Department/Observatory members will work to ensure that the work environment for research, teaching, and outreach programs at Steward Observatory is safe and healthy.

Buell T. Jannuzi
Director

Jeffrey S. Kingsley
Associate Director

The Steward Observatory has published a Director's Statement that indicates the Observatory commitment to ensuring a workplace that is as safe and healthy as reasonably practicable and that all relevant contractual and statutory requirements shall be complied with. This declaration provides a framework for the management of health and safety and indicates relevant objectives.

Steward Observatory is committed to excellence in the areas of environment, safety, and security (ES&S). This commitment is an essential part of our business. Creative and cost-effective ES&S solutions are necessary for our long-term success. Meeting this commitment is a responsibility shared by everyone, including contractors and third parties. High standards of ES&S performance shall be directed by the following principles:

Commitment - All employees understand the need for and demonstrate a strong commitment to high standards of ES&S performance.

Build Trust - The Observatory conducts its operations in a manner of building trust on ES&S issues with its employees, government, and the public. We recognize and respond to any legitimate community concerns about the environmental and health safety impact of our programs.

Accident Prevention - All employees strive for the goal of no accidents, injuries, unsafe work practices, or conditions.

Reduction of Emissions/Releases - Reduction and prevention of waste and emissions/releases are among the objectives of all operations. Reuse and recycle materials when it makes good economic and environmental sense to do so. Consider possible environmental impact when making decisions, including those concerning facilities management and construction projects.

Emergency Preparedness - Emergency preparedness is a vital function and is the responsibility of management and supervision at all levels.

Compliance - The Observatory complies with all applicable environmental, health, and safety laws and regulations.

Training/Education - The Observatory proactively assures that employees are adequately trained and educated on ES&S issues. We limit occupational injuries and illnesses by emphasizing safety education and safe work practices for all employees.

Measurement of Performance - ES&S performance are measured and communicated company-wide. Compliance reviews and audits are periodically conducted.

Communication - The Observatory provides appropriate and timely information about its ES&S commitments, responsibilities, and achievements to its employees and the public, and participates in appropriate industry-sponsored ES&S initiatives and programs.

GENERAL

The Health and Safety Program, with all its elements, is administered by the Safety Organization, which consists of one or more Safety Representatives appointed by the Associate Director for Administration and a Steward Observatory Safety Committee. This Safety Organization, along with the U of A Department of Risk Management & Safety (RM&S) serves as an advisor to assist the line management and employees in fulfilling their requirements. All safety plans, procedures, equipment requirements, training, and program audits are subject to approval by the Associate Director for Administration. Implementation of the safety program is a line responsibility. The ultimate responsibility for safe operations resides with each Telescope and Laboratory Director or Manager and they are responsible for the following.

1. Implementation of the Steward Observatory and University of Arizona Safety Policies.

2. The conduct of a safety program suitable for his or her area of responsibility.

3. Providing the Associate Director for Administration and/or his Safety Representative(s) with an assessment of the level of risk associated with their operations.

4. Ensuring that all necessary training has been provided prior to work assignment.

5. Providing all necessary safety equipment.

6. Selecting and employing work practices to reduce potential for accident or injuries.

7. Supervising staff performance to ensure that required work practices are employed.

8. Arranging appropriate medical attention for employees in the event of an injury.

9. Promptly reporting any accidents, injuries or near misses, according to established procedure.

ALL EMPLOYEES

Each individual is responsible for performing assignments in a manner that will not endanger themselves or their fellow employees. Each employee is responsible for:

1. Following all of the Steward Observatory safety policies, programs, and procedures.

2. Utilizing all safety equipment in the proper manner.

3. Promptly reporting all unsafe conditions to their supervisor.

4. Promptly reporting all work related injuries, illnesses, and near misses to their supervisor.

5. Promptly seeking appropriate medical attention when injured on the job.

SAFETY REPRESENTATIVE

The Safety Representative(s) are appointed by the Associate Director for Administration to assist with the development and implementation of the Steward Observatory Safety Program. Their responsibilities include the following:

1. Assist with accident investigation and recordkeeping.

2. Conduct periodic safety audits/inspections.

3. Administer the Observatory safety programs and new employee orientation programs.

4. Organize Quarterly Safety Meetings and other safety meetings as required.

5. Assist in the preparation and review of safety plans.

6. Act as liaison between management and the Safety Committee.

7. Represent the Observatory in visits or investigations by outside government agencies and insurance agencies.

8. Be responsible for conducting or overseeing all safety training, safety footwear and eye wear programs.

9. Review all plans for new construction or renovation to ensure conformity with appropriate regulations and guidelines, when asked to do so by RM&S or Steward Observatory Management.

The Safety Representative has the authority to stop any work activity if, in his or her judgment, continuation of such activity constitutes an imminent threat to personnel, site equipment, or property.

STEWARD OBSERVATORY SAFETY COMMITTEE

The Safety Committee is the mechanism for employees to voice concerns or observations on safety-related issues to the Observatory management. It is intended that there be a Safety Committee Member from each department or organization within the observatory. The Safety Committee Members will be available to assist in safety Inspections, attend scheduled meetings, help maintain a Safety Awareness Program, and be an advisor to management on safety issues. In addition its members shall:

1. Meet periodically (no less than four times per year).

2. Post the provided Quarterly Safety Meeting minutes on area Safety Bulletin Boards to assure their availability to all employees and assure that each member of their department or organization has read the Safety Manual as it becomes available.

3. Review all safety documentation and assist in the development of safety policy and safety procedures, including a Steward Observatory Safety Manual.

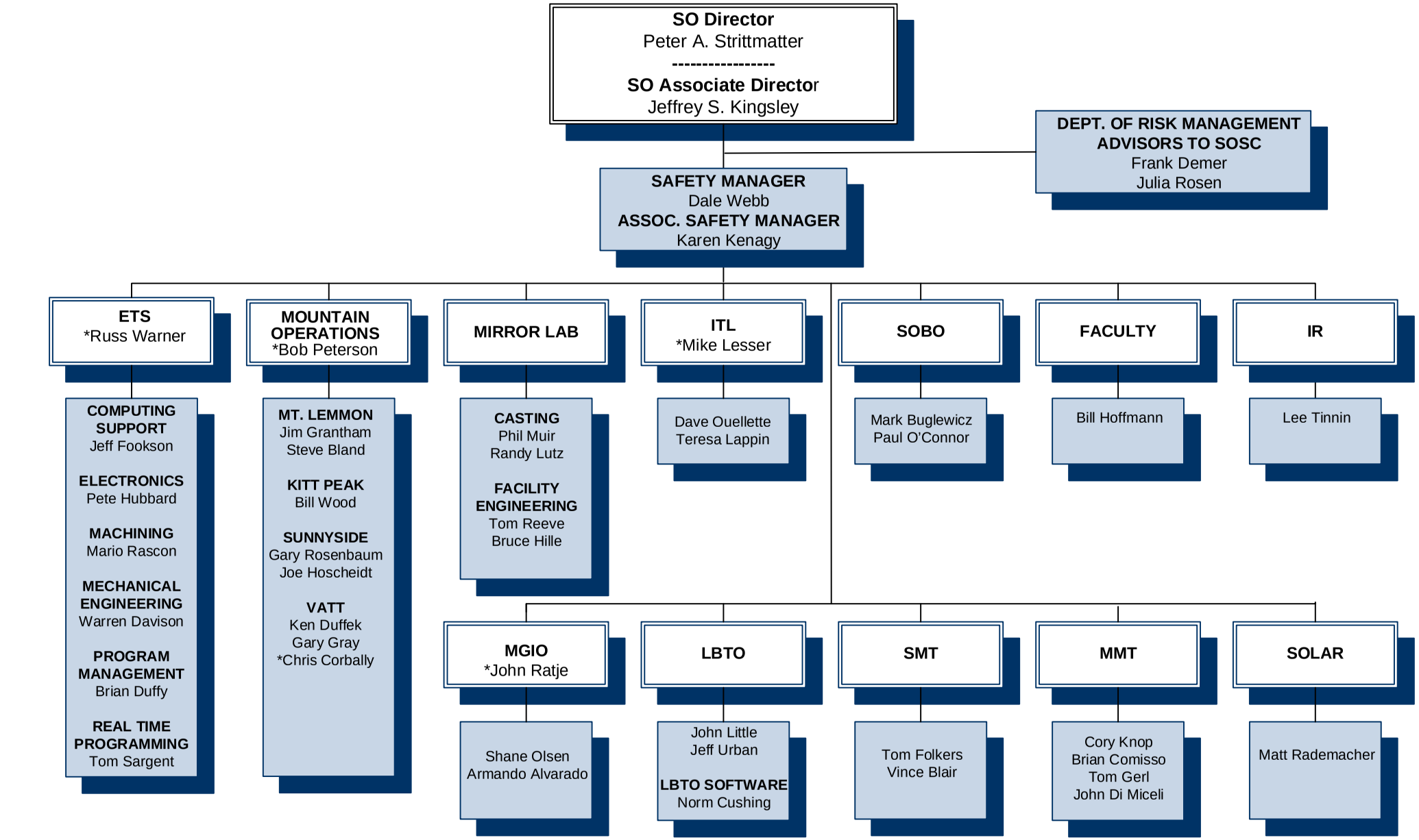
OUTSIDE CONSULTANTS

The Observatory may, as needed, recommend the use of “expert” outside consultants to assist in determining safety policy.

CONTRACTORS

Contractors on University/Observatory property are expected to take all reasonable precautions in the performance of the work under his/her contract to protect the health and safety of employees and of the public and to minimize danger from all hazards to life and property and will comply with all health, safety and fire protection regulations and requirements (including reporting requirements) required by Federal, State or local authorities.

Steward Observatory
Safety Management System Members



* = active participant

Last Updated: 2/8/11
Version 2

An accident is an unexpected consequence to an event resulting in personal injury or property damage.

CATEGORIES OF ACCIDENTS

Categories of accidents are as tabulated below:

Personal Injury - Any personal injury or occupational illness involving a Steward Observatory employee, visitor, or member of the public due to an accident associated with the operation of the Observatory.

A. Injuries that are fatal or imminently fatal.

B. Injuries that are disabling and permanent, or require hospitalization.

C. All other injuries.

Near Miss - Any accident which had the potential for personal injury or occupational illness involving persons at or near the scene of the accident. Or, any accident which could have caused personal injury or occupational illness if any personnel were at or near the scene of the accident.

Property Loss - Any accident, not in one of the above categories, which involves a property loss or damage to any UA property and is deemed worthy of documentation by an Observatory Safety Representative. Property losses greater than $10,000.00 must be reported to Risk Management & Safety (RM&S) within one working day of the discovered loss. Property losses less than $10,000.00 must be reported within 10 working days of the discovered loss.

Public Interest - Any accident which is likely to give rise to inquiry by the public or the news media. Where a Public Interest accident is declared, all employees should immediately be notified and advised on communication with the news media. A public spokesperson should be appointed and all statements and information issued through that person. All accidents in this category, which may also fit another category, shall be classified as such by the Associate Director of Administration.

RESPONSIBILITY FOR NOTIFICATION

All category A and B accidents shall be investigated immediately by an Observatory Safety Representative in cooperation with U of A RM&S, the Associate Director for Administration and the Telescope or Laboratory Director or Manager involved. In

addition, the Safety Representative shall appoint an Investigating Committee. The Chairman of the Investigating Committee shall issue a final written report. The written report prepared by the Investigating Committee shall be distributed to the Associate Director for Administration, RM&S, the Steward Observatory Business Manager and other appropriate personnel.

All other personal accidents shall be investigated by the Safety Representative and the Telescope or Laboratory Director or Manager. If deemed necessary, the Safety Representative will appoint an Investigating Subcommittee of the Safety Committee. The Safety Representative will chair this committee and issue a final written report. The written report prepared by the Investigating Subcommittee will be distributed to the Associate Director for Administration, RM&S, the Steward Observatory Business Manager and other appropriate personnel.

The Safety Representative and appropriate supervisor shall investigate any property damage and near-miss accidents deemed appropriate. Other personnel as needed will aid the Safety Representative.

For all categories it is prudent to assume that the accident will at least be a valuable learning experience and any supervisor on hand should request, where practical, a photographic record.

RESPONSIBILITY FOR INVESTIGATING

A Supervisor's Report of Injury/Illness Form must be filed with RM&S for every employee injury accident within 24 hours of the occurrence and it shall include the signature of the injured employee's supervisor. The supervisor of the person or area involved in the accident is responsible for completing the report and giving copies to the Safety Representative. The Safety Representative shall give copies to the Associate Director for Administration and the Steward Observatory Business Manager. Copies of the Supervisor's Report of Injury/Illness Form and Near-Miss Form are available in the appendix of this manual and on the RM&S website.

http://risk.arizona.edu/forms/SupervisorsReportofInjury06-05b.doc

In the event of a fatality or incident requiring immediate medical treatment, the supervisor must report the accident immediately via telephone call to State of Arizona Risk Management (1-800-837-8583), via phone, e-mail or text message to the Associate Director for Administration, RM&S, the Safety Representative(s) and the Steward Observatory Business Manager.

All accidents should be reported, since there may be unforeseen medical complications.

Completing a Near-Miss FYI Report is at the discretion of the Safety Representative/Supervisor/Employee for a near-miss accident.

RESPONSIBILITY FOR EXTERNAL REPORTING

Any employee who knows of an unsafe condition or has witnessed an unsafe act is responsible for reporting the condition or act to the Safety Representative.

Motor vehicle accidents occurring on public highways involving property damage or personal injury are to be reported to the State Police and/or the Local Police. If University of Arizona vehicles are involved, reports must be filed with the University of Arizona Motor Pool. This should be coordinated with the Steward Observatory Business Office. **If U.S. Government vehicles are involved, reports must be filed with the GSA Motor Pool as well.**

Driving citations received while driving on authorized University business must be immediately reported to that person's supervisor. Any actions (citations, etc.) on or off work duty that change the driver's status per the University's Fleet Safety Policy must be immediately reported to that person's supervisor. Supervisors must report these incidents to RM&S. The University Fleet Safety Policy can be found at: http://risk.arizona.edu/fleetsafety/index.shtml.

For the safety of all employees, it is essential that each employee be motivated to work and to behave in a safe manner. It is up to each supervisor to provide this motivation. Part of this motivation will come with a consistent response from management to unsafe actions and violations of safety regulations.

Steward Observatory requires strict compliance with this manual and established work procedures. Failure to comply may result in disciplinary action. The following are guidelines for handling such situations:

1. Any supervisor, lead man, or journeyman responsible for the work of others, on witnessing an unsafe act must react immediately, without consultation with higher authority. His or her action will be limited to correcting the infraction, eliminating the hazard, and appropriate counseling of the offender. A report of the incident must be made to that person's supervisor.

2. Each Manager or Supervisor, upon notification of an unsafe act by one of his or her employees, has the responsibility to follow up and determine if discipline is warranted under the guidelines established in Policy 403.0 in the Human Resource Classified Staff Manual. For much more information and the official University of Arizona documentation and procedures on this subject please go to: http://www.hr.arizona.edu/09_rel/clsstaffmanual.php

The Steward Observatory Health and Safety Program consists of several interrelated components. These individual programs, together with the policies and procedures outlined in this manual and on the Risk Management & Safety website, Radiation Control website, and Facilities Management Fire Safety website comprise the entire health and safety program. Specifically, the interrelated safety program policy statements are detailed in the following Sections, Site or Telescope Specific Procedures, including the Appendices and Forms as well as the information provided in the RM&S website. In fact, in all cases, the U of A Department of Risk Management & Safety will have final say over any safety matter.

The safety provisions in this manual and in the specific safety procedures of each site are based on Federal and State regulations and on industry consensus standards. This manual is intended to provide employees with minimum acceptable standards for the protection of life and health. Employees who want more details on specific safety provisions are encouraged to contact the Site Safety Representative for additional information.

For much more information and the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/

Steward Observatory maintains records of all information required by 29 CFR 1910.1001 and information otherwise known concerning the presence, location and quantity of asbestos containing material, ACM, in all facilities. The Observatory will:

1. Provide, at no cost to employees who perform housekeeping operations in an area containing ACM an annual asbestos awareness-training course.

2. Make a copy of 29 CFR 1910.1001 and its appendices readily available without cost to all affected employees.

3. Provide, upon request, all materials relating to the employee information and the training program to appropriate regulatory officials.

Warning labels must be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers. Labels are placed in areas noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. Signs may be posted instead of labels.

Provide and display warning signs at each regulated area and approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

The most effective way to protect workers exposed beyond the permissible exposure limit is to minimize exposure using engineering controls and good work practices.

An Asbestos Regulated Area is an area where employees may be exposed to airborne concentrations of fibers of asbestos. Each person entering a Regulated Area must be supplied with and required to use a respirator. Steward Observatory will supply respirators at no cost to the employee, and ensure they are used.

The Observatory will institute a medical surveillance program for employees who are or will be exposed to airborne concentrations of fibers of asbestos at or above the time weighted average, TWA, and/or excursion limit, consisting of initial and periodic (at least annual) examination. All medical examinations and procedures will be performed by or under the supervision of a licensed physician, and provided without cost to the employee at a reasonable time and place.

If an employee discovers a new deposit of something that could be asbestos and it is not on the existing records, he or she shall notify his or her supervisor, who in turn will call Risk Management and Safety (RM&S) to examine the site. RM&S will determine the best course of action which may be to call a professional firm to handle the situation, or may be to follow certain guidelines and abate the problem.

For much more information and the official University of Arizona documentation and procedures on this subject, please go to:
http://risk.arizona.edu/healthandsafety/asbestos.shtml.

The University of Arizona blood borne pathogens program has been developed in accordance with 29 CFR 1910.1030. All personnel who may come in contact with blood or other body fluids as part of their duties shall be familiar with the Exposure Control Plan and shall at all times practice Standard or Universal Precautions.

All human blood and certain human body fluids are treated as if known to be infectious for the human immunodeficiency virus, the Hepatitis B and C Viruses, and other blood borne pathogens.

Training and annual refresher training on the Blood borne Pathogen Standard shall be furnished to all employees who have been determined to be covered by this standard.

Personal protective equipment shall be provided to affected employees at no cost to the employee, as well as Hepatitis B vaccinations, as required. Personal protective equipment provided to these employees shall be worn in all situations where there is a possibility exposure to human blood and/or body fluids.

For much more information and the official University of Arizona documentation on this subject, please go to http://risk.arizona.edu/healthandsafety/bloodbornepathogens.shtml

For information on training, please go to: http://risk.arizona.edu/training/index.shtml

To view the OSHA website on this subject, please go to:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051

The Site Safety Representative will ensure that all potential confined spaces at each telescope or laboratory are evaluated in accordance with the OSHA regulation, 29 CFR 1010.146. A Confined Space Program will be implemented for all areas where there is a need to perform any activity within a Confined Space as defined by the OSHA standard. The Confined Space Program will be reviewed annually and as regulations require.

Confined spaces may have limited openings for entry and exit, unfavorable natural ventilation and not designed for continuous worker occupancy. General examples include: pits, septic tanks, storage tanks, telescope cells, vessels, vaults, and furnaces. Specific examples in Steward Observatory include the pit under the test tower in the Mirror Lab and the interior of the mirror cell on the LBT.

Steward Observatory will inform employees of the existence and danger posed by the permit-required confined space, or PRCS by posting danger signs, conducting awareness training, or by other means. Areas listed on the Steward Observatory Confined Space inventory are required to be posted with a sign that reads, “DANGER – PERMIT REQUIRED CONFINED SPACE – DO NOT ENTER.”

All Confined Space authorized personnel are expected to take an active role in maintaining a safe Confined Space Program. Each individual entering or attending a Confined Space shall be trained regarding the hazards associated with Confined Space entry. Training shall be provided prior to performing assigned duties that require a Confined Space entry, or prior to a change in duties. Untrained employees will be prevented from entering the PRCS.

Those spaces meeting the criteria of a Confined Space and having a known potential to contain hazardous atmospheres will be designated as a PRCS. Untrained personnel are *not* permitted entry into areas meeting OSHA criteria for confined spaces until pre-entry procedures demonstrate that special training is not required. Procedures for entry without the need for a written permit or attendant into certain confined spaces are detailed in the Confined Space Program.

In the event of a need for Confined Space rescue, only appropriately trained and authorized personnel may enter a confined space for rescue purposes. Training for rescue and emergency services must be in accordance with 1910.146(k). This section requires annual rescue simulation exercises, CPR, and first-aid certification.

For much more information on the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/healthandsafety/confinedspace.shtml .

For the protection of Steward Observatory employees, the following guidelines regarding electrical safety have been developed. An electrical safety program must be implemented in accordance with the OSHA standard, Subpart S, for workplace safety when dealing with electrical safety. This OSHA website is shown below for your convenience. Further, OSHA 29 CFA 1910.333 requires that safe work practices be utilized when working on or near exposed energized parts. And, Steward Observatory employees are to comply with Section 1910.132(d) which requires employers to assess the workplace to determine if hazards are present, and, if present, must select proper personal protective equipment to protect employees and must provide proper training for the use of the equipment.

All electrical wiring and equipment shall comply with the National Electric Code (NEC).

Below are some of the general work rules established by Steward Observatory for its employees.

1. Employees are not permitted to work near any part of an electric power circuit that the employee could contact in the course of work unless the employee is protected against electric shock by de-energizing the circuit, by grounding it, or by effectively guarding it. (Lockout-Tagout)

2. In areas where the exact location of underground electric power lines is unknown, employees using tools which could come in contact with an underground power line shall be provided with insulated gloves. If possible, an expert from the power company will be called to assure no lines are present.

3. Working spaces, walkways and similar locations must be kept clear of electrical cords to eliminate hazards.

4. Worn or frayed electric cords shall not be used. Additionally, cords shall not be fastened with staples, hung from nails, or suspended by wires.

5. Plugs equipped with grounding prongs must have the prong in place.

6. Only trained persons shall perform work incidental to their area of expertise on circuits of 30 volts AC or 50 volts DC or greater. By definition a Qualified Person is someone familiar with the construction and operation of the equipment and the hazards involved, and who can demonstrate knowledge of the technical and safety issues in the use and maintenance of the equipment involved.

7. The two-person rule shall be in effect for work on these circuits and Lockout-Tagout procedures used.

8. On call-ins, the two-person rule will be in effect. If the call-in pertains to power loss to any portion of a building or site, a site electrician must be present in order to restore power to the site, especially if entrance to a high-voltage area is required.

9. Non-grounding adapters are not to be used without approval from the site electrician.

10. When high voltage equipment is being operated or is present, "High Voltage" signs must be displayed. High voltage is defined for this purpose as voltage above 240 volts AC.

11. Do not open or close an electrical switch unless you are familiar with its purpose.

12. All new wiring installations must be made or reviewed by a qualified electrician.

13. Ground Fault Circuit Interrupts (GFCI) must be utilized with power equipment such as pumps and power tools if they are to be utilized when working around water or on outdoor applications.

14. No employee should attempt to repair or use defective electrical fittings. Users should inspect all electrical equipment for hazards which could cause serious harm or death before use.

15. Each telescope operation or department is responsible for properly training and appointing their Qualified Persons who are able to perform electrical work.

To view the OSHA website related to electrical standards please go to: http://www.osha.gov/SLTC/electrical/standards.html

For additional information and the official University of Arizona documentation please go to: http://risk.arizona.edu/healthandsafety/lockout-tagout.shtml

The University of Arizona has a comprehensive emergency action plan that defines employee responsibilities in the event of personal injury, radiation spill, chemical spill, biological spill, fire, bomb threats & suspicious objects, suspicious or threatening parcels and letters, etc. The U of A documentation of this plan should be required reading for all employees and should be posted permanently on all safety bulletin boards.

The Steward Observatory emergency response/action plan addresses emergencies that may reasonably be expected in the workplace, fulfills the requirements listed in OSHA1910.38 and provides the following kinds of information:

1. Assignment of emergency planning tasks;
2. A site map of each building or facility showing exits and safety equipment;
3. A list of potential workplace emergencies;
4. A workplace summary that identifies chemicals and hazardous materials and the location of MSDS sheets;
5. Escape procedures and emergency escape route assignments;
6. Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
7. Procedures to account for all employees after emergency evacuation has been completed;
8. Rescue and medical duties for those who are to perform them;
9. The preferred means of reporting fires and other emergencies; and
10. Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.

Further, the Observatory will ensure that all of its facilities have an employee alarm system which complies with OSHA 1910.165, and before implementing the emergency action plan, the observatory will designate and train a sufficient number of employees to assist in the safe and orderly evacuation of employees.

In addition, the Observatory will have a Fire Prevention Plan which includes the following:

1. A list of major workplace fire hazards and their proper handling and storage procedures and the type of fire protection equipment or systems which can control them;

2. Names or regular job titles of those personnel responsible for maintenance of equipment and systems installed to prevent or control ignitions of fires; and

3. Names or regular job titles of those personnel responsible for control of fuel source hazards.

Also, the Observatory shall control accumulations of flammable and combustible waste materials and residues so they do not contribute to a fire emergency. And last, the Observatory shall provide proper training of employees and maintenance of equipment designed to control fires.

For much more information and all of the official University of Arizona documentation on this subject please go to: http://risk.arizona.edu/emergencyprocedures/index.shtml

See Appendix: Emergency Operations Plan for the different Steward Observatory Sites listed below

- Imaging Technology Laboratory (ITL)
- Kitt Peak National Observatory (KPNO)
- Mt. Graham International Observatory (MGIO)
- Mt. Lemmon Operations (MLOPS)
- MMT Observatory (MMTO)
- Steward Observatory Building (SO)
- Steward Observatory Mirror Lab (SOML)
- Sunnyside Facility

OSHA's Fire Prevention Plan (FPP) regulation found at 29 CFR 1910.38 and Subpart L requires specific program elements. The Steward Observatory Fire Prevention Plan addresses fire emergencies reasonably anticipated to occur through all phases of the construction, repair alteration, or demolition at our site. The FPP is in place to control and reduce the possibility of fire and to specify the type of equipment to use in case of fire. The plan addresses the following:

1. Workplace fire hazards and their proper handling and storage procedures.

2. Potential ignition sources for fires and their control procedures.

3. Type of fire protection equipment or systems.

4. Personnel responsible for maintenance of equipment and systems installed to prevent or control ignition of fires and for control of fuel-source hazards.

5. Emergency evacuation plans for orderly egress.

Under this plan, our employees will be informed of the plan's purpose, preferred means of reporting fires and other emergencies, types of evacuations to be used in various emergency situations, and the alarm system. The plan is closely tied to our Emergency Action Plan where procedures are described for emergency escape procedures, procedures to account for all employees after emergency evacuation has been completed, and rescue and medical procedures. Please see the Emergency Action Plan for this information.

Flammable or combustible materials may not ignite on their own without an external source of ignition. The following procedures are used to control known ignition sources:

1. Flammable materials are kept separate from any possible heat sources.

2. Welding activities are confined to the outside when possible, and to the welding shop. When welding is required, a proper fire watch or fire detection system is established along with the necessary extinguishing material. See Section 40 Welding, Cutting, and Hot work.

3. Fuel, oil and other stored flammable products are kept in bulk storage containers designed to minimize the hazard of fire, and are controlled.

Once hazards are evaluated and equipment is installed to control them, that equipment must be monitored on a regular basis to ensure it continues to function properly. Strict

guidelines for maintaining the equipment are followed, as set forth by National Fire Protection Association and OSHA.

Regular waste disposal and adherence to our Recycling Program help to eliminate the accumulation of waste materials, combustible paper and cardboard. It is each employee's responsibility to ensure that his/her work area is as clean of these types of materials as possible.

Training will be provided for each employee who volunteers to use fire prevention equipment. Employees shall not use fire-prevention equipment without appropriate training. Employees must demonstrate an understanding of the training and the ability to use the equipment properly before they are allowed use of the equipment. All untrained personnel are expected to immediately evacuate the building upon the alarm.

In anticipation of the discovery of an uncontrolled fire, all employees should become familiar with the layout of the site, exit pathways, and the location of fire extinguishers. Emergency lighting should be installed in all buildings to illuminate exits and means of egress. Fire extinguishers need to be checked monthly and tested annually in accordance with an established schedule. All fire extinguishers at each site shall be appropriate for the type of fire anticipated.

To view the OSHA website go to:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9726&p_table=STANDARDS

For much more information and the official University of Arizona documentation on this subject, please go to:
http://risk.arizona.edu/emergencyprocedures/fire.shtml
http://risk.arizona.edu/healthandsafety/index.shtml
http://risk.arizona.edu/training/index.shtml

Steward Observatory has established a Forklift Safety Training Program in accordance with OSHA 29 CFR 1910.178. The following information provides the highlights of the safety requirements of the program.

Drivers need to be trained in accordance with Section L of the standard before they operate a lift truck. Not only is it important to know how to professionally operate a forklift, it is vital to know all safety rules of operation. If, at any time, a forklift is found to be in need of repair, defective, or in any way unsafe, the truck must be taken out of service until it is safe to operate. Only a trained and authorized operator is permitted to drive a forklift. A qualified operator is one who has been fully trained, knows the general vehicle design and who has learned safety inspections and safe driving rules. The following "rules of the road" list general guidelines for safe forklift operations.

1. Always keep arms and legs inside the vehicle.

2. Wear protective equipment, when required, such as safety glasses and ear protection.

3. Face direction of travel, keep your mind on what you are doing and never travel forward with the load blocking your view.

4. Pedestrians always have the right of way.

5. Never allow anyone to ride on your forklift. Forks may be used as a lift only with an approved safety platform. An appropriate safety harness and lanyard must be used.

6. Know the position of your forks at all times.

7. Obey speed limits. Avoid sudden braking.

8. Slow at all intersections and always sound the horn at blind ones.

9. Always drive up and back down ramps and inclines. The center of gravity of the forklift is in a more stable position when operated in this fashion.

10. Lift or lower the load only when completely stopped, never when traveling.

11. Cross railroad tracks at an angle, never a right angle.

12. No horseplay is allowed.

13. Keep aware of overhead clearances.

14. Know the load limits of the vehicle.

15. Watch for obstructions or spills which may cause an accident.

16. Make sure the load is balanced.

17. No towing or pushing is allowed with a forklift.

When you leave a forklift unattended and remain within 25 feet of the truck, completely lower the load engaging means (or apparatus), neutralize controls and set the brakes to prevent movement. NOTE: A powered industrial truck is unattended when the operator is 25 feet or more away from the vehicle which remains in his or her view, or whenever the operator leaves the vehicle and it is not in view.

Examine the forklift prior to use. At a minimum, check the fork pins and stops, all cowling, body parts, and tires for wear. Check fuel, oil, and water levels and report any leaks.

For much more information and the official University of Arizona documentation and procedures on this subject please go to:

http://risk.arizona.edu/healthandsafety/poweredindustrialtrucks.shtml

The Occupational Safety and Health Administration (OSHA) established two programs to protect employees who work with hazardous chemicals. The OSHA Laboratory Standard applies to employees involved in the laboratory who use hazardous chemicals, while the OSHA Hazard Communication Standard (or Worker Right-to-Know) applies to all other employees who work with hazardous chemicals. In addition, hazardous materials are classified by no less than three Federal agencies: the Environment al Protection Agency (EPA), the Department of Transportation (DOT), and OSHA. Hazardous waste is regulated under OSHA and EPA.

It is the duty of Steward Observatory employees to adhere to The University of Arizona policies and procedures when it comes to Hazard Communication and all other aspects of chemical safety. The University of Arizona policies give reference to all other applicable OSHA policies. Please go to:

http://risk.arizona.edu/healthandsafety/chemicalsafety.shtml

For dealing with chemical waste:

http://risk.arizona.edu/environmentalcompliance/chemicalwastedisposal.shtml

For dealing with chemical emergencies:

http://risk.arizona.edu/emergencyprocedures/index.shtml

For training in chemical handling:

http://safety.arizona.edu/LCSM/

For safe work practices for chemical fume hoods:

http://risk.arizona.edu/healthandsafety/labchemicalsafety/WorkPracticesforChemicalFumeHoods.pdf

The Steward Observatory Hearing Conservation Program details areas that exceed minimum noise levels as set by The Occupational Noise Exposure Standard (OSHA 191.95) which requires hearing protectors be provided to all general industry employees exposed to an 8-hour TWA of 85 decibels or more. The Site Safety Representative and/or Risk Management & Safety (RM&S) person will conduct a hazard assessment to determine what types of noise control measures are needed. The wearing of hearing protection is mandatory when working in a designated area. Employees are also encouraged to use hearing protection in other noisy areas.

All employees who are required to work in any area where hearing protection is required are required to participate in the Hearing Conservation Program. In addition to wearing hearing protection, these employees are to be given annual hearing tests. RM&S must approve audiograms for individuals who work in noise-hazard areas. The results are analyzed by the test provider to see if the employee has sustained a work-related hearing loss. The test is provided at no cost to the employee.

For much more information and the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/healthandsafety/hearingconservation.shtml

The OSHA website is:
http://www.osha.gov/pls/oshaweb/searchresults.category?p_text=1910.95&p_title=&p_status=CURRENT

Steward Observatory and The Department of Risk Management & Safety have a close working relationship in the area of training. It is intended that all Steward employees be given training in each area of work where there are possible hazards or when it is required under OSHA rules.
Also, the University has a very extensive training program operated by RM&S. For much more information and the official University of Arizona documentation and procedures on this program, please go to:
http://risk.arizona.edu/training/index.shtml

Training is an integral part of the OSHA program and therefore there are many website links to training on the OSHA website. To reach many of these links you may go to http://www.osha.gov/pls/oshaweb/searchresults.category?p_text=Training&p_title=&p_status=CURRENT

In addition to the training programs provided by Risk Management, Steward Observatory has established an on-line training program that allows employees to observe quality training presentations and take tests and get credit for the training received. All employees are encouraged to participate in this activity whenever there is a “free” time slot of 20 to 30 minutes. Employees just need to go to the Steward Observatory web page and click on “Safety” to get to this manual, and all on-line training classes.

In order to give guidance to employees on types of training they should receive, all department supervisors have as a part of their responsibility, the obligation to define training requirements for each classification of employee under their supervision. This responsibility should be a line item in each performance appraisal, and in most cases, the supervisor should also take the training he or she suggests for his or her employees.

The Lockout-Tagout Program is designed to comply with OSHA 1910.147 and covers servicing and maintenance of telescopes, antennas, machines, and other equipment in which unexpected energizing or release of stored energy could cause an injury. The Program establishes the minimum procedures for the control of electrical, mechanical, pneumatic, hydraulic, chemical, or other energy during construction, servicing, and maintenance.

An Energy Control Program is required where an employee is required to remove or bypass a guard, or if an employee is required to place any part of the body in an associated danger zone existing during an operating cycle. The Energy Control Program consists of energy control procedures, employee training and periodic inspections to ensure the equipment is isolated from the energy source and rendered inoperative.

The energy control procedures outline the scope, purpose, authorization, rules, and techniques utilized to control energy. The procedures include the following:

1. Notify the telescope operator or machine operator and any other affected employees in the area of the lockout.

2. Be aware that there may be more than one energy source.

3. Be aware that stored energy must be dissipated or restrained to prevent possible injury. After the lock is in place, verify the isolation of energy by attempting to operate the device or otherwise test for the presence of energy.

4. When repair or service is complete, verify that the area is clear before restarting the equipment.

5. Place the equipment back in service in accordance with the energy control procedures.

6. If more than one employee is working on a locked-out piece of equipment, then each affected employee shall place a lock on the equipment to prevent startup.

7. If a piece of equipment has been locked out and the employee whose lock is on the equipment has left the site, then every attempt shall be made to verify that the lockout was not inadvertently left in place. This must be accomplished before the lock is removed by someone other than the employee that placed the lock.
8. If no contact can be made with the individual, a qualified engineer must inspect the entire situation before the lock can be removed.

Training shall be conducted for authorized and affected employees. Employees, whose work is in the area of energy control procedures, shall be instructed in the procedures and prohibition to remove controls. Retraining will be conducted when there is a change in job assignments, machines, processes, or energy control procedures. The Safety Representative will certify the training has taken place and is up to date. Only authorized employees performing the work shall do lockout. Affected employees shall be notified of the removal of the lockout devices.

For much more information and the official University of Arizona documentation, as well as access to training on this subject, please go to:

http://risk.arizona.edu/healthandsafety/lockout-tagout.shtml

A comprehensive medical surveillance program has been developed by Steward Observatory in conjunction with the existing University of Arizona program described in Section 2.5 of the Laboratory Chemical Safety Manual shown in the hyperlink below. The primary reason for this program is to help to ensure the continuing welfare of each employee exposed to potentially hazardous situations. Specifically, the program is designed to determine their ability to safely wear personal protective equipment, to determine the extent of exposure to hazardous chemicals or situations and to provide medical treatment and advice. All facets of the program have been designed to comply with medical monitoring guidelines presented in the Code of Federal Regulations Parts 1910 and 1926, DOT regulations, and RCRA requirements.

Participation in the program is currently mandatory for personnel who may be required to work around hazardous chemicals or materials. In addition audiograms are required for individuals who are working in high noise areas (over 85db). Depending on the answers to the medical exam, a medical questionnaire and a physical may also be required for respirator use and for employees who work with asbestos or RCF.

These employees shall receive post-offer baseline, annual, and exit examinations as applicable. If exam results indicate that an employee has an unusually high risk if exposed, the Observatory will exclude that person from projects with potential for exposure. Likewise, if results indicate a person's inability to safely work under specific physical conditions or to wear specific protective equipment, then that individual will not be placed in such risk situations. In the event of a worksite accident, failure of personal protective equipment, or evidence that extensive exposure to a hazardous substance has occurred, an incident specific evaluation and possible physical may be provided for the employee based on hazardous exposure information. All routine medical consultations and examinations shall be approved by Risk Management and Safety. For assistance, call 621-1790.

OSHA regulations require that each employee in the program be provided the opportunity of an exit medical examination if the last physical was longer than six (6) months earlier. Risk Management & Safety will schedule an appointment with a local clinic at a convenient time for the employee prior to the termination date. A copy of the results will be mailed to the employee's home address. If the employee fails to report to the clinic for the scheduled examination, the lack of action shall be taken as a declination.

http://risk.arizona.edu/healthandsafety/labchemicalsafety/manual/generallabchemsafetypractices/sectiontwo.shtml

The University of Arizona Department of Risk Management & Safety has a very complete Respiratory Protection Policy that complies with the OSHA Respiratory Protection Standard 29 CFR 1910.134. Steward Observatory, its management and employees are required to comply with The University policy.

For the official documentation on this subject, please go to:

http://risk.arizona.edu/healthandsafety/respiratoryprotection.shtml

and

http://risk.arizona.edu/healthandsafety/personalprotectiveequipment.shtml

and for the OSHA reference, please go to:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=STANDARDS

The Steward Observatory Used Oil Management Plan provides written documentation for used oil records. In addition, the plan details compliance with Environmental Protection Agency (EPA) requirements (found at 40 CFR 279) for used oil generators. The plan outlines a written description of used oil management procedures, disposal methods, and transportation requirements. Steward Observatory adheres to the following practices:

1. Never dump or dispose of used oil in the trash, in sewers, or on the ground.

2. Make sure collection and storage set-up is leakproof, spillproof, and that tanks have lids or are covered to prevent water from entering.

3. Use lockable fills to prevent dumping of materials into the tank when it is not supervised.

4. Maintain collection containers regularly, comply with local fire and safety regulations, and avoid leaks and spills.

5. Label storage tanks "Used Oil."

6. Keep records of used oil sent to recycling.

7. Never mix used oil with any other material. Keep gasoline, solvents, degreasers, paints, and so on, separate to prevent contamination or the mixing of incompatible wastes.

8. Carefully record the amount of used oil placed into and removed from storage devices.

9. Construct secondary containment around drums/tanks with a capacity for 100 percent of the contents of the drums we store; the base of the containment area is sloped so that any spilled oil may be recollected and removed.

10. Equip storage containers with wide-mouth, long-necked funnels to reduce spills during filling.

11. Equip storage containers with a pressure relief valve to reduce pressure build-up, which could cause leaks.

12. Keep the area near the storage devices neat and clean.

13. If there are areas where oil could possibly be spilled, keep a supply of clean up and absorbent materials on hand.

The used oil management standards define a used oil transporter as any person who transports used oil, any person who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Steward Observatory complies with all relevant used-oil regulations, including keeping tracking records of where the used oil is collected and where it will be transported to.

Small quantities of used oil such as vacuum pump oil should be disposed of through the Department of Risk Management & Safety, go to https://web.arizona.edu/~risk/environmentalcompliance/chemicalwastepickupform.php

For much more information and the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/environmentalcompliance/index.shtml and http://www.access.gpo.gov/nara/cfr/waisidx_02/40cfr279_02.html

The Steward Observatory is required to follow the University of Arizona guidelines when disposing of fluorescent & high intensity discharge lamps as they should not be disposed of as regular trash. Most fluorescent lamps contain Mercury (a highly toxic, heavy metal) and HID lamps contain elemental Sodium (which is water reactive). For disposal of these lamps, please call the UA Facilities Management Work Desk at 621-3000 to arrange for pick up and disposal. You will be asked to provide the Bldg. name, room number, contact person and phone number. Your request will be put on a daily log and you should see a response within 24 - 48 hours.

Further, when storing these lamps while awaiting pick up by Facilities, you should store the lamps in a closed container that has a label identifying the box as universal waste (labels are available from Facilities department) and the label should be marked with the first date a lamp was placed in the storage container. Care should be taken so that lamps will not be crushed. In the event of a broken lamp, call facilities if possible so that they can clean the spill with a mercury vacuum. If it must be cleaned immediately, wear a mask and carefully place debris in a waste bucket and call RM&S for disposal as a hazardous waste. For more information and the official University of Arizona documentation on this subject, please go to :http://risk.arizona.edu/environmentalcompliance/lampdisposal.shtml

ADEQ Arizona Department of Environmental Quality
Janice K. Brewer, Governor
Benjamin H. Grumbles, Director

FACT SHEET

What To Do If You Break A Mercury Containing Lamp

February 2010

NOTE: This document is not a substitute for the rules. To properly manage mercury-containing waste lamps as universal waste, you must comply with all applicable provisions in the Arizona Universal Waste Rule (A.A.C. R18-8-273) and the Federal Universal Waste Regulation (40 CFR § 273).

BACKGROUND

Mercury Containing Lamps (lamps) are lighting more homes than ever before, and the Arizona Department of Environmental Quality encourages households to use and recycle them safely. Carefully recycling lamps prevents the release of mercury into the environment and allows for the reuse of glass, metals and other materials that make up a fluorescent light's structure. Lamps contain a very small amount of mercury sealed within a glass housing. They do not pose a health hazard when used and handled properly, however if broken, mercury can escape and pose a hazard to you or the environment. Please consult the following guidelines for cleaning up a broken lamp.

Mercury Containing Lamps, including CFLs, use approximately 20%-25% less electricity, which in turn reduces mercury and greenhouse gas emissions from power generating stations.

WHAT IS A MERCURY CONTAINING LAMP?

Bulb or tube portion of an electric lighting device that is designed to produce radiant energy. Includes, but not limited to, fluorescent [tubular and compact florescent lamps (CFLs)]; high intensity discharge; neon; mercury vapor; high pressure sodium; and metal halide lamps.

BEFORE YOU CLEAN UP: AIR OUT THE ROOM

- Restrict pets and people from the area.
- Open a window and leave the room for 15 minutes or more.
- Shut off forced-air heating/air conditioning system.

WHAT DO YOU NEED?

- Disposable gloves
- Stiff piece of paper or cardboard
- Glass jar with lid or sealed plastic bag
- Sticky tape or damp cloth/paper towel

CLEAN-UP STEPS: HARD SURFACES

1. Wearing gloves, scoop glass fragments and powder into a glass jar or plastic bag.
2. Use sticky tape to pick up any remaining small glass fragments and powder. Wipe the area clean with a damp cloth or paper towels. Place cloth/towels in the glass jar or plastic bag.
3. Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

CLEAN-UP STEPS: CARPET AND SOFT SURFACES

1. If vacuuming the carpet is needed, remove the vacuum bag (or empty and wipe the canister), and put the bag and vacuum debris in a sealed plastic bag. Vacuuming increases the chances of mercury droplets being dispersed into the air.
2. If clothing or bedding materials come in direct contact with broken glass or powder, the material should be thrown away. Do not wash.
3. You can, however, wash materials that have been exposed to mercury vapor, such as the clothing you are wearing when cleaning the broken lamp, as long as that clothing has not come into direct contact with the materials from the broken lamp.
4. Wipe off shoes with a damp cloth or paper towels. Place the cloth/towels in a glass jar or plastic bag for disposal.

Publication Number: FS 10-03

DISPOSAL OF CLEAN-UP MATERIALS

- Immediately place all clean-up materials outdoors in a trash container or protected area for the next normal trash pickup.
- Wash your hands after disposing of the clean-up materials.

FUTURE CLEANING OF CARPETING OR RUG

- The next several times you vacuum, shut off the forced-air heating/air conditioning system and open a window before vacuuming. Leave open for 15 minutes after vacuuming.

WHAT NEVER TO DO WITH A MERCURY SPILL

- Never use a broom to clean up mercury. It will break the mercury into smaller droplets and disperse them.
- Never pour mercury down a drain. It may lodge in the plumbing and cause future problems during plumbing repairs. If discharged, it can cause contamination of the septic tank or sewage treatment plant.
- Never wash contaminated clothing in a washing machine. Mercury may contaminate the machine and/or pollute the environment. Clothing that has come into direct contact with mercury should be disposed.
- Never walk around if your shoes might be contaminated with mercury. Contaminated clothing can also spread mercury throughout the environment.

MORE INFORMATION

For additional information regarding this subject, please contact ADEQ:

Hazardous Waste Inspections and Compliance Unit
Waste Programs Division
1110 W. Washington St.
Phoenix, AZ 85007

(602) 771-4673 or
toll free at (800) 234-5677 Ext. 771-4673

Hearing impaired persons call
ADEQ's TDD line: (602) 771-4829

www.azdeq.gov/environ/waste/index.html

WEB SITES THAT MAY PROVIDE ADDITIONAL INFORMATION

- Energy Star Web site on CFLs:
  www.energystar.gov/cfls
- EPA's Web sites on Mercury and Mercury Containing Products:
  www.epa.gov/mercury
  www.epa.gov/epr/products/mercury.htm
- EPA's Broken Lamps Clean-up Procedures:
  www.epa.gov/mercury/spills/index.htm#fluorescent
- Local Recycling Options for Households:
  www.epa.gov/bulbrecycling
  www.earth911.org

RECYCLING FACILITIES

The following are some options for lamp disposal. Please contact the facility to verify hours of operation. Some organizations may not accept all types of lamps or may charge a small fee. In addition to those listed below, please check with your local Ace Hardware, Home Depot, or Household Hazardous Waste Collection Facility as other possible recycling locations.

IKEA Tempe
2110 W. IKEA Way
Tempe, AZ 85284
(480) 496-5658

Lighting Resources, LLC
1522 East Victory Street, Suite #4
Phoenix, AZ 85040
(602) 276-4278

WM Universal Waste Lamp Tracker, Inc.
10 South 48th Street, Suite #4
Phoenix, AZ 85043
(602) 353-9282

City of Tucson and Pima County
Main HHW Program – Main Facility
2440 West Sweetwater Drive
Tucson, AZ 85705
(520) 888-6947

Hazardous Products Center (HPC)
6770 East Landfill Road
Flagstaff, AZ 86004
(928) 527-9005

All personnel whose work requires them to be on or under any elevated structure such as a telescope, antenna, wind tower, water tank or other similar structure are required to wear hard hats or other approved head protection if there is someone working above. All visitors are to conform to this rule or remove themselves from the hazard.

No one is to be at or on a telescope unless they have permission from the Telescope Operator on duty. When there is more than one operator present, permission should be obtained from the Operations Manager or Site Manager.

Special precautions must be observed if it is necessary to move the telescope when someone is on or near it. In this event, there must be a qualified operator at the controls at all times the telescope is in motion. The person on the telescope must be provided with communications to the operator at all times. If the telescope is remotely operated, the operator shall communicate orally with other persons on the structure before starting the movement of the telescope. Anyone planning to be on the telescope structure when it is in motion shall be advised before climbing as to the danger areas around the drives, and should know the location of all emergency stop switches. He or she shall also follow all safety rules such as wearing proper safety harnesses with appropriate tie-off points, and utilization of other personal protective equipment that may be called for.

When telescopes have work platforms that are located or can be moved to more than four feet above floor level, said platforms shall have guardrails around all open sides. Further, when these platforms are movable in an up/down motion, all possible pinch points shall be guarded.

No one shall work on the telescope drives or control systems where dangerous voltages exist, or on electronic gear or drive gears without first informing the operator on duty and having appropriate lock-out tagout locks in place. The telescope operator shall, if necessary, stop any unsafe operation of this nature.

Except when absolutely necessary, no one is to be on a telescope or dome in adverse weather conditions (rain, snow, sleet, high winds, etc.). Some personnel will have to climb under these conditions in order to check snow and ice loads. Steel and aluminum structures are slippery when wet, and care should be taken when climbing in these conditions. In all cases where climbing is done in adverse weather conditions, the climber is to be tied off in a proper manner and there is to be two persons or at least an open communication line to someone within a close proximity to help.

In the event that any personnel “freeze,” or are injured on a telescope, antenna or other structure, notify the telescope operator immediately and/or call emergency help. If at all possible, the person in need of aid should be secured to the structure until help arrives.

No loose materials, tools or equipment are to be left on any telescope or other structures at any time for any reason.

At telescopes or other structures where it is common to have overhead workers on a frequent basis, a flashing or revolving light should be installed to warn persons coming in to the area to wear safety hard hats and to proceed with caution. An alternative is for maintenance workers who frequently work on ladders or overhead platforms to carry with them small, portable flashing lights to set up when they are working high. Signs placed in the path at the point of entry into a space where there are overhead workers or cranes in operation is also acceptable.

The telescope operator on duty has full authority to enforce these regulations, as well as other Safe Practice regulations such as Lock-out Tagout, Confined Space Rules, etc. They have authority to stop any activity at the telescope that, in their opinion, is dangerous to personnel or the equipment. This is to assure that only competent personnel work at jobs on or around the telescope, that the telescope operator is always fully informed when personnel are working, and that reasonable safety precautions are taken. The operator's responsibility and authority are not limited to these regulations alone. They shall impose any additional safety measures they deem necessary under any particular circumstance.

If there is any doubt as to the safety of any activity, the telescope operator shall stop that activity and then consult with the Operations Manager or Site Manager.

For additional information and the official University of Arizona documentation, please go to

http://risk.arizona.edu/heathandsafety/fallprotection.shtml

and

http://risk.arizona.edu/healthandsafety/index.shtml

GENERAL SAFETY REQUIREMENTS

The Steward Observatory Health and Safety Program consists of several interrelated components. These individual programs, together with the policies and procedures outlined in this manual and on the Risk Management & Safety (RM&S) website, comprise the entire health and safety program. Specifically, the interrelated safety program policy statements are detailed in the following Sections, Site or Telescope Specific Procedures, including the Appendices and Forms as well as the information provided in the RM&S website. In fact, in all cases, the U of A Department of Risk Management & Safety will have final say over any safety matter.

The Steward Observatory Safety Program is based in part on the RM&S Program together with the following standards:

STANDARDS

- Occupational Safety and Health Administration 29 CFR 1910
- NFPA Volume 1 through 12 (Includes National Electric Code, Sprinkler System Code, Life Safety Code and other parts of the National Codes)
- Standard Practice for the Fire Protection of Essential Electronics Equipment, U.S. Department of Commerce, RP-1
- International Building and Fire Codes, International Code Conference
- National Fire Prevention Code

ARIZONA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH INSPECTIONS

The Arizona Division of Occupational Safety and Health (ADOSH) operates under an approved plan with the U.S. Department of Labor and OSHA to retain jurisdiction over occupational safety and health issues within Arizona. All Steward Observatory facilities are subject to inspection by an ADOSH compliance officer, in accordance with the provisions of OSHA 1910. Inspections will normally be made during regular working hours. Unless authorized by the Secretary of Labor or designee, advance notice of the inspection will not be given. RM&S will be notified immediately if a compliance officer requests an interview and inspection.

The compliance officer will be escorted without delay to the office of the Associate Director for Administration, where he or she will present credentials. The compliance officer will conduct an opening conference at which time he or she will explain the purpose of the visit, outline the scope of the inspection, provide the employer with copies of applicable laws, regulations, standards, etc. He or she will also furnish copies of any complaints submitted to OSHA by employees and ask for a designated employer representative to walk around with them. The employer representatives will normally be the Site Safety Representative and a designated member of RM&S. The employer representatives will accompany the Compliance Officer during the site inspection.

Following the opening conference, the compliance officer will conduct the inspection. Inspections are performed on a priority system as listed:

Priority 1 – Catastrophe or fatality
Priority 2 – Employee complaints
Priority 3 – Occupational health and environmental control
Priority 4 – Target industries
Priority 5 – Random cross section

The compliance officer may:

- Privately talk with or question any employee
- Question any employee in the area being inspected
- Sample air, water, dust, chemicals, and other environmental conditions
- Photograph any area
- Examine records
- Request and copy specific medical records and monitoring data
- Request immediate correction of a violation if there is an imminent danger

Upon completion of the inspection, the compliance officer will confer with the Associate Director for Administration and RM&S representative and advise of the following:

- Disclosure of violations noted
- Recommendations of citations and penalties for each violation
- That within a reasonable time frame after the termination of the investigation, the employer shall receive, by certified mail, the notification of penalty including the period of abatement

- That the employer, upon receipt of said notice, has fifteen (15) working days within which to notify the Secretary that he wishes to contest the citation of the proposed assessment.

According to OSHA, back injuries are the Number One workplace safety problem. According to the Bureau of Labor Statistics, more than one million workers suffer back injuries each year, and back injuries account for one of every five workplace injuries or illnesses and one fourth of compensation claims.
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=146)

While OSHA does not have any written rules to follow to reduce back injuries, they do have several recommendations as shown in OSHA Fact Sheet No OSHA 93-09 which can be viewed at the website shown above. Further there are a number of places that make general recommendations that are mostly common sense. At Steward Observatory we recommend that all employees follow proper lifting and carrying techniques to help reduce the number of back injuries.

Always wear the proper personal protection for the job. When lifting or carrying heavy equipment, wear sturdy safety shoes and gloves. A hard hat and eye protection may also be required. Special lower back support belts may be necessary when lifting however, back belts are not a final solution. See http://www.cdc.gov/niosh/backbelt.html for more information.

The process of lifting something properly involves several considerations.

1. Stretch prior to lifting.

2. If the material is too heavy, get help. Tip the load to see how light or heavy it is before attempting to lift it. If the load is too large to grip firmly or comfortably, it is too large to carry alone. Do not attempt to lift any load over 50 pounds alone.

3. Check the load for splinters, staples, loose strapping, or other hazards that could injure the hands or cause a tripping hazard.

4. When preparing to lift, place one foot alongside the object and one foot behind it. Keep the back straight. Grip the load firmly with the palms of the hand.

5. Ensure your body weight is centered over the feet. Draw the object close if necessary. Lift the object straight up, using the legs and keeping the back straight.

6. When turning while carrying a load, shift the feet rather than twisting the body. Feet should be pointed in the direction of travel before lifting the object.

7. Do not try to lift an object above waist level in one motion. Set the load on a table or bench, then adjust the grip to lift it higher.

8. Before carrying a load, check the intended route for tripping hazards. Also, check doorways to make sure there is enough clearance.

9. Use just as much caution when carrying a light load.

10. When carrying long loads, carry it on the shoulder, keeping the front end high. If two or more people are going to carry a load, decide ahead of time how it is going to be done.

There are other causes of back injuries besides improper lifting. For example back injuries can also be a result of improper work motions such as continued bending over, or twisting and turning. As a normal rule it is best to perform work while standing or sitting erect. In some cases this may require longer handled tools, or other specialized equipment. If you feel strain on your back as a result of working in an unusual position or with unusual motion, discuss the situation with your supervisor and/or Safety Representative.

The use of vehicles for university business is governed by the University of Arizona Fleet Safety Policy. This policy was adopted in January 2005 to establish a management framework for fleet safety that will minimize losses and maintain compliance with State rules governing loss control programs for State agencies. For much more information and the official University of Arizona documentation on this subject please go to: http://risk.arizona.edu/fleetsafety/index.shtml

And for information on the required U of A Training, please go to: http://risk.arizona.edu/training/index.shtml

And for information on forms dealing with this subject, please go to: http://risk.arizona.edu/forms/index.shtml

There are also several OSHA regulations in 29CFR 1926.601 relating to vehicle safety and they can be found at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10768

Compressed gases are dealt with under the OSHA Standard (29CFR1910.101)

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9747

and

http://www.osha.gov/SLTC/compressedgasequipment/standards.html

and

http://www.osha.gov/SLTC/compressedgasequipment/recognition.html

and

http://www.osha.gov/SLTC/compressedgasequipment/solutions.html

One of the OSHA websites names the Stony Brook University websites as a very complete discussion of this subject, so for your convenience, I recommend if you want very good information on this subject, go to:
http://www.sunysb.edu/facilities/ehs/occupational/cg.shtml

The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965, which is incorporated by reference as specified in Sec. 1910.6.

Further, if you will be involved in the transportation of larger quantities of compressed gases you must read the training requirements under the Hazardous Materials Regulations. It is entitled Code of Federal Regulations, Title 49, Subpart H, 172.700-172.704 from PHMSA (Pipeline and Hazardous Materials Safety Administration at website: http://hazmat.dot.gov/regs/rules.htm

After reading the referenced Stoneybrook website, one should know all of the important information on this subject; however, as a convenience the major requirements are summarized below:

CYLINDER STORAGE

Cylinder storage has safety implications. Remember these guidelines when storing cylinders:

1. Store cylinders upright.

2. Group cylinders by compatibilities of gas.

3. Store full and empty cylinders apart and have them tagged or labeled.

4. Store gases so that old stock is used first.

5. Secure cylinders with chains or cables or special holders designed for that purpose such as cylinder carts or wall holders. Never secure cylinders to conduit carrying electrical current.

6. Make sure that fire extinguishers near cylinder storage area are appropriate for the types of gases being stored.

7. Store oxygen cylinders at least 20 feet from flammables or combustibles or separate them by a 5-foot high, fire resistant barrier in accordance with NFPA requirements.

8. Keep oil and grease away from oxygen cylinders, valves, and hoses. If your hands, gloves or clothing are oily, do not handle oxygen cylinders. Oxygen and compressed air are not the same thing. Do not use them interchangeably.

9. Compressed gases may not be stored, permanently or temporarily in hallways or corridors of the University. And, section 3003.3.1 of the 2003 International Fire Code (the current fire code that applies to all State of Arizona facilities) requires that compressed gas cylinders be secured against unauthorized access.

CYLINDER HANDLING AND TRANSPORTATION

1. Always transport cylinders with the regulator removed and the safety cap installed. Use a cylinder cart, do not roll them by hand along the floor or transport them on forklifts. All cylinders should be treated as full and handled accordingly.

2. Always use the correct pressure regulator for the specific gas.

3. CGA fittings differ for inert gases (e.g., He, Ar, N_2), flammable gases (e.g., H_2) and oxidizers (e.g., O_2, N_2O). The modification or retrofitting of CGA fittings or relief valves is *not* allowed.

4. All compressed gas cylinders must be clearly marked with the correct chemical name. Shoulder labels must clearly identify the contents of a cylinder. DO NOT rely on cylinder color to identify the gas.

5. If more than 1,000 lbs of cylinders are carried in a truck, the vehicle must be appropriately placarded and the driver needs a Commercial Drivers License and Hazmat Endorsement.

6. Never open valves until regulators are drained of gas and pressure-adjusting devices are released. When opening cylinders, point outlets away from people and sources of ignition, such as sparks or flames. Open valves slowly. On valves without hand wheels, use only supplier recommended wrenches. On valves with hand wheels never use wrenches. Never hammer a hand wheel to open or close a valve.

7. Never put any gas cylinder in an enclosed environment such as a car trunk or a station wagon because if the valve has even a small leak, it could present an exposure, asphyxiation, fire and/or explosion risk.

8. Cylinders should be carried in the back of an open truck in a standing position and chained to a rack. If they must be transported laying down, they should be blocked in a manner to keep them from rolling around or banging against each other, and they must not be used until they have been in a standing position for several hours.

9. The transportation of cylinders and compressed or liquid gases is largely controlled by the U.S. Department of Transportation, and its affiliate which can be explored further at: http://www.fmcsa.dot.gov/safety-security/safety-security.htm

10. The practice of “Transfilling” (where in the contents of a compressed cylinder is transferred to another cylinder) requires specific training and is a potential hazard. It can only be done with prior institutional approval (see: http://risk.arizona.edu/healthandsafety/labchemicalsafety/ExtremelyHazardousChemicals-Activities.pdf)

11. There are minimum requirements for the use of toxic and/or corrosive gases. See: http://risk.arizona.edu/healthandsafety/labchemicalsafety/MinReqforCSL-3ToxicCorrosiveGasUse2007.pdf

TRAINING

All employees using or handling compressed gases must be trained in the safe use of the material and pressurized systems, and permanent records/logs must be kept on all persons who have completed such training. Additional training is required if you will be involved in the transportation of larger quantities of compressed gases. See above.

Cryogenic Liquids are extremely cold and can produce a severe burn comparable to frostbite, or worse. Further, very small amounts of liquid are converted to large volumes of gas that can create asphyxiation and/or pressure hazards. Cryogenic liquids may only be used by persons trained in the safe use of gases. See Section 25 for more on this subject.

When handling cryogenic liquids, the following precautions must be taken:

1. Wear a face shield and safety goggles. Safety glasses with side shields, or without, do not give adequate protection and a face shield alone does not provide adequate protection.

2. Wear a long sleeve garment such as a lab smock.

3. Cryo-thermal gloves or loose-fitting gloves are required as they allow the filler to remove them quickly to avoid a burn.

4. When handling large volumes, it is recommended that high top shoes with cuffless pants outside the shoes be worn. This is to prevent fluid from getting inside the shoes or being trapped in the pants cuff.

5. Where the volume of the expanded gas from a cryogenic liquid has the potential to displace significant amounts of oxygen in the work area, a survey must be done by the user. The survey is to describe the extent of the potential hazard and the controls necessary to eliminate or control the hazard. For example, when carrying liquid nitrogen in an elevator it may be wise to send the dewar up by itself and walk up rather than chance being caught in the elevator if the power goes out.

6. Transportation of liquefied gases must be accomplished in a manner such that no occupant of the vehicle, or bystander could possibly be exposed to a liquid spill or to a reduced oxygen atmosphere as a result of a liquid spill or boil off. All liquefied gas containers will be securely fastened to the vehicle in which they are being transported.

Steward Observatory is dedicated to following the leadership of the University of Arizona Department of Risk Management & Safety in the area of Environmental Compliance. All employees are urged to go to the following link and read the entire section so as to be fully informed of your responsibilities in this area:
http://risk.arizona.edu/environmentalcompliance/index.shtml

Steward Observatory is dedicated to following the leadership of the University of Arizona Department of Risk Management & Safety in the area of Ergonomics. All employees are urged to go to the following link and read the entire section so as to be fully informed of your responsibilities in this area: http://risk.arizona.edu/healthandsafety/ergonomics.shtml.

There will be no individual flammable or combustible liquid containers larger than 60 gallons. Only approved containers may be used. Aggregate volumes of flammable liquids greater than 10 gallons must be kept in an approved flammable liquid storage cabinet. Open flame and smoking are not permitted in flammable or combustible liquid use or storage areas. Smoking is not allowed in any University of Arizona building or within 25 feet of entrances. Combustible liquids are not to be poured into a drain due to the potential for formation of gas pockets in the trap. All containers are to meet NFPA requirements. See web site:
http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=30&cookie%5Ftest=1

Other important information dealing with fire safety is dealt with by the University of Arizona Risk Management & Safety web site and you should become familiar with this information. It is at http://risk.arizona.edu/healthandsafety/firesafety.shtml

The University of Arizona generally provides housekeeping services to all of its facilities. However, it is the responsibility of all employees to adhere to good housekeeping procedures and to keep their work area neat, clean, and uncluttered. Good housekeeping procedures are required under the University's policies in the area of Environmental Compliance. For more information, see http://risk.arizona.edu/environmentalcompliance/index.shtml.

Several OSHA regulations require written housekeeping procedures. These regulations are: 29 CFR 1910.38(b) – Fire Prevention Plan and 29 CFR 1910.1030(c)&(d) – Bloodborne Pathogens. Many other regulations also lead to or reference housekeeping procedures and for this reason, Steward Observatory requires its employees to adhere to the following general policies and procedures:

1. Provide sufficient or required safe clearances and access to any and all work stations, exit corridors, fire extinguishers, fire blankets, electrical disconnects, safety showers, other emergency aids, doors, and access to stairways. The usual public access way is at least 44 inches wide, but could be more in some circumstances.

2. Clearly mark to distinguish walkways from areas not for pedestrian traffic. All aisle ways, exits, and markings shall conform to the International Fire Code, Chapter 10.

3. Keep aisles and walkways free of physical obstructions that would prevent access and do not block exit signs.

4. Keep floors clean; dry as possible; slip resistant; and free of waste, unnecessary material, oil and grease, protruding nails, holes or loose boards. Work sites where waste or dirt accumulates should be cleaned at least daily and waste materials disposed of properly.

5. Tools should be picked up and stored properly at the end of each work day.

6. Keep doorways and loading docks free of debris and other obstructions.

7. Clean up spills immediately after they occur.

8. Do not allow boxes of "stuff" to accumulate on the floor. If it is important enough to keep, it should be stored safely on a shelf and not become a tripping hazard. Also, do not store stuff within 18 inches of the ceiling if the room has a fire sprinkler system.

9. Establish a monthly or quarterly procedure to walk through your work area and dispose of unused and unneeded "stuff". If you have unneeded stuff with residual

value, contact the Surplus Property Coordinator in the Business Office who will arrange for disposal.

Lasers are now utilized in many parts of Steward Observatory. OSHA has published Guidelines for Laser Safety and Hazard Assessment under STD 01-05-001 – PUB 8-1.7 If you are going to be involved with the operation or installation of lasers, you should read this document so that you are aware of the hazards. It can be accessed at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=1705

The University of Arizona is very involved in the control of lasers, especially class 3 and 4. If you will be operating lasers, you are *required* to go through the University Training Program. Details on this program can be obtained at: http://www.radcon.arizona.edu/main.asp?page=73 and **this training is mandatory.**

And, if you will be involved in the installation of a new class 3 or 4 laser, contact the Radiation Control Office to inform them of the installation before it is installed or turned on.

MACHINE GUARDS

The following types of dangerous moving parts need guarding:

The Point of Operation: the point where work is performed on the material, such has cutting, shaping, boring or forming of stock.

Power Transmission Apparatus: the components of the mechanical system that transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connections, couplings, cams, spindles, chains, cranks and gears.

Other Moving Parts: parts of the machine which move while the machine is working, can include reciprocating, rotating and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.

Guards must meet these minimum general requirements:

Prevent Contact: The guard must prevent hands, arms or any part of your body or clothing from making contact with dangerous moving parts.

Secure: Guards should not be easy to remove or alter; a guard that can easily be made ineffective is no guard at all. Guards and safety devices should be made of durable material that will withstand the conditions of normal use. They must be firmly secured to the machine.

Protect from Falling Objects: The guard should ensure that no objects could fall into moving parts. A small tool that is dropped into a cycling machine could easily become a projectile that could injure someone.

Create No New Hazards: A guard defeats its own purpose if it creates a hazard of its own such as a shear point, a jagged edge, or an unfinished surface which can cause a laceration. The edges of guards should be rolled or bolted in such a way that they eliminate sharp edges.

Create No Interference: Guards should be designed so that equipment can be maintained and lubricated without having to remove them.

MACHINE/TOOL SAFETY REQUIREMENTS

General safety rules apply to both stationary and portable equipment. The following rules apply to every machine or power tool you may use:

1. Keep your work area well lit and dry

2. Keep tools sharp, oiled and stored in a safe, dry place. Regularly inspect all tools, cords and accessories. Repair or replace problem equipment immediately.

3. Keep your work area clean. Sawdust, paper and oily rags are a fire hazard and can damage tools.

4. Use safety features like three-prong plugs, double insulated tools and safety switches. Make sure all machine guards are in place before using any equipment.

5. Use personal protective equipment when necessary. This might include safety glasses, gloves, hearing protection, or respiratory protection.

6. Dress correctly. Never wear clothing or jewelry that could become entangled in power tools. Ties are a real no-no around rotating spindles!!

7. Install or repair equipment only if you are qualified to do so.

8. Use the right tool for the job. Do not force a small tool to do heavy work.

9. Keep electric cables and cords clean and free from kinks. Never carry a tool by its cord, or pull a plug from the wall by the cord.

10. All visitors to machine shops are required to have safety glasses if equipment is in operation.

11. Never leave loose tools on other equipment, telescopes, antennas, or vehicles.

12. All stationary equipment in labs, shops or other work areas is to be secured to the floor or bench surface.

GRINDING WHEELS

It is important for all employees who use a grinder to be familiar with the mounting operation, speed, and use of the grinder and different wheels. The following guidelines represent minimum acceptable safety practices for grinder use:

1. Inspect the grinding wheel before installation
2. Never alter the mount hole or force a wheel on the spindle
3. Make sure the safety flanges are used to mount the wheel
4. Adjust the wheel guards and put on PPE before grinding
5. Make grinding contact without bumping the wheel
6. Grind only using the face of the straight wheel
7. Use a disk wheel for side grinding
8. Never grind aluminum on a standard wheel

Every employee should endeavor to keep his or her office clean and neat. Excess accumulation of paper products should be avoided to minimize the potential for fire and to eliminate tripping hazards.

Electrical outlets must not be overloaded, and extension cords are not to be used in place of permanent wiring.

Wiring should be routed so as not to present a tripping hazard, even if low profile cable protectors are required.

All electrical power strips or bars must be UL approved and have a resettable circuit breaker on the strip, and they should be kept off the floor and secured.

Freestanding bookcases should be stable and/or secured to the wall to prevent tipping. Heavy books should be on the bottom shelves.

File cabinets should be opened one drawer at a time to prevent tipping. Whenever possible, cabinets should be loaded from the bottom-up, with the heaviest accumulation in lower drawers.

Ergonomics is the study of fitting the work/job to the individual. Office furniture and equipment must accommodate various body types. For much more information and all of the official University of Arizona documentation on this subject please go to: http://risk.arizona.edu/healthandsafety/ergonomics.shtml

Indoor air quality is a concern of the University and Steward Observatory. For much more information and all of the official University of Arizona documentation on this subject please go to: http://risk.arizona.edu/healthandsafety/iaq.shtml

Protective equipment shall be provided and used as required, and shall be maintained in a sanitary and reliable condition. Each Department shall specify and provide employees with personal protective equipment as required to safely perform their assigned tasks. Each Department is also responsible for training employees in the proper use of any of the provided equipment. Specific requirements and related standards are found in OSHA 29CFR 1910.132-140. For much more information and the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/healthandsafety/personalprotectiveequipment.shtml

While Steward Observatory is committed to minimizing these hazards as much as possible at the source, this step is not always feasible. Use of personal protective equipment (PPE) completes other measures Steward Observatory takes to create a safe work environment for all.

Engineering and administrative controls are the installation of equipment or other physical facilities and procedures and work practices designed to minimize or eliminate the potential for an adverse exposure to hazards. Whenever engineering controls are not available or in conjunction with administrative controls are not fully capable of individual protection, the employee must wear protective clothing or personal protective equipment (PPE).

Steward Observatory supervisors are responsible for continuously assessing your workplace to determine if hazards are present or are likely to be present, which would necessitate the use of PPE. Steward Observatory does not expect total reliance on PPE to protect against hazards, but rather to use PPE along with guards, engineering and administrative controls, and sound manufacturing practices.

EYE PROTECTION

A variety of safety equipment is available to keep every employee safe and injury free. Steward Observatory provides basic plano safety glasses to all who need them. In addition, Steward Observatory will pay up to $100.00 per year toward the purchase of prescription safety glasses that meet the ANSI standards and are approved as required by your supervisor. If you are approved for prescription safety eyewear, you are expected to wear the equipment while at work and strongly encouraged to wear it while away from work. The safety devices and procedures listed below are all ways to ensure eye protection and continued eye health. Protective eye and face equipment must comply with ANSI guidelines and be marked directly on the piece of equipment (e.g. glasses frames and lenses).

1. Make sure equipment guards are in place on plant machinery and that they are used with additional eye protection.

2. Know location and operation of emergency eyewashes.

3. Inspect eyewashes frequently to make sure they work effectively and that the water is potable.

4. Street-wear eyeglasses are not designed to be safety glasses and should never be used as such.
5. Face shields should not be used alone, but always with other eye protection such as goggles or glasses.

6. Safety equipment should be maintained in good condition and replaced when defective.

7. Have your eyes tested regularly. If you need corrective lenses, get them and use them.

HAND PROTECTION

Keep these points in mind to protect your hands as you work:

1. Gloves should fit you properly and be maintained in the same careful way as other safety equipment.

2. Know the symptoms of carpal tunnel syndrome and seek medical attention immediately if you suspect this condition.

3. In the event of a hand injury, know proper first-aid procedures. Offer only the help you are trained to provide.

4. Proper protective gloves must be worn when working with acids or other chemicals which may be injurious to the skin.

HARD HATS

Hard hats must be worn at all times by all persons, including visitors and employees, in all work areas that represent potential situations resulting in head injury. This includes indoor and outdoor construction areas, all areas where there are employees working above you, and during crane lifts and other overhead operations.

PROTECTIVE FOOTWEAR

All employees shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where employee's feet are exposed to electrical or chemical hazards. This policy incorporates the requirements of the OSHA Regulations 1910.136, "Occupational Foot

Protection" and ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear."

It is the responsibility of Steward Observatory Management to perform a job hazard analysis to determine the need for foot protection. The Observatory will provide up to $75.00 per year reimbursement to be applied toward the purchase of protective footwear that meets the ANSI Standard Z41-1991. It is the responsibility of the employee to wear the protective footwear at all times when working in the designated areas. Employees are encouraged to wear the protective footwear at home and away from work if in hazardous areas.

For much more information and the official University of Arizona documentation on this subject, please go to:
http://risk.arizona.edu/healthandsafety/personalprotectiveequipment.shtml

To obtain Personal Protection Footwear, you must first go to the Forms section of this manual and print a copy of the Safety Footwear Purchase Authorization Form, complete the form and have your supervisor approve and sign the form. You may then purchase the footwear and provide the approved form and the receipt to the Safety Officer who will arrange for reimbursement.

To obtain Prescription Safety Eyeglasses you must first obtain written authorization from your supervisor using the approved form for the purchase of Safety Eyewear available on line in this manual. Then go to the University web site shown above, click on the Link called Prescription Safety Eyewear Program and you will be required to provide your Net Id and password. From there you will follow instructions at the site to obtain the glasses and when you have them you may turn in the invoice to the Safety Officer to obtain reimbursement.

Steward Observatory utilizes hazard signs, labels, tags, and placards to keep everyone aware of potential dangers. The following OSHA website details the requirements for signage:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9794

All employees need to understand the meaning of the warning signs at the entrances to work areas and the specific location of the hazard. The Site Safety Representative along with the Telescope or Laboratory Director or Manager shall be responsible for identifying areas of work where special hazards exit. The Director or manager is responsible for obtaining, placing, and maintaining appropriate warning signs, labels, or placards at the entrances to the work areas and at the specific location of the hazard.

As part of the communication responsibility, signs are posted throughout each work area indicating the proper procedures to follow when working on or around potential hazards. This includes, but is not limited to, speed limit signs, safety glasses signage, as well as indicators of hard hat areas. All safety signs must be observed.

Signs are classified according to use. There are five classifications, which are:

Danger - indicates an immediate danger that could result in death or injury. Danger signs use black, red and white colors.

Warning - indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

Caution - warns against potential hazards or unsafe practices and represents the potential for moderate or minor injury. Caution signs have a yellow background, a black panel and yellow letters.

Notice - indicates general safety policies and should not be associated directly with a hazardous situation.

Safety Instruction Signs - convey general instructions relative to safety measures. These signs are white, with green panel and white letters.

Uses of **labels** are for identifying potential hazards of chemicals in the workplace. Along with signs, they help ensure all workers understand the hazards around them.

Tags are sometimes used as signs to prevent accidental injury or illness to employees exposed to potential hazardous conditions, equipment or operations. Tags are used until the identified hazard is eliminated or the hazardous operation is completed.

Placards are used in the handling or shipping of hazardous materials. For much more information on this please go to the OSHA website shown below:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10105

Steward Observatory has telescopes and equipment in remote and isolated sites. In addition it has facilities that include complicated, large moving equipment such as that at the Mirror Lab, and it has processes that require the presence of hazardous chemicals. Because of these facts and the nature of our research, it is often advisable that some tasks which could be completed by one person, be performed by two persons in order to increase safety. No employee should perform any task alone if that individual feels that the job cannot be completed safely without assistance or the presence of a second person. In general, the Two-Person Work Rule shall be in effect under at least the following conditions:

1. Working from any external platform, scaffolding, or building roof. This would include scissor lifts and the like.

2. Working with any energized electrical circuits above 408 volts AC. The second person does not need to be qualified.

3. Accessing any parts of the telescope under hazardous weather conditions.

4. Working on moving equipment or machinery which is not designed with a seat or work station.

5. Working with hazardous chemicals or in areas of very high temperatures.

6. Working in manholes or confined spaces.

There may be emergency or unplanned circumstances where it seems to be important to work alone, despite the above rules and guidelines. If that happens, and the person who feels that he or she must perform (and is willing to perform) a task without benefit of a second person in attendance, then that person should first contact his or her supervisor and advise the supervisor of the circumstances. The supervisor may give approval to perform the task if both persons feel confident that the task can be performed safely. Usually, if this happens there will be a direct, hand-held two-way radio or cell phone on an open line between the worker and someone who is in a place close enough to respond quickly, if needed. Video monitoring of some work situations might also be considered in some circumstances.

TIP

Bob Peterson and Cory Knop looked into several radio harnesses that can be used for conveniently holding two-way, hands free radios. The websites are shown below, if you wish to purchase harnesses for your employees.

They can be found at:

Chiefsupply.com
http://www.chiefsupply.com/search/radio%20harness.aspx

Uplanders.com
http://www.uplanders.com/home.php?dr=products&fn=product_details&pr_id=GEAR-42-1

Amazon.com
http://www.amazon.com/True-North-Stealth-Radio-Harness/dp/B0046C0HEC

Tailgate Safety Meetings (sometimes called Toolbox Meetings) were first started in the construction industry as a way for contractors to inform their crews of the days activities, jobs, dangers, concerns, and questions. They evolved to become commonplace at most job sites and have proven to be major factors in accident reduction. Although we do not regularly operate out of pick-up trucks at the Observatory, we do regularly have new and different tasks that require careful thought and preparation if they are to be done safely and properly. Utilizing open discussion of the tasks to be performed by those experienced in doing the work as well as the engineers or planners of the tasks, will usually beget excellent results with no injuries.

Tailgate Safety Meetings should be held when:

1. A new task is being performed for the first time, or by different participants.
2. Any major task is being performed, even if done before.
3. Any task is being performed in crowded or hazardous conditions.
4. Any task is being performed with new equipment.

To prepare for the meeting:

1. Appoint a leader for the meeting.
2. Inspect the jobsite for hazards.
3. Read the material you plan to discuss.
4. Be sure to know the regulations, guidelines and company rules related to the days work or task.
5. Invite the crew to ask questions and make suggestions, and answer or consider them all.
6. If there is disagreement on a method, obtain an expert to get an opinion
7. Obtain feedback from the crew on the meeting.
8. Involve the crew in preparing for the meeting and future meetings, and finally:
9. Look into complaints, concerns or suggestions brought up by the crew and keep good records of each meeting, time, place, and subject.
10. Be sure that everyone of the crew knows that performing the job safely is paramount.

Subject: **Visitors**

The safety of visitors to any Steward Observatory facility is the responsibility of each visitor's Observatory host. It is the responsibility of the host to be sure that each visitor complies with all Safety Rules and Procedures. This includes providing each visitor with personal protective equipment to wear when appropriate. Examples include hard hat, eye and hearing protection. If you are the host, be sure you know the Safety Rules and Procedures well, and this may include procedures such as Lockout/Tagout. Be sure to inform the Telescope Operator or Site/Operations Manager that you will be escorting visitors into the area, prior to the visit.

GENERAL

In accordance with OSHA 29 CFR 1910.21-32, workplaces are to be maintained and kept accessible. The following details some of the general safety requirements:

1. All places of employment, passageways, storerooms, and service rooms shall be kept clean, orderly, and in a sanitary condition.

2. Floors will be maintained, cleaned, dried and in good condition

3. There will be no obstructions or protrusions from the surface

4. All floor and wall openings or any place where there is a falling object hazard will be appropriately guarded and signed.

5. All portable ladders will meet ANSI standards and be maintained in good condition.

6. Damaged ladders will be properly repaired before use or destroyed to prevent use.

For more information on this subject go to:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=13820

LADDERS

The following points summarize many of OSHA'S regulations for ladders and can serve as guidelines for ladder use. For more information on ladders, check the OSHA regulations, which can be found at 20CFR 1910.25 and 26
http://www.osha.gov/pls/oshaweb/owaquery.query_all_docs?src_doc_type=FEDERAL_REGISTER&src_unique_file=FED19980626B&src_anchor_name=1910.25

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9718

1. Do not build makeshift ladders out of chairs, benches or boxes. If the job calls for a ladder take time to find one.

2. Make sure there is only one person on a ladder at a time, unless the ladder is designed for two.

3. Check the condition of the ladder before use. Do not use a ladder with broken or cracked rails or rungs or rungs made slippery by grease or oil. The ladder should have good safety feet.

4. Do not place a ladder on boxes or blocks to make it taller.

5. Face front and use both hands as you climb.

6. Do not overreach from a ladder. If your waist reaches past the uprights you have gone too far.

7. Set ladders up properly by using the 4 to 1 rule. The distance from the wall to the base of the ladder should be one-fourth the distance from the base of the ladder to where it touches the wall.

8. Hoist tools or materials up to you after you reach the top, so both hands are free for climbing

9. Do not stand on top of a stepladder, or get too close to the top of an extension ladder.

10. Any portable ladder being used to gain access to an upper level such as a roof, must extend at least three feet beyond that level.

SCAFOLDS

Working surfaces include scaffolding. Keep both feet firmly on the scaffold with these safety precautions:

1. Make sure scaffolds are sturdy. Check them daily for any safety defects. Always clear work surfaces of snow, ice or slippery materials. Sand wet planking for sure footing.

2. Never overload scaffolds with people, equipment or supplies. Lock casters on mobile scaffolding to prevent movement when working. Use ladder jack scaffolds only for light duty work. Fall and climbing protection devices prevent injury in the event of an accidental slip, trip, or fall on ladders or scaffolding.

For much more OSHA information on scaffolds please go to:
http://www.osha.gov/SLTC/scaffolding/

And for much more information and the official University of Arizona documentation on this subject, please go to: http://risk.arizona.edu/healthandsafety/scaffolding.shtml

The OSHA requirements associated with welding, cutting and hot work are found in the OSHA Manual 29 CFR 1910.252. For detailed information and regulations go to:

http://www.oshaweb/owadisp.show_document?p_table+STANDARDS&p_id=9853

Steward Observatory requires employees to comply with all OSHA,NFA Standard 51B, 1962, and University of Arizona requirements when welding, cutting or heating.

Hot Work permits must be obtained from Risk Management & Safety prior to beginning any torch cutting, welding or brazing. See http://risk.arizona.edu/healthandsafety/hotworkrequirements.shtml for dtailis of the requirements.

The general Steward Observatory policy is that appropriate eye, hand, and body protection will be worn at all times while welding cutting, brazing, or burning. The welder will consider the safety of others in the worksite by placing glare shields, barricades, or other barriers as necessary. The worksite shall be properly ventilated and respirator equipment will be worn when necessary. A fire watch shall be placed for all field-welding operations.

A few practices for working safely apply in many situations:

1. When working above ground or floor level, use a platform with toeboards and standard railings or safety harnesses and lifeline. Also, protect workers from stray sparks or slag in the area below an elevated surface where welding is taking place.

2. Aim the welding torch away from cement or stone surfaces. Moisture within these materials could cause them to explode when they reach a certain temperature.

3. When finished welding or cutting, warn other workers of hot metal by marking or putting up a sign. Keep floors clean by putting electrode or rod stubs in an appropriate container. Keep floors clear of tripping hazards; store tools safely.

4. Never use bad conductors, damaged regulators, torches, electrode holders or other defective equipment.

5. Do not arc or resistance weld while standing on damp surfaces, or weld in rain.

6. Routinely inspect and maintain welding equipment, including welding cylinders. Inspect cylinders regularly to make sure all parts are in good working order, especially manifolds, distribution piping, portable outlet headers, regulators and hose or hose connections. Be sure that welding torches and regulators have flashback arresters installed according to gas flow requirements.

7. If the welding project itself must take place at a specific location, all fire hazards in the vicinity of a welding or cutting operation must be moved to a safe place before welding may begin.

8. Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use and should generally be in reach of any welding operation.

9. Consider a thorough review of the OSHA standards referenced above if welding anything with cadmium, fluorides, mercury or other materials that might give of poisonous fumes. Be sure there is adequate ventilation.

Your supervisor will designate a worker as a “fire watch” whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

1. Appreciable combustible material in building construction or contents is closer than 35 feet to the point of operation.

2. Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.

3. Wall or floor openings within a 35-foot radius that expose combustible material in adjacent areas including concealed spaces in walls or floors.

4. 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.

For much more information, the official University of Arizona documentation, and the National Fire Protection Association Documentation, please go to:

http://risk.arizona.edu/healthandsafety/hotworkrequirements.shtml

http://miamidade.gov/portofmiami/library/hotwork_NFPA51B.pdf

POLICY

It is the intent of Steward Observatory that all of its employees who are engaged in construction/maintenance activities where fall protection is required under OSHA 29 CFR 1926.501 or 29 CFR 1910.23 adhere to The University of Arizona Fall Protection Policy which can be found at http://risk.arizona.edu/healthandsafety/fallprotection.shtml

1. In addition, no one is to be on any telescope or platform/structure unless necessary and authorized by his/her supervisor. Only those with a reason to climb will be permitted to do so.

2. All first-time climbers must be accompanied by an experienced climber.

3. Climbers should restrict themselves to stairs, walkways, or platforms whenever possible.

4. Exercise good judgment when climbing. Do not climb when tired or ill.

5. See the Site Safety Representative for guidance in the use of harnesses, lanyards, and tie-offs.

Steward Observatory operates telescopes, labs, shops and other facilities on several mountains in Southern Arizona. Each of these sites have the potential for hazardous weather conditions year around including heavy rain, flash floods, very high winds, and ice and snow, particularly in the winter months. In its effort to minimize risk to employees and visitors who must travel in the mountains, the Observatory has established the following policies and procedures:

First, employees and visitors are encouraged to either stay on the mountain for the night if they must work late, or leave the mountain in time to arrive at the bottom by sunset. If emergency situations require travel after dark, then they are required to carry a two-way radio and make arrangements with some other employee on the mountain to monitor the radio channel until the traveling person reaches the bottom (or the top) of the mountain, at which time the traveling person announces arrival to flat land or the site.

Second, each observatory department that has vehicles which are primarily used to travel to and from mountain sites, will outfit those vehicles with proper supplies that can be used in the event of accident or breakdown on mountain roads. The supplies will be kept in a duffel bag and will include at least the following:

1. Listing of all emergency telephone and radio contact numbers (updated quarterly from the MGIO web site by each department)
2. Fire extinguisher
3. Crank or shake flashlight
4. Small shovel
5. Ice scraper
6. First aid kit
7. Pocket lighter or butane mini-torch
8. Emergency blanket per passenger
9. Bag of sand
10. Snow chains
11. Tool kit which includes pliers, duct and electrical tape, screwdrivers, plastic warning sign, set of jumper cables, and a 20-foot tow strap.

Third, it is recommended that each employee or visitor who is traveling to mountain sites must be given and required to read the MGIO Orientation package or the observer guidelines on the University of Arizona website for the Mount Lemmon, Mount Bigelow, Mount Hopkins and Kitt Peak telescopes. All employees and visitors are warned / advised to take appropriate clothing such as gloves, heavy coat, hat, boots, etc. In addition, it is advised that they carry a supply of water and food. It is required (for Mount Graham) that they have a hand-held or vehicle radio that is operational and turned on to the proper channel, that they are trained in snow-chain application (and have the snow chains mounted to all four wheels if there is sufficient snow on the road, or it has been required by MGIO Recommendation) , and that they have established a contact to monitor travel if after hours. Employees and visitors are also responsible that the fuel tank on their vehicle is full before going to the Mountain, that tires are inflated properly, that there is an inflated spare tire and that the wipers are operational and that there is wiper fluid in the container.

Advice for the Mountain Traveler: If you are an infrequent visitor (or employee worker) to any of the mountain sites then if you have a chance to ride to the mountain and leave the driving to one who is experienced, that should be your decision. If you decide to drive yourself, then you should consider and adhere to the following:

If there is snow on the ground or the possibility of snow or mud then you should only take a four-wheel drive vehicle and be sure you know how to get it in and out of four-wheel drive. Remember that going at high speed on flat land is very bad if you are in four-wheel drive. Different four-wheel vehicles go in and out of four-wheel drive with very different procedures, so know your vehicle type.

When you are driving on steep mountain grades and find that you are beginning to “ride” your brakes, shift the transmission to a lower gear. Let your engine do the braking so that you do not damage the brake system by overheating the rotors or drums.

If the road has snow cover, you should proceed slowly with chains correctly mounted to all four wheels and cautiously and try to stay as close to the center of the road as possible. Remember that a plowed road may look to be much wider than it really is. The soft shoulder on either side of the road may not support the weight of the vehicle.

If there are snow plows on the road, you are required to adhere to the current set of MGIO, or relevant mountain instructions for passing plows. And last, if your vehicle is on ice or slippery road and it begins to skid, you should turn your wheels in the direction of the skid, provided of course, that does not take you over the edge.

One Final Note: All of this policy and these procedures apply to Mount Graham visitors and employees. Because the roads are more heavily traveled and the weather conditions are usually less severe on Kitt Peak, Mount Lemmon, Mount Bigelow, and Mount Hopkins, there is not a firm requirement for two-way radios and a standby radio monitor most of the time for traveling observers. Employees will have radios in the Observatory vehicles. And last, but certainly not least it is required that all employees and visitors adhere to posted speed limits, or travel at slower than posted limits if conditions require slower travel.

There are other concerns for employees and visitors to the telescopes and labs on the mountain sites. Some of these concerns are the prevalence of poisonous animals/bugs such as snakes and scorpions. On Kitt Peak it is not unusual to find cattle roaming across the highway and if it is dusk or nighttime, one may not have a lot of time to react and apply the brakes, but be sure to drive safely and not too fast. Also lightning is a very major concern on mountaintops and no one should be standing near corded telephones, electrical appliances, electric sockets or plumbing. Avoid water activities like taking a shower and try to get into a large, fully enclosed, substantially constructed building. Next best is an all-steel vehicle with closed windows and don't touch anything but the seat. To determine the danger, use the National Lightning Safety Institute, NSSI, 30/30 Rule. When you see lightning, count the time until you hear thunder. If the time is 30 seconds or less (9.66 km), go immediately to a safe place.

It is not unusual to see small groups of people walking along side the highways and although they usually go off in the desert, sometimes they will attempt to stop you or flag you down. If this happens you should use extreme caution and stay in your vehicle. Be sure that the doors are locked and only roll your window down part way to allow you to communicate, but does not allow them to reach into the vehicle. If the group requests assistance, evaluate the situation and determine if you can provide assistance without compromising your own safety. Offer to contact authorities for the group to request assistance. If at any time you feel threatened, immediately drive away from the area and call 9-1-1 and report the incident. [side note - we may need to determine what the legal boundaries are between providing reasonable assistance to someone in need as opposed to what might be interpreted by law enforcement as aiding illegal immigration]. Or, if you notice a small fire a short distance from the highway, but in the desert, you should approach the area cautiously, remaining in your vehicle if possible. A small fire may be the start of a brush fire that needs be reported to authorities, or it may be a campsite. As fires may spread quickly, it is important to note the location and contact authorities by calling 9-1-1, and reporting the incident, if it is determined to be a fire rather than a camp fire. If it is a camp fire and it is unattended, report it to the authorities ASAP. And finally, if you approach an obvious automobile accident that is not attended by official authorities such as an ambulance or police vehicle, and you feel

qualified to be a first aid provider you should stop and render aid within the level of your training and abilities. Call for police or medical assistance as needed. Arizona has a Good Samaritan Statute (Arizona Revised Statutes 32-1471), which provides qualified immunity from liability for person rendering aid at the scene of an emergency.

For much more information and the official University of Arizona documentation and procedures on this subject, please go to:

http://policy.web.arizona.edu/hovmemo.shtml

http://risk.arizona.edu/fleetsafety/index.shtml

The University of Arizona has a comprehensive Risk Management and Loss Prevention Program. This program contains provisions and requirements for establishing scheduled safety inspections of buildings, grounds and equipment, including University vehicles. For much more information and the official University of Arizona documentation and procedures on this subject please go to:
http://risk.arizona.edu/index.shtml

OSHA also has provisions and requirements for Safety Inspections. For more information on these provisions go to:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=OSHACT&

Further, as a guide for Steward Observatory employees, we have included in this manual a non-comprehensive guide for making routine safety inspections of observatory facilities. It is our policy that all operational observatory facilities will be inspected by at least one Safety Representative at least twice per year. Where there are continuous or unabated safety infractions inspections will be made on a more frequent basis. A copy of this guide is provided for your convenience below:

STEWARD OBSERVATORY: SAFETY INSPECTION GUIDELINES

Safety inspections should be conducted of all Steward Observatory Facilities at least twice per year, and more often if there are unabated safety infractions. The inspections should be conducted by at least one authorized Safety Representative, preferably with a member of management or a site Safety Representative in attendance.

Pre-inspection discussion:

1. Safety concerns…what is the most unsafe job?
2. How is the department attitude towards safety, in general?
3. Is there a lock-out/tag-out program and is it used?
4. Are training records and accident records kept in the department?
5. Are there confined space issues, haz-mat issues, etc?

Telescope Inspection: Look for, loose wires, possible pinch points, lock-out tag-out devices, oil leaks, cryogenic safety (proper connectors, gloves, long sleeves, face masks, etc), telescope movement lights or sirens, fall protection devices, including tie off points, guard rails. Also look or listen for extended loud noise levels, flammable liquids exposed, unsafe ladders, access issues, control issues, sharp points or corners, unguarded belts or pulleys, etc.

Machine Shop Inspection: Look for unguarded belts and pulleys, loose wires, machines too close to each other, bad oil leaks, housekeeping, fluid disposal, two hand control buttons, emergency shut off switches, Safety glass availability and use by

operators and visitors, access to electrical panels, evidence of lock-out/tag-out, air nozzles over 35 lbs for cleaning, slippery conditions, availability of first aid kit and telephone. Check steel storage racks, parts bins and general condition of machines and equipment. Are hazardous metals being machined, if so are there proper precautions. Check grinding wheels for aluminum build up, and proper spacing of tool rests and eye shields.

Vehicle Inspection: includes cars, trucks, fork lifts, cranes, snow plows, tractors, etc: Check overall appearance and condition, check brakes, lights, turn signals, horns and back up warning systems. Look for worn tires, missing parts, crane inspection certificates, worn, leaking, or gashed hydraulic hoses. Be sure that chains and lifters are in good shape on the cranes. Do road graders and other highway vehicles have slow moving warning signs or revolving lights that work? Do all vehicles have fire extinguishers, and small safety kits with first aid items.

Fall Protection: Are there proper tie off points for employees working at heights? Does each employee have his or her own full body harness and is there a record of each inspection of each harness. Are there records of inspections of other fall protection equipment? Have employees taken training and is there a record?

Housekeeping: Are floors maintained in a clean, safe dry manner with no holes or protrusions such as nails, and no slippery areas, and no tripping hazards such as extension cords? Is equipment stored properly, at least 18 inches from the ceiling in sprinkler system areas and not in aisles. Are eating areas and bathrooms cleaned and sanitized on a regular basis?

Electrical: Look for blocked electrical panels and shut offs, extension cords being used in place of permanent wiring, flexible electric cords without strain relief. Are all boxes, feeder and branch circuits identified at the outlet and in the panel box. Are boxes and /or breakers equipped with lock holders for lockout/tagout? Are cords or wires run through walls without approved conduit?

Compressed Gas: Look for cylinders to be chained to walls or in approved standing containers. Are cylinders marked properly and do they have safety relief valves. Cylinders should not be stored in hallways or corridors or near flammables or combustibles. Is hydrogen being used and if so is it in a well ventilated area and being kept at a safe distance from flammable gases and people? Are rules concerning transportation of gases being followed?

Welding Areas: Welding should only be done in a well ventilated area, away from flammables. Only approved welding equipment, in good condition should be used and it should have anti-flash back valves installed. All welders should have been trained and records kept. Cylinders must be kept in approved carts or containers. Acetylene

cylinders shall be stored with the valve end up and all cylinders that are not in use shall have valve protection caps in place, especially when being moved. All cylinder valves should be closed when moving cylinders and when work is finished and the welder has left the area. Proper safety equipment including gloves and welding glasses or helmets must be used and in good, safe condition. Precaution must be taken to assure that visitors to a welding area cannot look at the flash or be exposed to it without proper equipment.

Signs and Labels: Are there proper exit signs, equipment warning signs, chemical labels and in use signs, fire extinguisher location signs, Safety eyewear warning signs, etc.

Fire Safety: Look for current inspection stickers on fire extinguishers. Check for accumulations of trash and flammable materials, weeds and debris. Is there a fire alarm system, smoke detectors, and, if there is a furnace, are there carbon monoxide detectors. Are routine tests for fire apparatus and fire drills performed and documented? Is there training on fire extinguishers and lists of approved persons to handle extinguishers.

Fork Lift and Crane Safety: Check equipment, approved certifications, approved operator lists, and look for leaking hydraulic hoses or cylinders. Is there an approved man lift or safety platform with guard rails and can it be secured to the fork lift mast. Check the fork pins and stops, cowling, body cage, and tires for wear. Are the forks in the lowest position when the fork lift is parked and not in use?

Security: Check for fences, locks on doors, windows etc. Are there after-hours workers, and good parking lot lights? Is there an alarm system and does it go to police directly.

Stairs and Handrails: Are the stairs painted to indicate a level change? Are handrails located at the right height?

Ladders: Check all ladders for proper feet, damage, OSHA approval in electrical shop, etc. In general, wood ladders should not be painted because paint can mask problems.

Portable Hoists and Winches: Look for current certification, wire rope connected properly, cable spooling properly, and see if there are weight limits marked. There should be an inspection log for the hoist. Check that associated slings, chains and web straps are in good condition and have regular inspection.

Fuel Tanks: Are there barricades, proper signage, vents, and emergency shut off valves? If it is underground is it due for removal, or is it a double tank? If it is above ground, is it a double tank or is it located in a spillproof container? Are there leak test valves, and if so do a leak test.

Used Oil Management: All telescopes use oil and grease in big quantities and the used oils must be disposed of properly. Look for a plan and good records for doing this. Also check that new oil and greases are stored properly as are old oils in drums in spill-proof containers.

Chemicals: Look for proper storage of chemicals and other flammable compounds. There should be specially made flammable liquid storage cabinets for oil based paints, thinners and solvents. Are there persons trained to handle chemicals. Is there an MSDS book in the vicinity of chemical usage and is there a policy to get current MSDS from the vendor selling the product to the person using it and finally into the book located in the vicinity of use?

Respiratory Protection: Look for areas that might require respiratory protection and check to see that respirators are available and being fitted and used properly.

Lasers: Are lasers being used and if so what class are the lasers and are there proper protections in place for the class of laser. Check for a laser safety program, that deals with who is authorized to use lasers and where.

General: Is asbestos or lead-based paint an issue and is there a management plan for dealing with it? Are there workers who must go in confined spaces and if so is there a program for safety? If it is in a remote place, are there persons always available who are trained in first aid, or are EMT's. Check for first aid cabinets in all areas where there are likely to be cuts and injuries, such as machine shops, shipping areas, or repair facilities

References:

Abrasive wheels	29 CFR 1910.215
Compressed gases	.101, .252
Electrical installations	.301
Emergency lights	.261
Exits and egress	.37
Fire extinguishers	.157
Hazard communication	.1200
Hoisting equipment	.66, .179
Housekeeping	.141
Ladders	.25, .26, .27
Lockout/Tagout	.147
Machine guarding	.211, .211
Manlifts	.68
Personal protective equipment	.132 -.137
Powered industrial trucks	.178
Pneumatic tools	.243
Signs	.145+
Tanks and storage	.106
Welding	.252
Woodworking machines	.213
Work platforms	.66, .67

Transporting Injured Employees:
To establish guidelines for transporting injured or ill employees located on the University of Arizona Campus or in the city of Tucson:

Serious Injury or Illness:
Call 911 if an employee becomes seriously injured or ill while on duty. If a person has suffered or may be suffering a heart attack or stroke, has severe breathing difficulties or is not breathing, has lost consciousness after an injury, has an epileptic seizure, has suffered a fractured neck, spine or femur, has gone into shock, has lost a significant of blood, has had a limb amputated, etc., any responding employee must:

1. Call 911 and request assistance describing the situation.
2. Notify the injured or ill person's supervisor.
3. Provide any first aid and comfort prior to the arrival of emergency personnel.
4. Never drive or move anyone with the above injuries or illness.

A UAPD officer will always respond to 911 calls and be in communication with dispatch and paramedics. UAPD cannot transport injured employees. The responding officer will provide a written case number for the incident.

Non –Serious Injury or Illness:
If an employee is non-seriously ill or injured while on duty, then accompany that person to a medical care facility by whatever means deemed appropriate (walk, drive, UA vehicle).

1. Locate the MSDS (if applicable) and provide to injured employee.
2. Notify the employee's supervisor.
3. Supervisors shall ensure that they or a co-worker, accompany the injured or ill person to the medical care facility but they must let the medical facility know that the injury or illness is work related.
4. The injured/ill employee can drive on himself or herself to a medical facility. The employee can choose to go to any medical facility.
5. Provide the employee with the Workman's Comp address and phone number to give to the medical personnel for work related injuries.

If emergency personnel are clearly not necessary and if the employee requires medical attention or wishes to return home, the following option is permissible if the employee feels he or she cannot manage alone.

- Then the injured/ill employee may notify, or request to have notified, a family member or another individual arrange for transportation.

Crane Safety is a major area of concern to OSHA and as a result there are many references to crane safety in OSHA documents. Also crane safety is a major area of concern to Steward Observatory as there are many cranes of different types in the Observatory. If you will be involved in the operation of cranes, the major OSHA websites that you should familiarize yourself with are:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10760
and:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9830
and:
http://www.osha.gov/SLTC/cranehoistsafety/recognition.html

Further, if you will be making unusual or significant lifts, you should read section 46 and understand it before proceeding.

All Observatory cranes are to be professionally inspected on an annual basis, and fixed immediately if not certified, or locked out, if not fixed immediately. Cranes should be visually inspected before each use to determine that the cables are not frayed, the hand controls work properly, and that proper safety hooks are in use.

This policy was written by Warren Davison in December, 2006 as a result of a near-miss accident and has been included in the Safety Manual as a guide to all Steward Observatory employees and departments.

1. Purpose:

To provide guidelines and a method to establish a safe and intelligent way of moving materials. Although this applies to the Mirror Lab cranes explicitly the directions are applicable to moves by fork lifts or other conveyances, or at other facilities. The main directive is to get more help when you need it whether it involves something as simple as asking another person to check the rigging or as complex as a written and controlled procedure.

2. Definition of a Significant Lift:

Significant lifts are lifts in which you need to get more information or experience involved to ensure that it goes safely. The idea is that the larger the number of the following guidelines that apply then the more help and therefore more formal you should become until the task can be accomplished safely. These include but are not limited to the following guidelines.

A. If you are unsure or do not know for sure that the lift is safe then it is a significant lift and you need to seek help. <u>ASKING</u> is always correct.

B. When the action is infrequent or complex. The handling of a 5000 lb spreader bar may be routine but a 500 lb special device may be a significant lift since it has not been done before.

C. The weight is large. This is again a relative term and depends on what you are doing. Special considerations should be given to the following.

1. Relative capacity of the device. Lifting 4 tons with a 5 ton crane is more of a significant lift than 10 tons with a 50 ton crane. If you are over 50% of the rated capacity of the device then unless this is a very repetitive lift it is a significant lift.
2. When the absolute weight of the lift exceeds 10 tons, it is a significant lift, even if it is usual.
3. When hand lifting something which weighs over 150 lbs, requiring several people to share the load, it is a significant lift and needs consideration and planning.

D. The clearance is small or the size is large:

1. Proximity of people is an important consideration. No one is allowed under a load but if they need to be near it to secure it with bolts or around it when it could swing then it is a significant lift.
2. The clearance around an object could make a significant lift. When a little swing could damage something there needs to be consideration given.

E. The stability of the move is another important consideration:

1. If you are turning a load over and it may flop. If you are close to this condition it is a significant lift.
2. When a load may topple when released it is a significant lift.
3. When you use more than one device like one side lifted with a crane and the other with a fork lift it is a significant lift.
4. When you know the load will swing or slide when lifted it is a significant lift.

F. When the load is fragile or very costly increased vigilance is demanded:

1. Mirrors are always a significant lift. The only exceptions would be ones under 3 meters when the move has been repeated many times and the rigging and procedure approved and proven.
2. Mirrors over 3 meters in size are required to have a senior engineer or scientist present when lifted by a crane.
3. Mirrors over 6 meters in size are required to have a written and approved procedure in place and have a senior engineer or scientist present before the lift is made.

G. Complex or special rigging:

1. Rigging to more than 3 points is tricky and when done for the first time on a load it is a significant lift.
2. Rigging where you use more than 50% of the rated rigging capacity is a significant lift.
3. An unusual shaped object where the center of gravity is unknown is a significant lift.

3. Methods of handling a significant lift:

A. The method of handling a significant lift depends on how significant it is. If you are in doubt, then assign a higher level to the action. Seek help and guidance until questions and doubts are answered. Never deny help to anyone who asks, but you can delay for short periods or help in finding more help.

B. The following levels are escalations in complexity and formality and should have an appropriate level for any activity. A knowledgeable person can also reduce the levels if appropriate.

1. **Discuss the lift and gain the information required.**
2. **Find a coworker with more knowledge or experience to guide the lift.**
3. **Find a supervisor or engineer with sufficient knowledge to guide the lift.**
4. **Have a written procedure for the lift.**
5. **Have a written and reviewed procedure for the lift.**
6. **Have a written and reviewed procedure and an approved safety observer for the lift.**

All employees will have their performance measured in the area of safety by the following metrics:

01. Did you perform your assignments in a manner that will not endanger yourself or your fellow employees?
02. Have you adhered to established safety policies, programs and procedures?
03. Have you utilized safety equipment in a proper manner?
04. Have you reported unsafe conditions, work related injuries or illnesses and near misses to your supervisor?
05. Have you promptly sought medical attention if injured on the job?
06. Have you worked with your supervisor to establish a required training program for your job and have you taken said training?
07. Is the work area that you and your employees occupy consistently kept clean and free of hazards?

In addition to the above, each employee should be asked to perform a self evaluation and list the areas in which he or she excels and areas that could use improvement. This should include such items as identifying barriers to safety in the workplace and how those barriers can be overcome. This is also a good time for each employee and his or her supervisor to work together to establish a training program for the following year.

If you are a supervisor or manager, some or all of the following additional metrics will be considered in your performance evaluation:

01. Have you established a safety training program for each of your employees and required them to participate?
02. Have you consistently held "Tailgate Safety Meetings" as required in Section 37 of the Safety Manual?
03. Are you consistent in requiring your employees to wear personal protective equipment when necessary?
04. Is the work area that you and your employees occupy consistently kept clean and free of hazards? Did you inspect the area on a regular basis?
05. Are Safety considerations always incorporated into the scheduling process in order to complete the job properly?
06. Have you required employee compliance with safety requirements and rules, and stopped work if there is non-compliance?
07. Have you recognized and reinforced safe behaviors, and corrected unsafe behaviors when first observed?
08. Have you made safety and health a part of job standards and procedures?
09. Did you request safety and health technical assistance when necessary?

10. Did you report and investigate accidents and take appropriate corrective actions?
11. Did you establish emergency procedures for your employees and their work area?
12. Have you asked all of your employees to do a department or area safety evaluation in which employees identify barriers to good safety practices, and then followed up to correct those barriers?

The above listing is not designed to be all-inclusive, but a minimum. Additional metrics may be added from time to time depending on accident rates and other factors.

The UA Pandemic Response Planning Subgroup, part of the Campus Emergency Response Team (CERT) has developed appropriate measures to be taken during a potential pandemic influenza outbreak. These measures include:

01. Campus Plan
02. Continuity of Operations Plan
03. Campus Communications
04. Subgroup Members
05. Useful Pandemic/Emergency Response Information

Much more detail on the above can be found at the U of A website:
http://cert.arizona.edu/pandemic_plan.html

The Pandemic Influenza-Continuity of Operations Plan (COOP) for Steward Observatory has been completed and is on file with the UA Manager of Emergency Preparedness at 621-3507.

And finally, you should use the CDC Pandemic Flu Planning Checklist for Individuals and Families to make sure you and your family are prepared for this type of situation. It is available at:
http://www.pandemicflu.gov/plan/individual/checklist.html

Many departments within Steward Observatory utilize students as workers. The students are paid wages and have workers compensation insurance. They are subject to the same rules and have the same responsibilities as all other non-student workers. However, there are some items that must be considered when utilizing student labor. The first major consideration is whether the student is at least 18 years of age. If he or she is not 18, and not had a drivers license for at least two years, they are not allowed to drive or operate university vehicles or equipment. Also, they cannot be treated for medical emergency without a written consent form from their parents or guardians. That item by itself means there are certain limitations on what you might ask them to do and where they may be allowed to go. For example, taking an underage person to any of our mountaintops, or on any trip, without a written consent form could be a problem.

OSHA has no specific policies regarding workers under age 18, as their policies apply to all workers. However the Wage and Hour Division of the U.S. Department of Labor has regulations that pertain to workers under the age of 18. For more information on this please go to: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=22820 and for information on drivers go to: http://www.dol.gov/esa/whd/regs/compliance/whdfs34.htm

The specific University of Arizona rules regarding driving can be found at: http://risk.arizona.edu/fleetsafety/policy/index.shtml

The specific University of Arizona rules regarding personal conduct and student responsibilities as workers can be found at: https://financialaid.arizona.edu/WorkStudy/student_student_employment_manual.aspx

In general, all student workers must be given all of the same training for any given job that a non-student worker must be given. Further, they should be supervised much more closely than a full-time regular hire that presumably has experience. This means that students over the age of 18 who have had a drivers license for over two years may operate vehicles and moving equipment such as fork lifts, articulating booms, scissor lifts, etc., provided that they have received thorough training on such equipment, and provided that this is University owned equipment. If this is rental equipment, the rental contract will normally stipulate ages of operators.

Fleet safety Policy: Drivers of standard vehicles (sedans, pickups, golf carts, etc, that do not require special licensing) must be at least 18 years of age, and have been licensed for a minimum of two years prior to driving on university business.

http://www.dol.gov/esa/whd/regs/compliance/whdfs34.htm fact sheet #34

This Safety Manual is intended to be an on-line, web based manual that utilizes hyperlinks to keep it current with the University of Arizona Risk Management Department Policies as well as OSHA Policies. The original manual contained 46 sections and was approved with signatures by the Management of Steward Observatory and the Risk Management Department in July and August of 2008.

A record has been kept of all changes to this manual since that time and will be shown in the Appendices Section, under the heading of “Changes to This Manual”. Each time a major change or a new section is added, an e-mail will be sent to the Steward Observatory Safety Committee for their approval and to the Director of Risk Management and the Associate Director of Steward Observatory requesting their approval.

The e-mail to the safety committee will state that “This policy will be voted on by this committee at the next Quarterly Safety Meeting (provided that there is a quorum) and will be open for at least one month prior to the meeting to give each committee member time to read and comment. A form has been developed and is shown on the next page and in the forms section to document all changes to the manual.

After approval by vote of the Safety Committee an e-mail will be sent to the Risk Management and Steward management requesting them to send a responding e-mail authorizing the change. Copies of those e-mails will be kept on file and a record of them will be shown in the Change section of the appendix.

Safety Manual Update Form

LETTER OF APPROVAL
Steward Observatory Safety Manual Changes

Date:

To: Jeff Kingsley, Steve Holland

From: Dale Webb and Karen Kenagy

Attached are copies of [name] sections for the Steward Observatory Safety Manual written in 2009. They have been approved by vote of the Steward Observatory Safety Committee and have been reviewed by at least one member of the Risk Management Department.

If you approve of these sections, please respond with a written note stating that.

Thank You…….Dale and Karen

THE STEWARD OBSERVATORY
HAZARD REPORT FORM

BACKGROUND INFORMATION

Employee reporting incident_____

Job Title_____

Dept. _____Work Phone_____

Date of Incident _____ Time_____

Location of incident_____

Employee(s) involved_____

Resulting injury(s)_____

Description of equipment/ process_____

_____

How / why equipment/process is hazardous_____

_____

_____

Is there a SOP for this equipment/process? ☐ Yes ☐ No.

Were the SOPs being followed? ☐ Yes ☐ No.

NARRATIVE OF INCIDENT

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Did anyone witness the incident? ☐ Yes ☐ No. If so, who? _____

SUPERVISOR'S INFORMATION

Name/Title of supervisor_____Phone number_____

Date supervisor notified of incident_____

What Supervisory actions will be taken to prevent recurrence? _____

_____

If the information provided indicates a significant potential for a more serious event, RM&S may conduct a more detailed incident investigation.

Signature of employee _____Date_____

Signature of Supervisor _____Date_____

Safety and You!

Steward Observatory

University of Arizona

Authorization for Non-Injury Medical Examination

(Risk Management & Campus Health)

Located at UA Campus Health or Concentra Medical Services

Occupational Health Services, Campus Health,

1224 E. Lowell St. (W. of Highland at 6th St.) 626-6363 phone, 626-2416 fax

Campus Mail: P O Box 210095

Concentra Medical Services

across from El Con Mall 3402 E. Broadway Blvd., 881-0050 phone 795-8815 fax

Must present photo ID at time of service

Authorized by:	Julia Rosen	Title:	Health & Safety Officer
Phone:	621-1570	Date:	07/21/06

Employee Name:	_____	UA employee ID	_____	Work Phone:	_____
Department:	_____	*(Hint - it is on your health insurance card)*		Fax:	_____
Shop/Group:	_____	Supervisor/ P.I.:	_____	Email:	_____
Campus Mail Address:		Admin Contact:			

Campus Health / Concentra Medical Services: Results

Date of Exam: Date Reported:

					Initials/Comments
DOT Physical *(Concentra)*					
( )	Initial	Pass	Fail	Hold	
( )	Recertification	Pass	Fail	Hold	
DOT controlled substance testing *(Concentra)*					
( )	Breath Alcohol	Pass	Fail	Hold	
( )	Preplacement	Pass	Fail	Hold	
( )	Reasonable suspicion	Pass	Fail	Hold	
( )	Random	Pass	Fail	Hold	
( )	Post-accident	Pass	Fail	Hold	
( )	Follow-up	Pass	Fail	Hold	
( )	Analyze split sample	Pass	Fail	Hold	
Special Physical Exams **(X) Initial ( ) An** ***(1/2 mask air purifying respirator with acid gas cartridges)***					
(X)	Respirator - OSHA questionnaire *(Campus Health)*	Pass	Fail	Hold	
( )	Respirator physical exam *(Campus Health)*	Pass	Fail	Hold	
( )	Asbestos/RCF respirator physical *(Campus Health)*	Pass	Fail	Hold	
( )	Pulmonary function test	Pass	Fail	Hold	
( )	X-ray, single view	Pass	Fail	Hold	
( )	Hazmat physical exam *(Campus Health)*	Pass	Fail	Hold	

		Levels	
Blood Tests			
( )	Lead		
( )	Zinc protoporphyrin		
( )	CBCs		
( )	SMAC		
( )	Mercury		
( )	Chromium		
( )	Other_____		
Urine Tests			
( )	Mercury		
( )	Cadmium		
( )	Other_____		

Post-Exposure Exams

( ) Describe:

Billing: (X) Risk Management

( ) Other Department:

Billing Contact Name:

Phone #:

Steward Observatory

New Emplyee Training Requirements

(R = Required Training, D = Desirable Training)

Employee Name: _____ Date: _____

Job Title: _____ Supervisor Signature: _____

Job Duties: _____ Reviewed By: _____
(Safety Officer Signature)

Circle work sites and training requested below

	SO Mirror Lab							*SO ETS*						*ITL*							
TRAINING:	CASTING	POLISHING	SMALL OPTICS	MIRROR TESTING	INTEGRATION	MAINT. SUPPORT	MURPHEY'S SHED	MACHINE SHOP	ELECTRONICS	LOTIS	MT. OPS	MGIO	CAAO	ALL	MAINT. & SUPPORT	MACHINE SHOP	CHEM. LAB USERS	LBT1	LBT0	MMTO	OTHER AREAS
Safety Manual	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			R
Area Work Platforms	R	R	R	R	R	R				R		R						D			
Audiograms	R	R		R	R	R		R		R	D	R									
Confined Space	R			R	R	R						D									
CPR / AED	D	D	D	D	D	D	D	R	D	D	R	D		D				R			
Crane	R	R	R	R	R	R	R			R	R	D						D			
Cryogenics								D	R		R	R						R			R
Comp. Gas Cylinder								R	R		R	R						R			R
Driver Safety	D	D	D	D	D	D	D	R			D	D		D				R			
Ergonomics	R	R	R	R	R	R	R														
Fall Arrest	R	R	R	R	R	R				R	R	D			R			R			
Fire Extinguisher	R	R	R	R	R	R		R	D	R	R	D		R				R			
First Aid	D	D	D	D	D	D	D	R	D	D	R	D		D				R			
Forklift	R	R	R	R	R	R		R		R	R	R						D			
Fluid Mgmt	R	R	R		R	R	R	R				R									
Haz. Mtl. (HF Acid, Opti-Coat,	R	R	R	R	R	R	R	R		R	D	R					R				
Hearing	R	R	R	R	R	R	R	R		R	R	R		D				D			
High Altitude					R						R	R						R			
HOV Training					R						D							R			

Steward Observatory

New Emplyee Training Requirements

(R = Required Training, D = Desirable Training)

	SO Mirror Lab							*SO ETS*						*ITL*							
TRAINING:	CASTING	POLISHING	SMALL OPTICS	MIRROR TESTING	INTEGRATION	MAINT. SUPPORT	MURPHEY'S SHED	MACHINE SHOP	ELECTRONICS	LOTIS	MT. OPS	MGIO	CAAO	ALL	MAINT. & SUPPORT	MACHINE SHOP	CHEM. LAB USERS	LBT1	LBT0	MMTO	OTHER AREAS
Laser	D	R	R	R	D	D				R		R									
Lockout / Tagout	R	R	R	R	R	R	R	R	R	R	R	D			R			D			
Machine Guarding	R	R	R	R	R	R	R	R	R	R	D	R				R					
RCF Physical	R							D				R									
Respirator	R	R	R	R	R	R	R	D			D	D									R
Respirator Fit Test	R	R	R	R	R	R	R	D		R	D	D									R
Rigging	R	R	R	R	R	R	R			R	R	R						D			
Safety Orientation	R	R	R	R	R	R	R	R	R	R	R	R		R*				R			
Scaffolding	R	R		R	R	R	R			R	D	R									
Waste Disposal	R	R	R	R	R	R	R	R	R	R	R	D					R	D			

Steward Observatory

New Emplyee Training Requirements

(R = Required Training, D = Desirable Training)

	SO Mirror Lab							*SO ETS*						*ITL*							
Current VIDEO Training List	CASTING	POLISHING	SMALL OPTICS	MIRROR TESTING	INTEGRATION	MAINT. SUPPORT	MURPHEY'S SHED	MACHINE SHOP	ELECTRONICS	LOTIS	MT. OPS	MGIO	CAAO	ALL	MAINT. & SUPPORT	MACHINE SHOP	CHEM. LAB USERS	LBT1	LBT0	MMTO	OTHER AREAS
New Bloodborne Pathogens: The Complete Program																					
Orientation 2000 (Long Version)																					
Personal Protective Equipment (PPE) It's Your Call																					
Basic Electrical Safety in the Work Place																					
Electrical Safety Related Work Practices Standard																					
Office and Computer Ergonomics																					
System Lifting 2000/Back Injury Prevention																					
Carpal Tunnel Syndrome																					
HAZCOMM for the New Millennium (Long Version)																					
Ergonomics in the 21st Century																					
MSDS & Hazard Communications																					
Safety Awareness Presentation 10/19/07 - Patrick Galloway																					
Safety Awareness Presentation 10/19/07 - Mark Norton																					

Safety Equipment Checkout

Name (please print**):** _____ **IH/Safety Officer:** _____

Supervisor: _____

Group (circle please**):** **CASTING** **POLISHING** **INTEGRATION** **LOTIS** **OTHER**

EQUIPMENT (check please):	**QUANTITY:**		**DATE ISSUED:**	**DATE RETURNED:**
☐ **Laser Goggles (Type:_____) (S/N:_____)**	_____		_____	_____
☐ **Safety Goggles (Prescription:_____)**	_____		_____	_____
☐ **Safety Goggles**	_____		_____	_____
☐ **Hard Hat**	_____		_____	_____
☐ **Fall Protection Equipment**	_____		_____	_____
☐ **Respirator (Type:_____)**	_____		_____	_____
☐ **Work Gloves**	_____		_____	_____
☐ **Other:_____**	_____		_____	_____

Signature: _____

Steward Observatory

Pre - Class Registration for Training for: _____

Day / Date: _____

	Name Print	Group (please check which group you're with)									
		Mirror Lab				ETS	LBT	LOTIS	MMT	Mtn. Ops.	Other (please fill in)
		Casting	Polishing	Sec. Pol.	Small Optics						
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Steward Observatory

Training for: _____ **Trainer:** _____

Date and Time: _____ **Location:** _____

	Name		Group (please check which group you're with)									
			Mirror Lab									
	Print	Sign	Casting	Polishing	Sec. Pol.	Small Optics	ETS	LBT	LOTIS	MMT	Mtn. Ops.	Other (please fill in)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

Steward Observatory

Authorization for Purchase of
Prescription Safety Glasses

Date: _____

This form is to authorize _____ (employee name) to purchase prescription safety glasses and receive reimbursement to the extent of the cost of the glasses or $100.00; whichever is the lesser amount. The employee will pay all expenses and be reimbursed up to $100.00 and provide proof that the eyewear meets or exceeds the ANSI Z87-1989 standard. Evidence of meeting the ANSI standards must be presented along with receipt/invoice.

The preferred method for obtaining safety glasses (because the University receives a substantial discount) is for the employee to go to the University website: http://risk.arizona.edu/healthandsafety/personalprotectiveequipment.shtml. Next, click on the link "Prescription Eyewear Program" and follow the instructions provided. The site will prompt for the employee's NetID and password. Then, the employee will be required to provide the credit card information on the secure connection. The credit card will not be charged until the glasses are shipped. The final cost for most glasses should be $85.00 for the glasses plus $27.00 for the provider services, or $112.00 total. The employee will then be reimbursed $100.00 once the paperwork and receipt/invoice have been received and processed by the responsible signature authorities.

It is the responsibility of the employee to pay for the cost of an eye examination.

Once an employee is reimbursed for the safety eyewear, she or he is required to wear said eyewear on the job and encouraged to wear them off the job.

_____ _____
Employee Name (Please Print) Employee Signature

_____ _____
Supervisor Signature Safety Officer Signature

_____ _____
Account Number Project Number

Steward Observatory

Steward Observatory

Authorization for Purchase of
Safety Footwear.

Date:_____

When properly completed, this will authorize said employee to purchase footwear and receive reimbursement to the extent of the cost of the shoes or $75.00; whichever is the lesser amount. Present this form, together with a receipt bill, to the Safety Officer. In order to ensure the purchase of safety footwear, the receipt must indicate the item purchased. The form and receipt will then be processed for payment.

There are no restrictions on the style or brand of said shoes, however the shoes must meet the minimum ANSI standards. Evidence of meeting the OSHA and/or ANSI standards must be presented along with the receipt.

Once an employee is reimbursed for the safety footwear, they are required to wear them on the job.

It is the responsibility of the employee to provide evidence that existing safety shoes require replacement. Except in the case of accident/damage to the shoes, replacement will not be approved more then once per year.

_____ _____

Employee name (Please print) Employee Signature

_____ _____

Supervisor Signature Safety Officer Signature

_____ _____

Account Number Project Number

Aerial Lift Pre-Use Inspection Checklist

Operator: Date:	Model/Serial No:
Unit Type: ☐ ***Scissor Lift*** ☐ ***Articulating Boom***	Location:

1. Pre Start-Up Walk-Around	Status OK	NO	N/A
Wheels, tires, and Axils - condition/inflation	☐	☐	☐
Hydraulic components - condition/leaks	☐	☐	☐
Data plate - accurate/legible	☐	☐	☐
Annual inspection certification - valid/legible	☐	☐	☐
Battery tray - opens/closes easily, latches shut	☐	☐	☐
Turret turntable - gears/lock pin/stops	☐	☐	☐
Counterweight	☐	☐	☐
Cover panels - open/close easily, latch/lock shut	☐	☐	☐
Engine - fluids/filters/belts/hoses	☐	☐	☐
Batteries - clean/dry/secure/caps-cables/level	☐	☐	☐
Fuel tank - level	☐	☐	☐
Hydraulic oil level	☐	☐	☐
Lights and strobes	☐	☐	☐
Placards/labels/decals	☐	☐	☐
Boom valley/under platform - leaks/debris	☐	☐	☐
Accessory plugs and cables	☐	☐	☐
Boom/lift arms - general condition/wear	☐	☐	☐
Hydraulic cylinders and pin locks	☐	☐	☐
Articulated joints - wear/cracks	☐	☐	☐
Power track - lines/hoses	☐	☐	☐
Platform - guard rails/toe board/anchorages	☐	☐	☐
Weather resistant storage compartment - appropriate manuals	☐	☐	☐
All controls - clearly marked/hold to run	☐	☐	☐
Other:	☐	☐	☐

2. Powered Checks	Status OK	NO	N/A
Engine - starts/oil pressure	☐	☐	☐
Battery - charge level	☐	☐	☐
Gauges and instruments - hour meter/warning lights	☐	☐	☐
Ground and platform controls:	☐	☐	☐
~Boom/Lift arms - raise/lower/extend/retract	☐	☐	☐
~ Turret rotate	☐	☐	☐
~ Drive - forwrad and reverse	☐	☐	☐
~ Steer - left and right	☐	☐	☐
~ Platform - tilt/rotate/extend	☐	☐	☐
~ Horn	☐	☐	☐
~ Outriggers/stabilizers/pothole protection	☐	☐	☐
~ Extendable axles	☐	☐	☐
~ Function-enable (deadman) pedal/ switch	☐	☐	☐
Manual/auxillary controls	☐	☐	☐
Safety interlocks	☐	☐	☐
Other:	☐	☐	☐

3. Workplace Inspection	Status OK	NO	N/A
Drop-offs or holes	☐	☐	☐
Bumps and floor/ground obstructions	☐	☐	☐
Debris	☐	☐	☐
Overhead obstructions	☐	☐	☐
Energized power lines	☐	☐	☐
Hazardous locations	☐	☐	☐
Ground surface and support conditions	☐	☐	☐
Pedestrian/vehicle traffic	☐	☐	☐
Wind and weather conditions	☐	☐	☐
Other possible hazards	☐	☐	☐

Comments:

Operator's Initials:	Alternate Operator's Initials:

FALL ARREST
Full Body Harness Pre-Assignment Inspection

PASSED ☐ Date Inspected: ___ / ___ / ___
FAILED ☐ dd mm yy

User's Name: _____ Inspected By: _____

Manufacturer: _____ Serial/Model Num: _____

1. WEBBING	2. BUCKLES	3. STITCHING
☐ Damage due to Chemicals	☐ Cracked	☐ Broken
☐ Damage due to Heat	☐ Corroded	☐ Burnt
☐ Damage due to UV	☐ Damaged	☐ Cut
☐ Discoloration	☐ Distorted	☐ Frayed
☐ Fibers Broken	☐ Poor Function	☐ Missing
☐ Fibers Cut	☐ Sharp Edges	☐ Pulled
☐ Fibers Fraying	☐ Welded	☐ Other _____
☐ Requires Cleaning	☐ Worn Parts	_____
☐ Other _____	☐ Other _____	
_____	_____	
☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail

4. GROMMETS	5. "D" RING	6. RIVETS
☐ Not Applicable	☐ Bent	☐ Not Applicable
☐ Bent	☐ Cracked	☐ Bent
☐ Chemical Corrosion	☐ Damaged	☐ Corroded
☐ Loose	☐ Distorted	☐ Loose
☐ Missing	☐ Sharp Edges	☐ Missing
☐ Other _____	☐ Welded	☐ Other _____
_____	☐ Other _____	_____
	_____	
☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail

7. LABELS	8. PLASTIC "D" SHIM	9. KEEPERS
☐ Missing	☐ Missing	☐ Missing
☐ Not Legible	☐ Poor Condition	☐ Poor Condition
☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail

Note: If one or more items have been checked in boxes 1-9, the harness must be removed from service.

Note: If the harness has been modified/altered in any manner, it must be removed from service.

Removed From Service: ☐ Yes ☐ No Date: ___ / ___ / ___
dd mm yy

Repairs (to be completed by): _____ ( )_____-_____

Returned to Service: ☐ Yes ☐ No Date: ___ / ___ / ___
dd mm yy

THE UNIVERSITY OF ARIZONA
SUPERVISOR'S REPORT OF EMPLOYEE INJURY / ILLNESS
SEVEN (7) CALENDAR DAY DEADLINE TO FILE

Department subject to assessment up to $10,000 for late filing
All information is required to comply with both Workers' Compensation Law and OSHA.
Call 1-800-837-8583 to make an immediate report.

THIS FORM MUST STILL BE COMPLETED EVEN IF THE 800 NUMBER IS CALLED

INJURED/ILL EMPLOYEE INFORMATION

Name_____ ☐Male ☐Female
S.S. No._____ DOB_____
Home Phone_____
Home Address_____
City_____ State_____ Zip_____
Marital Status (S M D W)_____# of dependants_____

WORK INFORMATION

Job Title_____
Date of hire_____ Normal work shift_____
Department_____
Campus Address_____
Dept. #_____Work Phone_____

INJURY OR ILLNESS INFORMATION

(See reverse side for Instructions)

Date of incident/illness_____ Time_____ Nature of injury/illness _____Area of body effected:_____
Location_____ room#/shop# _____Type of injury/illness_____
If off campus, give address_____
HOW DOES THE EMPLOYEE EXPLAIN INJURY OR ILLNESS_____
_____
_____
Did anyone see employee get injured? ☐ No ☐ Yes. Name of witness:_____
How was the injury treated? Check all that apply. ☐First Aid ☐Campus Health ☐Emergency Room ☐Employee's HMO ☐No Treatment
State **where** for <u>each</u> box checked above:_____

SUPERVISOR'S INFORMATION

Name/Title of supervisor_____Phone number_____
Date supervisor notified of injury/illness_____ Did injury result in time lost from work? ☐ Yes ☐ No
Did the task resulting in injury require personal protective equipment (PPE)? ☐ Yes ☐ No Was it being worn? ☐ Yes ☐ No
If PPE required and not worn, Explain_____
Do you have any reason to believe injury/illness may not have occurred on the job? ☐ Yes ☐ No State your concerns: _____
_____
What Supervisory actions will be taken to prevent recurrence?_____
Did you or employee call the 1-800 #? (800-837-8583) ☐ No ☐ Yes If "Yes", indicate the date: _____

If the information provided indicates a significant potential for a more serious event, RM&S may conduct a more detailed incident investigation. (Instructions will be provided.)

Signature of Supervisor (required) _____Date_____

<u>NOTE: FORM MUST BE COMPLETELY FILLED OUT TO BE ACCEPTED!</u>

FOR FASTER RESPONSE, FAX TO (520)-621-3706

<u>CAMPUS MAIL</u>: P. O. Box 210300;
<u>HAND DELIVER</u>: 220 W. Sixth St., 4th FL South (BLDG. 300A)
<u>U.S. MAIL</u>: Risk Management & Safety, Worker's Comp, P.O. BOX 210300, Tucson AZ 85721-0300

MAKE COPIES FOR SUPERVISOR AND EMPLOYEE

THE UNIVERSITY OF ARIZONA
SUPERVISOR'S REPORT OF EMPLOYEE INJURY/ILLNESS

EMPLOYEE RIGHT: Workers' compensation is a right of all U of A employees/student employees

SUPERVISOR MUST FILL OUT THIS REPORT FOR:

1) All incidents involving injury or job related illness.
2) All incidents that could have resulted in injury or illness.

PURPOSE OF REPORT:

1) To help prevent similar incidents in the future.
2) Support Workers' Compensation claim for injured/ill employee as applicable.
3) OSHA compliance

REPORT MUST BE FILED:

1) By a supervisor or, in their absence, the acting supervisor.
2) Any incident/illness should be reported initially to **1-800-837-8583.**
3) If the injury or illness required immediate medical treatment, you must report incident/illness to State Risk Management (Arizona Department of Administration) **1-800-837-8583** within 24 hours.
   Fax report to The University of Arizona, Risk Mgmt. & Safety, (520) 621-3706.
   Mail original by Campus Mail to The University of Arizona, Risk Mgmt. & Safety, P.O. Box 210300
   Or Hand Deliver to Risk Mgmt. & Safety, 220 W. Sixth Street, 4th FL South (USA Bldg. 300A)
4) All other incidents must be filed in **SEVEN CALENDAR DAYS.**
5) If additional space is needed, please attach separate paperwork.

DESCRIPTION BY TYPE

Bodily Reaction
Caught In, Under or Between
Contact w/Animals
Contact w/Electric Current
Contact w/Cold--Atmosphere
Contact w/Cold Objects
Contact w/Heat--Atmosphere
Contact w/Hot Objects
Contact w/Chemicals
Contact w/Substance
Contact w/Machinery
Contact w/Tools
Contact w/ or Exposure to Radiation—Absorption; Ingestion; and/or Inhalation
Fall from Elevation
Fall from Materials
Fall from Scaffold
Fall from Vehicle
Fall in Opening
Fall on Same Level
Fall on Stairs
Fall onto Objects
Fall onto Walkway
Lifting Object – Pulling or Pushing, Wielding or Throwing
Motor Vehicle Accident -- U of A, Personal, or Other Vehicle
Public Transportation Accident:
- Aircraft Accident
- Bus or Boat Accident
- Streetcar or Subway Accident
- Taxi or Train Accident
- Other Transportation Accident

Rubbed or Abraded:
- By Leaning, Kneeling, or Sitting
- By Vibration of Objects
- By Foreign Matter in Eye
- By Repetition of Pressure

NATURE OF INJURY--CATEGORIES

Amputation
Burn (chemical)
Burn or Scald (heat)
Cancer
Concussion
Contagious/Infectious
Contusion
Crushing/Bruise
Cut/Laceration
Dermatitis/Rash
Dislocation
Electric Shock
Fracture
Freezing
Hearing Loss
Heart Attack
Heat Stroke
Hernia, Rupture
Inflammation
Pneumoconiosis
Poisoning
Puncture/Bite
Radiation
Scratches/Abrasions
Seizure
Sprains/Strains
Stroke
Sunburn/Sunstroke
Multiple Injuries
Occupational Disease
Other Injuries

LETTER OF APPROVAL
Steward Observatory Safety Manual Changes

Date:

To: Jeff Kingsley, Steve Holland

From: Dale Webb and Karen Kenagy

Attached are copies of [name] sections for the Steward Observatory Safety Manual written in 2009. They have been approved by vote of the Steward Observatory Safety Committee and have been reviewed by at least one member of the Risk Management Department.

If you approve of these sections, please respond with a written note stating that.

Thank You……Dale and Karen

- Employees who are injured on the job may seek medical care at a variety of places, including their own private physician.

✶ Do not hesitate to call 911 if an employee has sustained a major injury or if they are complaining of chest pain.

- The Campus Health Service (CHS) at the Acute Care Clinic (ACC) will be able to provide care for some on the job injuries involving employees.
  - Employees who go to Campus Health should complete a triage form at the front desk in the main lobby. A triage nurse will see them; evaluate their needs and the ability of the clinic to meet those needs.
  - Campus Health Triage Nurse 621-6493
    - M, T, Th, F 8:00 am - 5:00 pm or Wed 9:00 am - 5:00 pm

✶ **Any incident / illness requiring medical treatment must be reported to the employee's supervisor within 24 hours.**

✶ **UA Risk Management, Worker's Compensation and OSHA require all supervisors to complete a "Supervisors Report of Injury", within 24 hours of being notified.**
  - Form is available on the U of A Risk Management web site: http://risk.Arizona.edu/insurance/workerscomp.shtml.

✶ **If an injury occurs after hours go to a hospital Emergency Room, or Urgent Care.**
  - **You must tell them that this is a work related injury.**

✶ **You may also see your primary care physician for work related injuries.**
  - **You must tell your provider that this is a work related injury.**

- Normally the best place for employees to be cared for are Occupational Health Clinics who are used to using the Workers Compensation system, determining work status, and getting employees back to work in a timely manner. However, the employee has a right to seek care where they wish.

- If your claim is an acceptable claim per the Workers Compensation Group, they will pay for your care.
  - Coverage may also be available through your private insurance.

- Below is a partial list of clinics based on our knowledge of providers in the Tucson community and discussions with State Risk Management. They are all fairly close to campus and are open during general business hours.

✶ **Questions: contact Belen Aranda, 621-3626, baa@email.arizona.edu.**

Please use this information to help employees decide where to go for care.
If you have *any questions* about where to send an employee, you may contact:
Campus Health Triage Nurse, 621-6493, M, T, Th, F 8:00 am - 5:00 pm, Wed 9:00 am - 5:00 pm

Injury	Decision
Amputation (severed body part)	**Call 911**
Massive Trauma (multiple injuries)	
Chest Pain	
Broken bones – that protrude through the skin	
Electrocutions/electrical jolt/arc flash	
Loss of consciousness including seizures	
Chemical exposure **with** difficulty breathing	
New Back Pain	Send directly to an Occupational Health Clinic. Listed Below
Orthopedic Injuries including those with and without broken bones, and sprains/strains	
Non-Acute Chronic Injuries or conditions that have been present for some time (example: allergies to chemicals used)	
Repetitive Use Injuries (example: wrist pain from lots of typing or lifting)	
Exposures to chemicals **without** difficulty breathing	Send to Campus Health (CHS-ACC) Map
Blood Borne Pathogen Exposures (exposures to fluids with possible infectious or unknown organisms in it)	
Dermatitis (skin irritations)	
Chemical splashes to the eye, chemical burns to the skin. (If chemical splash/burn impacts majority of the body call 911)	
Foreign Body in the eye	
Possible infectious diseases from research work	
Animal bites or scratches	
Cuts/abrasions/burns/lacerations	

Tucson Occupational Health Clinics

Concentra Medical Centers, 3 locations:

4600 S. Park Ave., Suite 5	Tel: 889-9574	Hours: 7am – 8pm, Mon - Fri
2005 W. Ruthraff Rd., Suite 111	Tel: 293-7250	Hours: 8am – 5pm, Mon- Fri
3402 E. Broadway Blvd	Tel: 881-0050,	Hours: 8am - 5pm, Mon – Fri.

MBI Occupational Healthcare

1001 E. Palmdale	Tel: 807-1060	Hours: 8am – 5pm, Mon – Fri

Sunnyside Clinic

3681 S. Palo Verde Rd.	Tel:. 750-8855	7:30am-11am &1:00pm–4pm Mon- Fri.

Tucson Occupational Medicine

888 S. Craycroft Rd. Suite 150	Tel: 747-0446	Hours: 8am – 5pm, Mon - Fri
1661 W. Grant Rd.	Tel: 628-4340	Hours: 8am – 5pm, Mon - Fri
2945 W. Ina Rd., Suite 103	Tel: 877-8600	Hours: 8am – 5pm, Mon - Fri

CHEMICAL WASTE DISPOSAL BASICS

STEP 1 Ready Container

- 3.5 gal. plastic pails preferred (available from Campus Stores)

- Cut plastic plug from hole and locate hole 90° from handle

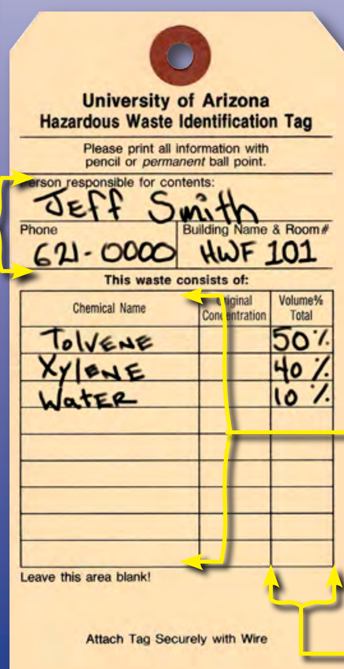
- Secure lid before filling

- Write bldg. name and room no. under handle for return (w/ permanent marker)

STEP 2 Tag

- **Attach a chemical waste tag w/ a wire tie <u>before</u> filling** (available from Risk Management. & Safety)

- – Include name of person who **knows** about the waste, phone number, bldg. name and room no.



STEP 3 Accumulate Waste

- Write complete name of chemicals on tag as they are added to container (in English w/ no. 2 pencil or ballpoint pen – no abbreviations or formulas)

If different compatible wastes are combined - accumulate according to the following groups, if possible:

- Non-chlorinated organics
- Chlorinated organics
- Acids & heavy metal solutions
- Chromic acid & sulfuric acid
- Bases
- Cyanides
- Photo fixer
- Color photo developer
- Oil

Segregate solids and liquids

<u>Always</u> keep container closed when not adding waste.

STEP 4 Request Pick-Up

- Write volume percentage of each chemical in container on tag

Request pick-up when you want waste removed – whether container is full or not (see four contact options below)

Provide: name of person who **knows** about the waste, phone no., dept., bldg. and room no., waste location in room, waste quantity and container size and indicate whether more tags are needed

For more information or to request waste pick-up – contact Risk Management & Safety at 621-5861 (phone), 626-4925 (FAX), hazmat@email.arizona.edu (e-mail) or http://w3fp.arizona.edu/riskmgmt/chemical_waste_pick_up_form.htm (on-line)

SM, Amend, Waste Disposal Quick Reference Poster 10jan08

THE UNIVERSITY OF ARIZONA POLICE DEPARTMENT

"Partners with our community"

Departmental/Building Emergency Operations Plan

Department Name Address:

Department Name: University of Arizona Imaging Technology Lab
Address: 325 S Euclid Ave, Suite 117

Building Manager Information:

Name: Dave Baxter
Office telephone: 520-628-2078 x107
Cellular phone/pager: None
Fax: 520-628-2859
Email: baxter@itl.arizona.edu

Building Manager Alternate Information:

Name: Michael Lesser
Office telephone: 520-621-4236
Cellular phone/pager: 520-548-1494
Fax: 520-628-2859
Email: lesser@itl.arizona.edu

Emergency Assembly Location – Primary Location

Complex entrance at 12th St and Tyndall

Emergency Assembly Location – Secondary Location (*to be used only if the primary area is not accessible.)*

City of Tucson building parking lot (800 E. 12th Street)

Departments in the Building:

Department Name: Only ITL

Departmental Emergency Staff:

Name: Michael Lesser
Cell phone/pager: 520-548-1494

Name:
Cell phone/pager:

Name:
Cell phone/pager:

Name:
Cell phone/pager:

Roster and Telephone Numbers for all Departmental Employees:
APPENDIX "A"

Identification of Hazards in the Building: (Rooms are not numbered!)

Room Number: Chemistry Lab (Rm. 11) Type of Hazard: Many chemicals including Hydrofluoric Acid (highly toxic, liquid form)	Room Number: Flex Room (Rm 50) Type of Hazard: Compressed gas cylinder (Helium)
Room Number: Mechanical Room (Rm. 10) Type of Hazard: Compressed gas cylinders (Nitrogen, Oxygen, Helium)	Room Number: Type of Hazard:
Room Number: Chemistry Lab Rrm. 11) Type of Hazard: Flammable organics	Room Number: Type of Hazard:
Room Number: Outside Dewar Prep (Rm 72) Type of Hazard: Cryogenic liquid Nitrogen	Room Number: Type of Hazard:

Audible and Visible Alarms:

a. Fire Alarm Sound: **The fire alarm is a loud continuous bell horn or siren accompanied by strobe lighting. (We do not have strobes.)**
b. Elevator Alarm Sound: **The elevator alarm is a continuous bell and is not as loud as the fire alarm. (We do not have an elevator)**
c. Other alarms in the building:

Room Number: All of building Type of Alarm: security (motion and glass breakage)	Room Number: Substrate (Rm 27) Type of Alarm: Air flow monitor on fume hood
Room Number: Chemistry (Rm 11) Type of Alarm: Air flow monitors on fume hoods	Room Number: Hybridization and Packaging (Rms 19 & 22) Type of Alarm: Timers
Room Number: Chemistry (Rm 11) Type of Alarm: emergency shower	Room Number: All of building Type of Alarm: ESD monitoring systems

Fire and security alarms are monitored by Central Alarm

Critical Operations Found in the Building:

The following employees should make themselves available to the Building Manager to explain the following critical operations: These employees should report to the EAL and report to the Building Manager, who can then coordinate with the first responders.

Critical Operation Name: Acid Thinning Location: Chemistry Lab Responsible party: Charles Bridges Cell phone/pager: None	Critical Operation Name: Location: Responsible party: Cell phone/pager:
Critical Operation Name: Location: Responsible party: Cell phone/pager:	Critical Operation Name: Location: Responsible party: Cell phone/pager:
Critical Operation Name: Location: Responsible party: Cell phone/pager:	Critical Operation Name: Location: Responsible party: Cell phone/pager:

Important Telephone Numbers

Campus telephone numbers for life-threatening emergencies:

a. From any office or campus public phone: **9-1-1**

b. From your cell phone: **9-1-1**
(Explain the location and type of problem to the operator immediately)

Telephone numbers for non life-threatening emergencies:

a.	UAPD (Police Department):	**621-8273**
b.	Facilities Management:	**621-3000**
c.	Radiation Control:	**626-6850**
d.	Custodial Services:	**621-7558**
e.	Parking and Transportation:	**621-1108**

Where to Get Information During a Large Scale Emergency

- **KNST Radio 790**
- **UA web page: www.arizona.edu**
- **Local television stations:**
  KVOA TV – Channel 4
  KGUN TV – Channel 9
  KOLD TV _ Channel 13 or 7
- **UA Student Union – Information Desk (unless the Student Union is affected). The Park Student Union would then serve as back up.**

Emergency Procedures

Emergency Notification Procedures

When you dial 9-1-1 to request emergency assistance, your will be connected to the UAPD Communications Center, if you are calling from a campus telephone extension. Calling 9-1-1 from an ITL number will connect you to the Pima County 9-1-1 Center. If you are calling on a cell phone, your will be connected to the Pima County 9-1-1 Center. Before you call remember to:

- Call from a safe location.
- Remain calm.
- Be prepared to give the Dispatcher as much information as you can (what is the emergency, where it is, are there injuries, how serious, etc. The Dispatcher will ask you questions as well.

- Do not hang up until you are told to do so. The Dispatcher may give you instructions. Follow those instructions, if you can do so safely.

Emergency Preparedness

Building Mangers/Department Heads/Designees –

a. Meet with all of your personnel in the EAL – You are the Incident Commander until such time as the emergency personnel arrive. Take roll, account for all your personnel. If someone is missing attempt to locate via telephone. If unable to locate notify emergency responders
b. Have emergency telephone numbers with you.
c. Contact the next person in your chain of command.

Evacuation Procedures

A building occupant is required by university policy and State law to evacuate the building when the fire alarm sounds. There may be instances where the building may be evacuated without a fire alarm sounding.

Review emergency evacuation routes with all employees at least once a semester. **APPENDIX "B" – Building Plans and Evacuations Routes**

When evacuating the building or work area:

- Stay calm: do no rush or panic
- Safely stop your work
- If safe, gather your personal belongings: take prescription medications, and keys with you.
- If safe, close your office door and window, DO NOT LOCK THEM.
- Use the nearest safe stairs and proceed to the nearest exit.
- Help others identify safe passage out of the building.
- Do not use the elevators.
- Proceed to the designated Emergency Assembly Location.
- Building Managers – Make yourself known to the first responders, or the Incident Commander, in the event that they have questions for you.
- Check in with the Building Manager, Dean, Director or Department Head.
- Await instruction from the Building Manager, Dean, Director or Department Head as to where you should go or do. ***DO NOT go home, or leave for other locations without first obtaining authorization from your Dean, Director or Department Head.***

Building Assessment

Fire Prevention Procedures:
To prevent a fire, this building maintains a good housekeeping policy by storing flammable and combustible materials in an approved manner and avoiding accumulation of flammable and combustible materials in work areas and exit hallways.

The Building Manager, Deans, Directors and Department Heads, work with Risk Management to ensure that there is no excess accumulation of flammable and combustible materials in this building.

Facilities Management provides custodial services to this building.

A schedule of custodial services in this building may be obtained by contacting the Custodial Services at 621.7558

Potential Fire Hazards: ***(Check all that apply)***

The following are potential fire hazardous identified in this building:

X Combustible materials (e.g. paper, cardboard, wood, etc.)
☐ Flammable/combustible gases in laboratories.
☐ Flammable/combustible solids in laboratories.
X Cleaning fluids
☐ Grease
☐ Gasoline/diesel
X Oils
☐ Other:_____
☐ Other:_____
☐ Other:_____

Summary

Prepare occupants in your department and building ahead of time for emergency evacuations. Know your building occupants. Train faculty, staff and students to be aware of the needs of people with disabilities and know how to offer assistance.

Hold evacuation drills, with the assistance of UAPD and Risk management in which occupants participate, and evaluate drills to identify areas that need improvement.

Plans must cover regular working hours, after hours, and weekends. ***Everyone needs to take responsibility for preparing for emergencies.*** People with disabilities should consider what they would do and whether they need to take additional steps to prepare.

For help and information about preparing and planning for emergency situations contact:

Commander Brian Seastone
Campus Emergency Planning Manager
The University of Arizona Police Department
520.621.3507
seastone@uapd.arizona.edu

or

Risk Management and Safety
The University of Arizona
520.621.1790

Revision by:
Date:

Risk Management and Safety has prepared the following information. For hard copies of these procedures contact Risk Management at 621-1790.

Biological Spill

Notes and Precautions:

Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. These spills are very serious if they involve microorganisms that require Biosafety Level (BSL) 3 containment, since most of these agents have the potential for transmitting disease by infectious aerosols. To reduce the risk of inhalation exposure in such an incident, occupants should hold their breath and leave the laboratory immediately. The laboratory should not be reentered to decontaminate and clean up the spill for at least 30 minutes. During this time the aerosol will be removed from the laboratory by the exhaust air ventilation system. Appropriate protective equipment is particularly important in decontaminating spills involving microorganisms that require BSL 2 or BSL 3 containment. This equipment includes lab coat with long sleeves, back-fastening gown or jumpsuit, disposable gloves, disposable shoe covers, and safety goggles and mask or full-face shield. Use of this equipment will prevent contact with contaminated surfaces and protect eyes and mucous membranes from exposure to splattered materials.

Spill Involving a Microorganism Requiring BSL 1 or BSL 2 Containment

- Alert people in immediate area of spill.
- Put on proper personal protective equipment.
- Cover spill with paper towels or absorbent pads.
- Carefully pour a freshly prepared 10% (vol./vol. w/water) dilution of household bleach around the edges of the spill and then into the spill. Avoid splashing.
- Allow a 15-minute contact period.
- Use paper towels to wipe up the spill, working from the edges into the center.
- Clean spill area with fresh towels soaked in disinfectant.
- Place towels in a red plastic bag for disposal in the biohazardous waste.

Spill Involving a Microorganism Requiring BSL 3 Containment

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.

- Close doors to affected area.

- **Call Biological Spill Emergency Response number (621-1790)**.

- Have person knowledgeable of incident and laboratory assist emergency personnel.

Notes and Precautions:

It is possible, although highly unlikely, that a staff member may someday receive a threatening telephone call, letter, or e-mail, or might receive a suspicious parcel or discover a suspicious item somewhere on campus. A suspicious item is defined as anything that is out of place and cannot be accounted for or any item suspected of being an explosive device.

Telephone Threat:

- Remain calm. Do not hang up! Listen carefully.

    - Try to keep the caller calm and talking so that you can gather more information. **Write down all information (see Bomb Threat Checklist)!**

- Attempt to find out why the caller is upset.

    - Note any characteristics about the call and caller:

- Time of the call

    - Age and sex of the caller

- Emotional state

        - Background noises

- Speech pattern, accent

    - Identify the type of threat and note any details offered:

- When is the bomb going to explode?

    - What does it look like?

- Where is the bomb located?

    - What kind of device is it?

- Immediately after the call ends, notify University Police (9-1-1) and supply them with the information obtained.

Written Threat:

- If the threat is received by mail, do not further handle the letter, envelope, or package.

- If the threat is received by e-mail, save the entire e-mail message, including any attachments and print out a copy for police.

- Call University police at 9-1-1, and notify your supervisor.

Suspicious Parcel, Mail, Etc.:

- **Letter and Parcel Bomb Recognition Clues:**

    - foreign mail, air mail and special delivery

- No return address

    - Restrictive markings such as "confidential," "personal, etc.

- Excessive postage, multiple stamps

    - Excessive weight, rigid envelope

- Lopsided or uneven envelope

    - Handwritten or poorly typed address

- Protruding wires or tinfoil

    - Incorrect titles or titles with no name, misspelled words

- Excessive securing material (i.e., tape, string)

    - Oily stains or residues

- Mysterious delivery

    - Shows a city or state in the postmark that does not match the return address

- Do not handle! Keep anyone from going near it.

    - Leave the area, notify your supervisor and call University Police (9-1-1).

- If an evacuation is warranted, University Police will activate the building fire alarm.

    - Evacuate the building by walking to the nearest exit and calmly direct others to do the same. Once outside, move to a clear area at least 150 feet from the affected building. Keep walkways and roads clear for emergency responders.

- Do not re-enter the building until advised by emergency response personnel, even if the alarms have ceased.

Bomb Threat Checklist:

- Exact time of call:
- Exact words of caller:

Questions to Ask:

- When is the bomb going to explode?
- Where is the bomb?
- What does it look like?
- What kind of bomb is it?
- What will cause it to explode?
- Did you place the bomb?
- Why?
- Where are you calling from?
- What is your address?
-
- What is your name?

Caller's Voice:

• Calm	Deep	Stutter	Stressed
• Slow	Loud	Accent	Nasal
• Crying	Broken	Angry	Lisp
• Slurred	Giggling	Rapid	Excited
• Disguised	Sincere	Squeaky	Normal

- If voice is familiar, whom did it sound like?
- Were there any background noises?
- Remarks:

- Person receiving call:
- Telephone number call received at:
- Date:

Report Call Immediately to UAPD (9-1-1)

Chemical Spill

Notes and Precautions:

The range and quantity of hazardous substances used in laboratories require preplanning to respond safely to chemical spills. Knowledgeable and experienced personnel should only do the cleanup of a chemical spill. Spill kits with instructions, absorbents, reactants, and protective equipment should be available to clean up minor spills. A minor chemical spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other chemical spills are considered major. Refer to the chemical spill procedures outlined in the Chemical Hygiene Plan (Section 9.5). Contact Risk Management & Safety (621-1790) to ensure proper procedures are being taken to clean up the spill. **Minor Chemical Spill**

- Alert people in immediate area of spill.
- Wear protective equipment, including safety goggles, gloves, and long-sleeve lab coat.
- Avoid breathing vapors from spill.
- Confine spill to small area.
- Use appropriate neutralizer for inorganic acids and bases. Absorb neutralized spill, collect residue, place in container, and dispose as chemical waste.
- For other chemicals, absorb spill with vermiculite, dry sand, or diatomaceous earth. Collect residue, place in container and dispose as chemical waste.
- Clean spill area with detergent and water.

Major Chemical Spill:

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the immediate area to evacuate.
- If spilled material is flammable, turn off ignition and heat sources.
- Call Chemical Spill Emergency Response number (621-1790).
- Close doors to affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Evacuation of Mobility-Impaired Persons

These guidelines for the evacuation of mobility-impaired persons from university buildings have been endorsed by the Department of Risk Management & Safety, University Police Department, Tucson Fire Department, Disability Resource Center, Residence Life, and the ADA/504 Officer. They are general guidelines to address most evacuation scenarios.

Emergency Situations:

If a person with a mobility impairment is able to exit the building without use of the elevator, then evacuation should follow the appropriate route out of the building. If exit from the building is only possible by use of the elevator, follow the procedures outlined below:

- The mobility-impaired person should proceed or ask for assistance to the nearest enclosed or exterior stairwell or "area of safe refuge" and remain there. In case of a fire, enclosed building stairwells are "safe refuge areas," and have a higher fire resistive rating. The mobility-impaired person should notify an individual (i.e. a co-worker, supervisor, instructor, or building monitor) of their specific location. If possible, the mobility-impaired person can notify 9-1-1 of their location.

  In Residence Halls, if the mobility-impaired occupant cannot leave his or her room immediately without the assistance of another person , they should remain in the room. Notification can be made by calling 9-1-1.

- Make sure the door to the stairwell is closed. Open doors will violate the "safe refuge area" and will allow smoke, and possibly fire, into the stairwell.

- Once outside, anyone with information should inform the Tucson Fire Department (TFD) Incident Command Center that there is a mobility-impaired person in a stairwell, which floor the person is on, and location of the stairwell or refuge area. When stairwell evacuations are necessitated, such decisions and evacuations will be made by TFD. **UNIVERSITY PERSONNEL SHOULD NEVER ATTEMPT TO CARRY ANYONE DOWN THE STAIRS.**

Non-Emergency Situations:

Persons with a mobility impairment who need assistance leaving a building in a non-emergency situation (elevator outage, etc.) should follow the procedures outlined below:

- Contact UAPD (621-8273). UAPD will send personnel to the location to assess the situation and will contact TFD for all evacuations. Improper evacuation techniques could harm the evacuee; therefore UAPD will not evacuate any mobility-impaired person because they are not trained to do so.

- Elevator outages will be reported to Facilities Management (Residence Life Maintenance for Resident Halls) by UAPD for immediate response. However in the event of elevator cars stuck between floors, no removal of passengers will be performed until the car is properly leveled.

- TFD will address non-emergency evacuations on a priority basis. This may mean a delayed response until TFD can respond.

- UAPD personnel will remain with the person until egress is restored (i.e. elevator has been repaired) or TFD responds. They will maintain contact with TFD and Facilities Management to determine response time.

Fire

Notes and Precautions:

Small fires can be extinguished without evacuation. However, an immediate readiness to evacuate is essential in the event the fire cannot be controlled. Only trained personnel should use fire extinguishers. Never enter a room that is smoke filled. Never enter a room containing a fire without a backup person. Never enter a room if the top half of the door is warm to touch.

Small Fire:

- Evacuate the immediate area.
- Activate the nearest fire alarm pull station
- If you choose to use a fire extinguisher, always maintain an accessible exit.
- Avoid smoke or fumes.
- Report all fires to Risk Management & Safety.

Major Fire

- Alert people in area to evacuate. Close doors behind you to confine fire and smoke.
- Activate nearest fire alarm and call Fire Emergency Response number (9-1-1).
- Evacuate to safe area or exit building through stairwell; do not use elevator.
- Have person knowledgeable of incident and area assist emergency personnel.
- **Mobility Impaired Persons:** If a person with a mobility impairment is able to exit the building without use of the elevator, then evacuation should follow the appropriate route out of the building. If exit from the building is only possible by use of the elevator, follow the procedures outlined below: The mobility-impaired person should proceed or ask for assistance to the nearest enclosed or exterior stairwell or area of rescue assistance and remain there. In case of a fire, enclosed building stairwells are "safe refuge areas," and have a higher fire resistive rating. The mobility-impaired person should notify an individual (i.e. a co-worker, supervisor, instructor, or building monitor) of their specific location. If possible, the mobility-impaired person can notify 9-1-1 of their location. Make sure the door to the stairwell is closed. Open doors will violate the "safe refuge area" and will allow smoke, and possibly fire, into the stairwell. Once outside, anyone with information should inform the Tucson Fire Department (TFD) Incident Command Center that there is a mobility-impaired person in a stairwell, which floor the person is on, and

location of the stairwell or refuge area. When stairwell evacuations are necessitated, such decisions and evacuations will be made by TFD.

University Personnel Should Never Attempt to Carry Anyone Down the Stairs

- Do not re-enter the building until advised by emergency response personnel, even if the alarms have ceased.

This is How Most Fire Extinguishers Work

Learn How to **P.A.S.S**.:

- **Pull** the pin. Some units require the releasing of a lock latch, pressing a puncture lever, or other motion.
- **Aim** the extinguisher nozzle (horn or hose) at the base of the fire.
- **Squeeze** or press the handle.
- **Sweep** from side to side at the base of the fire until it goes out. Shut off the extinguisher. Watch for reignition and reactivate the extinguisher if necessary.

Fire Extinguishers: Type:

- **"A"** Effective on fires composed of burning wood, paper, plastics, and fabrics.
- **"B"** Effective on fires fueled by flammable liquids or grease
- **"C"** Effective on fires involving electric current.
- **"D" Effective** on fires fueled by combustible metals such as magnesium and sodium, and other finely divided metal particles

Medical and First Aid

1. In case of serious injury or illness on campus, immediately call University Police at 9-1-1, or use emergency phone. Give your name; describe the nature of the problem and the location of the victim. University Dispatchers will notify Emergency Response Personnel. Police Officers are trained in CPR and First Aid.

2. Quickly perform these four steps:

- Determine welfare of victim by asking, "Are you okay," and "What is wrong?"
- If victim is unconscious, check pulse and breathing and give CPR or artificial respiration if necessary.
- Control serious bleeding by direct pressure and elevation of the wound.
- Keep victim still and comfortable; have them lie down if necessary.

First Aid Instructions

Mouth-to-Mouth Rescue Breathing:

- Place victim on side and remove foreign matter from mouth with finger.
- Place victim on back.
- Tilt victim's head back to open airway.
- Close victim's nostrils with fingers.
- Exhale until victim's chest expands.
- Repeat every 1-2 seconds after chest deflates.
- Keep trying until help arrives.
- If unable to give breath, check victim for airway obstruction.

Severe Bleeding and Wounds:

- Apply direct pressure on wound.
- Use clean cloth or hand.
- Elevate body part.
- Apply pressure to blood vessel if necessary. Add more cloth if blood soaks through. Never remove bandage once applied.
- Keep pressure on wound until help arrives.
- Use tourniquet ONLY as a last resort.

Fainting, Unconsciousness and Shock:

- Have victim lie down and rest.
- Keep victim comfortable, not hot or cold.
- Place victim on side if unconscious.
- Ask or look for emergency medical I.D.
- Treat other injuries as necessary.

Burns, Thermal & Chemical:

- Immerse burned area in cold water.
- Flood chemical burn with cool water for 15 minutes.
- Cover burn with dry bandage.
- Keep victim quiet and comfortable.

Poisoning and Overdose:

- Determine what substance is involved and how taken.
- Call Poison Control Center at 626-6016 or 1-800-222-1222.
- Stay with victim and assist as directed by Poison Control.

Fractures and Sprains:

- Keep the victim still.
- Keep injured area immobile.

Choking and Airway Obstruction:

- If victim is coughing, or able to speak, stand by and allow victim to cough object up.
- If unconscious, check victim's mouth and clear of foreign matter.
- Give abdominal thrusts (Heimlich Maneuver).
- Continue thrusts until airway cleared.

Radiation Spill

Notes and Precautions:

Spreading of radiation beyond the spill area can easily occur by the movement of personnel involved in the spill or cleanup effort. Prevent spread by confining movement of personnel until they have been monitored and found free of contamination. A minor radiation spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other radiation spills are considered major. Call the Radiation Control Office (626-6850) to ensure proper procedures are being taken to clean up the spill.

Always Remember to "S.W.I.M."

- **Stop** the spill.
- **Warn** other personnel.
- **Isolate** the area
- **Minimize** the exposure to radiation and contamination.

Minor Radiation Spill:

- Confine the spill immediately.
- Alert people in immediate area of spill and keep non-essential personnel out of the area.
- Notify Laboratory Manager or Radiation Safety Office (626-6850).
- Wear protective equipment, including safety goggles, disposable gloves, shoe covers, and long-sleeve lab coat.
- Place absorbent paper towels over liquid spill. Place towels dampened with water over spills of solid materials.
- Using forceps, place towels in plastic bag. Dispose in radiation waste container.
- Monitor area, hands, and shoes for contamination with an appropriate survey meter or method. Repeat cleanup until contamination is no longer detected.

Major Radiation Spill:

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to leave the immediate area.
- Have potentially contaminated personnel stay in one area until they have been monitored and shown to be free of contamination.
- Notify Laboratory Manager or Radiation Safety Office (626-6850).
- Close doors and prevent entrance into affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Suspicious or Threatening Parcels & Letters

Notes and Precautions:

It is possible, although highly unlikely, that a staff member may someday receive a suspicious parcel or letter. Biological or chemical threats targeting individuals or departments can frequently be controlled by screening of materials and by following the procedures listed below. University Police and responding Public Safety agencies have plans in place to deal with these types of threats. Following the procedures below will activate those plans and promote the highest level of safety while minimizing the disruption associated with these incidents.

- Mail and package delivery to each department should be screened for suspicious letters and/or packages. Common features of threat letters/packages are:
    - No return address
- Shows a city or state in the postmark that does not match the return address
    - Hand written or poorly typed address
- Excessive or foreign postage
    - Misspelling of common words
- Oily stains, discoloration or odor
    - Restrictive markings such as "Confidential", "Personal", etc.
- Protruding wires or aluminum foil
    - Incorrect titles or titles with no name
- Excessive weight and/or feel of a powdery or foreign substance
- Suspicious letters and packages should not be opened and should not be handled any more than is absolutely necessary. If there is nothing leaking from the suspicious item leave it alone and call University Police at **9-1-1**.
- If you open a letter/package that claims to have contaminated you, but there is no substance seen or felt in the envelope or on the letter, chances are that you have not been contaminated. Call University police at **9-1-1** and tell them exactly what you have done and what information you have in regard to the threatening letter. They will dispatch the appropriate personnel to your location to follow-up on your possible exposure and to document what has taken place. DO NOT handle the suspicious item any more and DO NOT let anyone else handle the item.
- If you open a letter/package that claims to have contaminated you and there is some sort of foreign substance in the envelope or package:

- Place the letter back into the envelope/package, close it back up, or cover the letter and substance with anything (cloth, paper, etc.). Do not remove this cover.

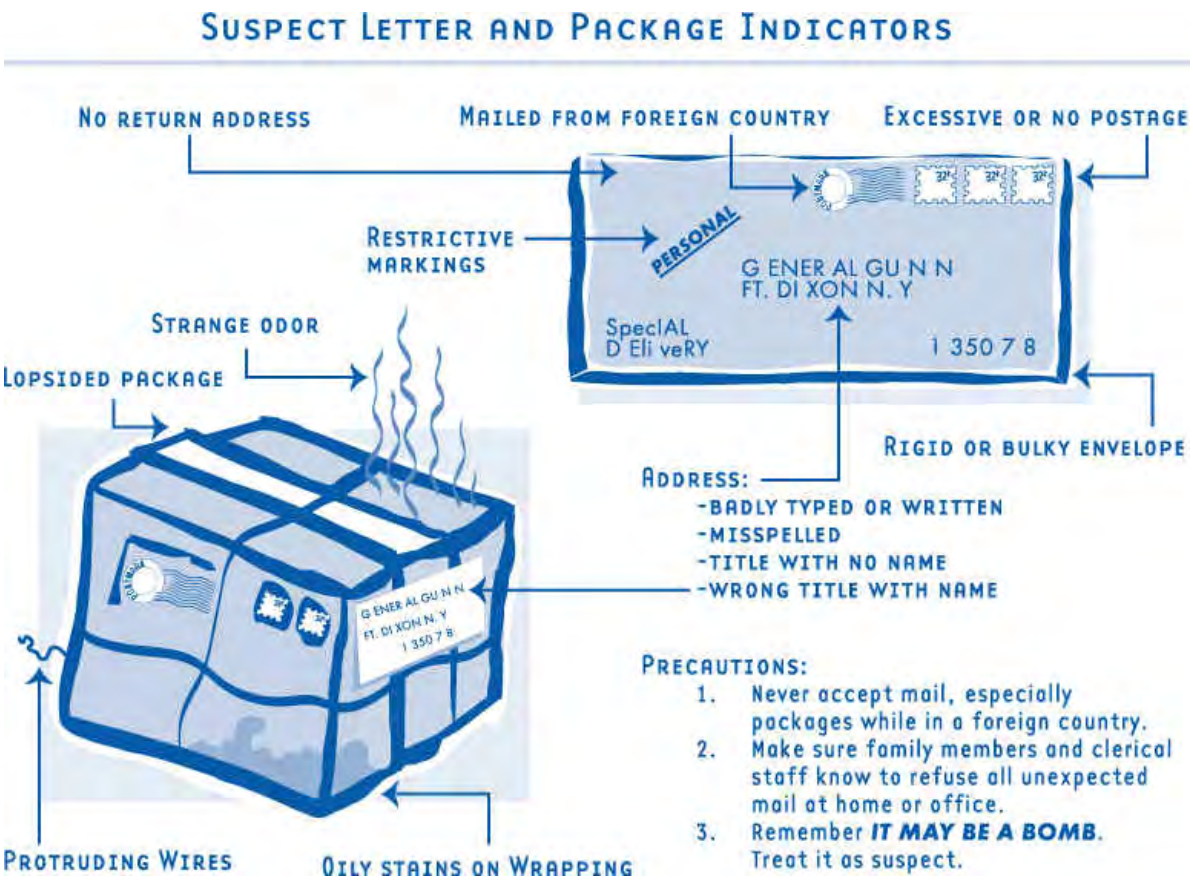
- Alert others in the area to leave.

- Wash all exposed skin with soap and water.

- If your clothes are covered with a significant amount of the substance, carefully remove the contaminated clothing and, if possible, place into a plastic bag.

- Call University Police at **9-1-1** to report the situation and tell the dispatcher you have opened the envelope/package, there is a substance inside, and what you have done up to that point.

- Police and Risk Management responders can evaluate the risk to those in the room at the time of potential exposure as well as any impact on the remainder of the building. Based upon that risk assessment, further emergency measures may be implemented as necessary. If the risk is found to be minimal, other areas of the facility will not be disrupted and any necessary actions to return the area involved to normal activity will begin as soon as possible.



Utility Failure

Notes and Precautions:

The University of Arizona has a maintained infrastructure of utilities that is generally uninterrupted. However emergencies such as electric power failure, natural gas leaks, and plumbing failure do occur. During these emergency situations, remaining calm and following the listed procedures will help minimize the disruption to everyday activities.

Power Outage:

- Remain calm.
- If possible, call Facilities Management at 621-3000.
- If you are in an unlighted area, proceed cautiously to an area that has lighting. Provide assistance to others in your area that may be unfamiliar with the space.
- If instructed to evacuate, proceed cautiously to the nearest exit.

  Note: Major campus buildings are equipped with an emergency light system that within 10 seconds of electrical failure will provide enough illumination in main corridors and stairways for safe exiting.

Elevator Failure:

- All campus elevators are equipped with emergency phones connected directly to University Police. If you are trapped in an elevator, contact University Police via the emergency phone. Do not climb out of the elevator and get on top of the car. If you discover an emergency (i.e., trapped occupants) involving an elevator, phone University Police immediately (9-1-1).

Serious Gas Leak:

- Cease all operations and immediately vacate the area.
- Do not turn on or off any electrical appliances, lights, etc.
- From a distant phone immediately call University Police at 9-1-1 and Facilities Management
  at 621-3000.

Plumbing Failure/ Flooding:

- Call Facilities Management at 621-3000 immediately, tell respondent of the exact location and severity of leak.
- If there are electrical appliances and outlets near the leak, use extreme caution.
- If there is any possible danger, evacuate the area.

- If you know the source of the water and can safely stop it (i.e. unclog the drain, turn off the
  water, etc.) do so cautiously.

Be prepared to assist as directed in protecting objects that are in jeopardy. Take only essential steps to avoid or reduce immediate water damage, by covering, removing or elevating them.

Appendix C

UA DEPARTMENTAL EMERGENCY STATUS REPORT

To be completed by Building Manager, Dean, Director or Department Head at the time of the incident

Department_____
Building name: _____Floors:_____
Completed by:_____
Available at:
Location_____Phone_____

URGENT NEEDS: e.g., rescue, severe flooding from break, Describe:

_____
_____

Personnel Status:

Number of personnel present or accounted for:_____
Number of persons missing:_____
Names:_____
_____
_____
_____
_____
_____
_____
_____
_____

Number requiring medial assistance:_____
Nature of injuries: Urgent □ Minor □

Is anyone trapped?
In building □ Yes □No
Where:_____
In elevator □ Yes □No
Where:_____

Building Status:

Fires (if so pull alarm) □Yes □No

Structural

- Major damage (partial building or floor collapse) □
- Moderate Damage (furniture overturned, light Fixture down) □
- Minor damage (cracks, books off shelf) □

Utilities

Electricity	□ OFF	□ON
Water	□OFF	□ON
Gas	□OFF	□ON
Emergency Power	□OFF	□ON

Communication

Phones	□OFF	□ON

Hazardous Materials

Chemical spills	□YES	□NO

Where:_____

Biological spills	□YES	□NO

Where:_____

Radiation Contamination	□YES	□NO

Where:_____

Observations/Needs:_____
_____
_____
_____

Complete this form and hand it to the first Police Officer or Fire fighter who arrives at your assembly location. This information will assist the first responders with the initial scene assessment.

APPENDIX "D" Incident Command

The Incident Command System (ICS) is a modular emergency management system designed for all hazards and levels of emergency response. This system creates a combination of facilities, equipment, personnel, procedures, and communication operations with a standardized organization structure. The system is used locally, statewide and through the United States as the basis for emergency response management. Out use of ICS at the University of Arizona facilitates the University's ability to communicate and coordinate response actions with other jurisdiction. In addition, the system facilitates coordination with external emergency response agencies.

Every incident, regardless of size has an Incident Commander. The initial Incident Commander is someone with the most information and who is responsible for overseeing the initial incident, until relieved by a higher authority, or first responders. The **Incident Commander is in complete control of the incident, regardless of rank or title.** ***All individuals associated with the emergency must listen to and follow the instructions of the IC.***

The following components characterize the Incident Command System:

- Common terminology applied to organization elements, position, titles, facility designations and resources.
- Generic position whereby multiple individuals are trained for each emergency response role and follow prepared action checklists.
- Modular organization based on activating only those organizational elements required to meet current objectives.
- Integrated communication so that information systems operate smoothly among all response agencies involved.
- Unified command structure so that organization elements are liked to for a single overall structure with appropriate span-of-control limits.
- Manageable span of control whereby supervisory demand is held in the one-to-three to one-to-seven range.
- Comprehensive resource management for coordinating and inventorying resources for field responses.
- Consolidated action plans, which contain strategy to meet objectives at both the field response and EOC levels.

1. ICS Structure

ICS is structured with expandable functional sections:

- Incident Commander and Command Staff;
- Operations Section

- Planning Section
- Logistics Section
- Finance/Administration

a. Incident Commander

The Indent Commander (IC) has the authority and responsibility to manage the incident response effort, with general guidance from the Emergency Operations Center (EOC). Designation of the "IC" being automatically as the first emergency responder arrives on the scene. This may evolve and be passed on to others depending upon the complexity, length, and severity of the incident.

The IC in consultation with emergency responders, determines the classification of the incident, the required response, and expands the emergency response organization as needed.

The Incident Command assumes all emergency response responsibilities until they are formally delegated to others. If a situation escalates, additional positions are assigned and resources obtained. Determination of personnel to assume the role of Incident Commander will be based on response time, the availability of qualified personnel, the nature of the incident, the level of training, and the demands of the position.

b. Command Staff

The Incident Commander may assign an immediate command staff consisting of the following positions and responsibilities:

- Safety Officer – provides overall operational safety authority
- Information Officer – acts as sole media contact; distributes information
- Liaison Officer – interfaces with cooperating agencies
- Scribe – to record the events

c. General Staff

Operations Section: The Operations Section is responsible for all incident tactical activities. The Operations Section is divided into groups (e.g. fire, law enforcement, emergency medical, facilities management, the Campus Emergency Response Team).

Planning Section: The Planning Section collects and analyzes data regarding operations and prepares extended incident actions plans. Incident Assessment, Resource Status, Recovery and Documentation are units under this division.

Logistics Section: The Logistics Section is responsible for meeting the resource needs of the Operations Section. This can include procuring specialized equipment and supplies, communication services, providing food and water to response personnel, and meeting the transportation requirement of the incident.

Finance Section: The Finance Section is activated for the purposes of determining the short and long term fiscal impacts of the emergency, and for providing payments to vendors for the use of supplies and equipment.

d. Campus Emergency Response Team (CERT):

The CERT plays an active, supportive role in campus emergencies. The CERT Chair, the Sr. Vice President for Campus Life, manages and activates CERT usually after notification by the Chief of Police. CERT supports the Incident Commander and the emergency by brining together key campus personnel to help plan and coordinate campus emergency efforts.

Emergency Operations Plan

Mt Graham International Observatory (MGIO)

For further information and details regarding this site:

Contact: John Ratje
Telephone: 621-8650
928-428-2739
Fax: 928-428-2854

Email: jratje@as.arizona.edu

Address: U of A – MGIO
1480 W. Swift Trail
Safford, Arizona 85546

Emergency Operations Plan

Steward Observatory

Department Name Address:	Steward Observatory 933 N. Cherry Ave., Bldg. 65

Building Manager Information:

Name:	Russ Warner
Office telephone:	621-1675
Cellular phone/pager:	
Fax:	621-3398
Email:	rwarner@as.arizona.edu

Building Manager Alternate Information:

Name:	Mark Buglewicz
Office telephone:	621-6536
Cellular phone/pager:	954-0714
Fax:	626-0103
Email:	mbug@as.arizona.edu

Emergency Assembly Location

See Attachment #1: Steward Observatory Fire Emergency Procedures

Department Name Address:	Steward Observatory 933 N. Cherry Ave., Bldg. 65

Building Manager Information:

Name:	Russ Warner
Office telephone:	621-1675
Cellular phone/pager:	
Fax:	621-3398
Email:	rwarner@as.arizona.edu

Building Manager Alternate Information:

Name:	Mark Buglewicz
Office telephone:	621-6536
Cellular phone/pager:	954-0714
Fax:	626-0103
Email:	mbug@as.arizona.edu

Emergency Assembly Location

See Attachment #1: Steward Observatory Fire Emergency Procedures

Departmental Emergency Staff:

The following employees should make themselves available to the Building Manager to explain the following critical operations: These employees should report to the EAL and report to the Building Manager, who can then coordinate with the first responders.

5th Floor

Department:	NRAO
Responsible party:	Joan Martin
Cell phone/pager:	444-1014

Department:	LSST
Responsible party:	Suzanne Jacoby
Cell phone/pager:	490-6683

Department:	LBT
Responsible party:	Jim Slagle
Cell phone/pager:	349-4576

4th Floor

Department:	MMT
Responsible party:	Cory Knop
Cell phone/pager:	977-1843

Department:	CAAO
Responsible party:	Tom McMahon
Cell phone/pager:	

3rd Floor

Department:	ETS
Responsible party:	Russ Warner
Cell phone/pager:	

2nd Floor

Department:	Admin/Classrooms
Responsible party:	Michele Cournoyer
Cell phone/pager:	

Department:	Infrared (IR)
Responsible party:	Lee Tinnin
Cell phone/pager:	621-2727

1st Floor

Department:	ARO
Responsible party:	Bill Hale
Cell phone/pager:	349-6698

Department:	SORAL
Responsible party:	Brian Duffy
Cell phone/pager:	

Department:	Machine Shop
Responsible party:	Mario Rascon
Cell phone/pager:	

Telescope and Modular and Annex

Department:	Grad Students Admin.
(annex)	Business office
Responsible party:	Paul O'Conner
Cell phone/pager:	307-0922

Roster and Telephone Numbers for all Departmental Employees: **APPENDIX "A"**

Identification of Hazards in the Building:

Room Number:	N109, N135
Type of Hazard:	Chemicals and Lasers

Room Number:	N134, 172, 174, 281
Type of Hazard:	Chemicals

Audible and Visible Alarms:

a. Fire Alarm Sound: **The fire alarm is a loud continuous bell horn or siren accompanied by strobe lighting.**
b. Elevator Alarm Sound: **The elevator alarm is a continuous bell and is not as loud as the fire alarm.**

The following employees should make themselves available to the Building Manager to explain the following critical operations: These employees should report to the EAL and report to the Building Manager, who can then coordinate with the first responders.

Important Telephone Numbers

Campus telephone numbers for life-threatening emergencies:

a. From any office or campus public phone: **9-1-1**
b. From your cell phone: **9-1-1**
(Explain the location and type of problem to the operator immediately)

Telephone numbers for non life-threatening emergencies:

a. UAPD (Police Department): **621-8273**
b. Facilities Management: **621-3000**
c. Radiation Control: **626-6850**
d. Custodial Services: **621-7558**
e. Parking and Transportation: **621-1108**

Where to Get Information During a Large Scale Emergency

- **UALert**
  i. A new serve that allows registered users (UA students, faculty and staff) to receive emergency alerts on their cell phones or other mobile devices during a campus emergency
  ii. Sign up at http://alterts.arizona.edu/
- **UA Student Union**
  i. Information Desk (unless the Student Union is affected). The Park Student Union would then serve as back up.
- **UA web page: www.arizona.edu**
- **KNST Radio 790**
- **Local television stations:**
  KVOA TV – Channel 4
  KGUN TV – Channel 9
  KOLD TV _ Channel 13 or 7

Emergency Procedures

When you dial 9-1-1 to request emergency assistance, you will be connected to the UAPD Communications Center, if you are calling from a campus telephone extension.

If you are calling from a cell phone or **UMC/COM BUILDING 201**
you will be connected to the Pima County 9-1-1 Center. Before you call remember to:

- Call from a safe location.
- Remain calm.
- Be prepared to give the Dispatcher as much information as you can (what is the emergency, where it is, are there injuries, how serious, etc. The Dispatcher will ask you questions as well.
- Do not hang up until you are told to do so. The Dispatcher may give you instructions. Follow those instructions, if you can do so safely.

Emergency Preparedness

Building Mangers/Department Heads/Designees –

a. Meet with all of your personnel in the EAL – You are the Incident Commander until such time as the emergency personnel arrive. Take roll, account for all your personnel. If someone is missing attempt to locate via telephone. If unable to locate notify emergency responders
b. Have emergency telephone numbers with you.
c. Contact the next person in your chain of command.

Evacuation Procedures

A building occupant is required by university policy and State law to evacuate the building when the fire alarm sounds. There may be instances where the building may be evacuated without a fire alarm sounding.

Review emergency evacuation routes with all employees at least once a semester.

APPENDIX "B" – Building Plans and Evacuations Routes

When evacuating the building or work area:

- Stay calm: do no rush or panic
- Safely stop your work
- If safe, gather your personal belongings: take prescription medications, and keys with you.
- If safe, close your office door and window, DO NOT LOCK THEM.
- Use the nearest safe stairs and proceed to the nearest exit.
- Help others identify safe passage out of the building.
- Do not use the elevators.
- Proceed to the designated Emergency Assembly Location.
- Building Managers – Make yourself known to the first responders, or the Incident Commander, in the event that they have questions for you.
- Check in with the Building Manager, Dean, Director or Department Head.
- Await instruction from the Building Manager, Dean, Director or Department Head as to where you should go or do. ***DO NOT go home, or leave for other locations without first obtaining authorization from your Dean, Director or Department Head.***

Building Assessment

Fire Prevention Procedures:
To prevent a fire, this building maintains a good housekeeping policy by storing flammable and combustible materials in an approved manner and avoiding accumulation of flammable and combustible materials in work areas and exit hallways.

The Building Manager, Deans, Directors and Department Heads, work with Risk Management to ensure that there is no excess accumulation of flammable and combustible materials in this building.

Facilities Management provides custodial services to this building.

A schedule of custodial services in this building may be obtained by contacting the Custodial Services at 621.7558

Potential Fire Hazards: ***(Check all that apply)***
The following are potential fire hazardous identified in this building:

X Combustible materials (e.g. paper, cardboard, wood, etc.)
X Flammable/combustible gases in laboratories.
X Flammable/combustible solids in laboratories.
X Cleaning fluids
☐ Grease
☐ Gasoline/diesel
X Oils
☐ Other:_____
☐ Other:_____
☐ Other:_____

Summary

Prepare occupants in your department and building ahead of time for emergency evacuations. Know your building occupants. Train faculty, staff and students to be aware of the needs of people with disabilities and know how to offer assistance.

Hold evacuation drills, with the assistance of UAPD and Risk management in which occupants participate, and evaluate drills to identify areas that need improvement.

Plans must cover regular working hours, after hours, and weekends. ***Everyone needs to take responsibility for preparing for emergencies.*** People with disabilities should consider what they would do and whether they need to take additional steps to prepare.

For help and information about preparing and planning for emergency situations contact:

Commander Brian Seastone
Campus Emergency Planning Manager
The University of Arizona Police Department
520.621.3507
seastone@uapd.arizona.edu

or

Risk Management and Safety
The University of Arizona
520.621.1790

Revision by:
Date:

Biological Spill

Notes and Precautions:

Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. These spills are very serious if they involve microorganisms that require Biosafety Level (BSL) 3 containment, since most of these agents have the potential for transmitting disease by infectious aerosols. To reduce the risk of inhalation exposure in such an incident, occupants should hold their breath and leave the laboratory immediately. The laboratory should not be reentered to decontaminate and clean up the spill for at least 30 minutes. During this time the aerosol will be removed from the laboratory by the exhaust air ventilation system. Appropriate protective equipment is particularly important in decontaminating spills involving microorganisms that require BSL 2 or BSL 3 containment. This equipment includes lab coat with long sleeves, back-fastening gown or jumpsuit, disposable gloves, disposable shoe covers, and safety goggles and mask or full-face shield. Use of this equipment will prevent contact with contaminated surfaces and protect eyes and mucous membranes from exposure to splattered materials.

Spill Involving a Microorganism Requiring BSL 1 or BSL 2 Containment

- Alert people in immediate area of spill.
- Put on proper personal protective equipment.
- Cover spill with paper towels or absorbent pads.
- Carefully pour a freshly prepared 10% (vol./vol. w/water) dilution of household bleach around the edges of the spill and then into the spill. Avoid splashing.
- Allow a 15-minute contact period.
- Use paper towels to wipe up the spill, working from the edges into the center.
- Clean spill area with fresh towels soaked in disinfectant.
- Place towels in a red plastic bag for disposal in the biohazardous waste.

Spill Involving a Microorganism Requiring BSL 3 Containment

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.
- Close doors to affected area.
- **Call Biological Spill Emergency Response number (621-1790)**.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Notes and Precautions:

It is possible, although highly unlikely, that a staff member may someday receive a threatening telephone call, letter, or e-mail, or might receive a suspicious parcel or discover a suspicious item somewhere on campus. A suspicious item is defined as anything that is out of place and cannot be accounted for or any item suspected of being an explosive device.

Telephone Threat:

- Remain calm. Do not hang up! Listen carefully.
- Try to keep the caller calm and talking so that you can gather more information. **Write down all information (see Bomb Threat Checklist)!**
- Attempt to find out why the caller is upset.
- Note any characteristics about the call and caller:
- Time of the call
- Age and sex of the caller
- Emotional state
- Background noises
- Speech pattern, accent
- Identify the type of threat and note any details offered:
- When is the bomb going to explode?
- What does it look like?
- Where is the bomb located?
- What kind of device is it?
- Immediately after the call ends, notify University Police (9-1-1) and supply them with the information obtained.

Written Threat:

- If the threat is received by mail, do not further handle the letter, envelope, or package.
- If the threat is received by e-mail, save the entire e-mail message, including any attachments and print out a copy for police.
- Call University police at 9-1-1, and notify your supervisor.

Suspicious Parcel, Mail, Etc.:

- **Letter and Parcel Bomb Recognition Clues:**
- foreign mail, air mail and special delivery
- No return address
- Restrictive markings such as "confidential," "personal, etc.
- Excessive postage, multiple stamps
- Excessive weight, rigid envelope
- Lopsided or uneven envelope
- Handwritten or poorly typed address
- Protruding wires or tinfoil
- Incorrect titles or titles with no name, misspelled words
- Excessive securing material (i.e., tape, string)
- Oily stains or residues

- Mysterious delivery
- Shows a city or state in the postmark that does not match the return address
- Do not handle! Keep anyone from going near it.
- Leave the area, notify your supervisor and call University Police (9-1-1).
- If an evacuation is warranted, University Police will activate the building fire alarm.
- Evacuate the building by walking to the nearest exit and calmly direct others to do the same. Once outside, move to a clear area at least 150 feet from the affected building. Keep walkways and roads clear for emergency responders.
- Do not re-enter the building until advised by emergency response personnel, even if the alarms have ceased.

Bomb Threat Checklist:

- Exact time of call:
- Exact words of caller:

Questions to Ask:

- When is the bomb going to explode?
- Where is the bomb?
- What does it look like?
- What kind of bomb is it?
- What will cause it to explode?
- Did you place the bomb?
- Why?
- Where are you calling from?
- What is your address?
-
- What is your name?

Caller's Voice:

• Calm	Deep	Stutter	Stressed
• Slow	Loud	Accent	Nasal
• Crying	Broken	Angry	Lisp
• Slurred	Giggling	Rapid	Excited
• Disguised	Sincere	Squeaky	Normal

- If voice is familiar, whom did it sound like?
- Were there any background noises?
- Remarks:
- Person receiving call:
- Telephone number call received at:

- Date:

Report Call Immediately to UAPD (9-1-1)

Chemical Spill

Notes and Precautions:

The range and quantity of hazardous substances used in laboratories require preplanning to respond safely to chemical spills. Knowledgeable and experienced personnel should only do the cleanup of a chemical spill. Spill kits with instructions, absorbents, reactants, and protective equipment should be available to clean up minor spills. A minor chemical spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other chemical spills are considered major. Refer to the chemical spill procedures outlined in the Chemical Hygiene Plan (Section 9.5). Contact Risk Management & Safety (621-1790) to ensure proper procedures are being taken to clean up the spill. **Minor Chemical Spill**

- Alert people in immediate area of spill.
- Wear protective equipment, including safety goggles, gloves, and long-sleeve lab coat.
- Avoid breathing vapors from spill.
- Confine spill to small area.
- Use appropriate neutralizer for inorganic acids and bases. Absorb neutralized spill, collect residue, place in container, and dispose as chemical waste.
- For other chemicals, absorb spill with vermiculite, dry sand, or diatomaceous earth. Collect residue, place in container and dispose as chemical waste.
- Clean spill area with detergent and water.

Major Chemical Spill:

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the immediate area to evacuate.
- If spilled material is flammable, turn off ignition and heat sources.
- Call Chemical Spill Emergency Response number (621-1790).
- Close doors to affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Evacuation of Mobility-Impaired Persons

These guidelines for the evacuation of mobility-impaired persons from university buildings have been endorsed by the Department of Risk Management & Safety, University Police Department, Tucson Fire Department, Disability Resource Center, Residence Life, and the ADA/504 Officer. They are general guidelines to address most evacuation scenarios.

Emergency Situations:

If a person with a mobility impairment is able to exit the building without use of the elevator, then evacuation should follow the appropriate route out of the building. If exit from the building is only possible by use of the elevator, follow the procedures outlined below:

- The mobility-impaired person should proceed or ask for assistance to the nearest enclosed or exterior stairwell or "area of safe refuge" and remain there. In case of a fire, enclosed building stairwells are "safe refuge areas," and have a higher fire resistive rating. The mobility-impaired person should notify an individual (i.e. a co-worker, supervisor, instructor, or building monitor) of their specific location. If possible, the mobility-impaired person can notify 9-1-1 of their location.

  In Residence Halls, if the mobility-impaired occupant cannot leave his or her room immediately without the assistance of another person , they should remain in the room. Notification can be made by calling 9-1-1.

- Make sure the door to the stairwell is closed. Open doors will violate the "safe refuge area" and will allow smoke, and possibly fire, into the stairwell.

- Once outside, anyone with information should inform the Tucson Fire Department (TFD) Incident Command Center that there is a mobility-impaired person in a stairwell, which floor the person is on, and location of the stairwell or refuge area. When stairwell evacuations are necessitated, such decisions and evacuations will be made by TFD. **UNIVERSITY PERSONNEL SHOULD NEVER ATTEMPT TO CARRY ANYONE DOWN THE STAIRS.**

Non-Emergency Situations:

Persons with a mobility impairment who need assistance leaving a building in a non-emergency situation (elevator outage, etc.) should follow the procedures outlined below:

- Contact UAPD (621-8273). UAPD will send personnel to the location to assess the situation and will contact TFD for all evacuations. Improper evacuation techniques could harm the evacuee; therefore UAPD will not evacuate any mobility-impaired person because they are not trained to do so.

- Elevator outages will be reported to Facilities Management (Residence Life Maintenance for Resident Halls) by UAPD for immediate response. However in the event of elevator cars stuck between floors, no removal of passengers will be performed until the car is properly leveled.

- TFD will address non-emergency evacuations on a priority basis. This may mean a delayed response until TFD can respond.

- UAPD personnel will remain with the person until egress is restored (i.e. elevator has been repaired) or TFD responds. They will maintain contact with TFD and Facilities Management to determine response time.

Fire

Notes and Precautions:

Small fires can be extinguished without evacuation. However, an immediate readiness to evacuate is essential in the event the fire cannot be controlled. Only trained personnel should use fire extinguishers. Never enter a room that is smoke filled. Never enter a room containing a fire without a backup person. Never enter a room if the top half of the door is warm to touch.

Small Fire:

- Evacuate the immediate area.
- Activate the nearest fire alarm pull station
- If you choose to use a fire extinguisher, always maintain an accessible exit.
- Avoid smoke or fumes.
- Report all fires to Risk Management & Safety.

Major Fire

- Alert people in area to evacuate. Close doors behind you to confine fire and smoke.
- Activate nearest fire alarm and call Fire Emergency Response number (9-1-1).
- Evacuate to safe area or exit building through stairwell; do not use elevator.
- Have person knowledgeable of incident and area assist emergency personnel.
- **Mobility Impaired Persons:** If a person with a mobility impairment is able to exit the building without use of the elevator, then evacuation should follow the appropriate route out of the building. If exit from the building is only possible by use of the elevator, follow the procedures outlined below: The mobility-impaired person should proceed or ask for assistance to the nearest enclosed or exterior stairwell or area of rescue assistance and remain there. In case of a fire, enclosed building stairwells are "safe refuge areas," and have a higher fire resistive rating. The mobility-impaired person should notify an individual (i.e. a co-worker, supervisor, instructor, or building monitor) of their specific location. If possible, the mobility-impaired person can notify 9-1-1 of their location. Make sure the door to the stairwell is closed. Open doors will violate the "safe refuge area" and will allow smoke, and possibly fire, into the stairwell. Once outside, anyone with information should inform the Tucson Fire Department (TFD) Incident Command Center that there is a mobility-impaired person in a stairwell, which floor the person is on, and location of the stairwell or refuge area. When stairwell evacuations are necessitated, such decisions and evacuations will be made by TFD.

University Personnel Should Never Attempt to Carry Anyone Down the Stairs

- Do not re-enter the building until advised by emergency response personnel, even if the alarms have ceased.

This is How Most Fire Extinguishers Work

Learn How to **P.A.S.S**.:

- **Pull** the pin. Some units require the releasing of a lock latch, pressing a puncture lever.
- **Aim** the extinguisher nozzle (horn or hose) at the base of the fire.
- **Squeeze** or press the handle.
- **Sweep** from side to side at the base of the fire until it goes out. Shut off the extinguisher. Watch for reignition and reactivate the extinguisher if necessary.

Fire Extinguishers: Type:

- **"A"** Effective on fires composed of burning wood, paper, plastics, and fabrics.
- **"B"** Effective on fires fueled by flammable liquids or grease
- **"C"** Effective on fires involving electric current.
- **"D" Effective** on fires fueled by combustible metals such as magnesium and sodium, and other finely divided metal particles

Medical and First Aid

1. In case of serious injury or illness on campus, immediately call University Police at 9-1-1, or use emergency phone. Give your name; describe the nature of the problem and the location of the victim. University Dispatchers will notify Emergency Response Personnel. Police Officers are trained in CPR and First Aid.

2. Quickly perform these four steps:

- Determine welfare of victim by asking, "Are you okay," and "What is wrong?"
- If victim is unconscious, check pulse and breathing and give CPR or artificial respiration if necessary.
- Control serious bleeding by direct pressure and elevation of the wound.
- Keep victim still and comfortable; have them lie down if necessary.

First Aid Instructions

Mouth-to-Mouth Rescue Breathing:

- Place victim on side and remove foreign matter from mouth with finger.
- Place victim on back.
- Tilt victim's head back to open airway.
- Close victim's nostrils with fingers.
- Exhale until victim's chest expands.
- Repeat every 1-2 seconds after chest deflates.
- Keep trying until help arrives.
- If unable to give breath, check victim for airway obstruction.

Severe Bleeding and Wounds:

- Apply direct pressure on wound.
- Use clean cloth or hand.
- Elevate body part.
- Apply pressure to blood vessel if necessary. Add more cloth if blood soaks through. Never remove bandage once applied.
- Keep pressure on wound until help arrives.
- Use tourniquet ONLY as a last resort.

Fainting, Unconsciousness and Shock:

- Have victim lie down and rest.
- Keep victim comfortable, not hot or cold.
- Place victim on side if unconscious.
- Ask or look for emergency medical I.D.
- Treat other injuries as necessary.

Burns, Thermal & Chemical:

- Immerse burned area in cold water.
- Flood chemical burn with cool water for 15 minutes.
- Cover burn with dry bandage.
- Keep victim quiet and comfortable.

Poisoning and Overdose:

- Determine what substance is involved and how taken.
- Call Poison Control Center at 626-6016 or 1-800-222-1222.
- Stay with victim and assist as directed by Poison Control.

Fractures and Sprains:

- Keep the victim still.
- Keep injured area immobile.

Choking and Airway Obstruction:

- If victim is coughing, or able to speak, stand by and allow victim to cough object up.
- If unconscious, check victim's mouth and clear of foreign matter.
- Give abdominal thrusts (Heimlich Maneuver).
- Continue thrusts until airway cleared.

Radiation Spill

Notes and Precautions:

Spreading of radiation beyond the spill area can easily occur by the movement of personnel involved in the spill or cleanup effort. Prevent spread by confining movement of personnel until they have been monitored and found free of contamination. A minor radiation spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other radiation spills are considered major. Call the Radiation Control Office (626-6850) to ensure proper procedures are being taken to clean up the spill.

Always Remember to "S.W.I.M."

- **Stop** the spill.
- **Warn** other personnel.
- **Isolate** the area
- **Minimize** the exposure to radiation and contamination.

Minor Radiation Spill:

- Confine the spill immediately.
- Alert people in immediate area of spill and keep non-essential personnel out of the area.
- Notify Laboratory Manager or Radiation Safety Office (626-6850).
- Wear protective equipment, including safety goggles, disposable gloves, shoe covers, and long-sleeve lab coat.
- Place absorbent paper towels over liquid spill. Place towels dampened with water over spills of solid materials.
- Using forceps, place towels in plastic bag. Dispose in radiation waste container.
- Monitor area, hands, and shoes for contamination with an appropriate survey meter or method. Repeat cleanup until contamination is no longer detected.

Major Radiation Spill:

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to leave the immediate area.
- Have potentially contaminated personnel stay in one area until they have been monitored and shown to be free of contamination.
- Notify Laboratory Manager or Radiation Safety Office (626-6850).
- Close doors and prevent entrance into affected area.
- Have person knowledgeable of incident and laboratory assist emergency personnel.

Suspicious or Threatening Parcels & Letters

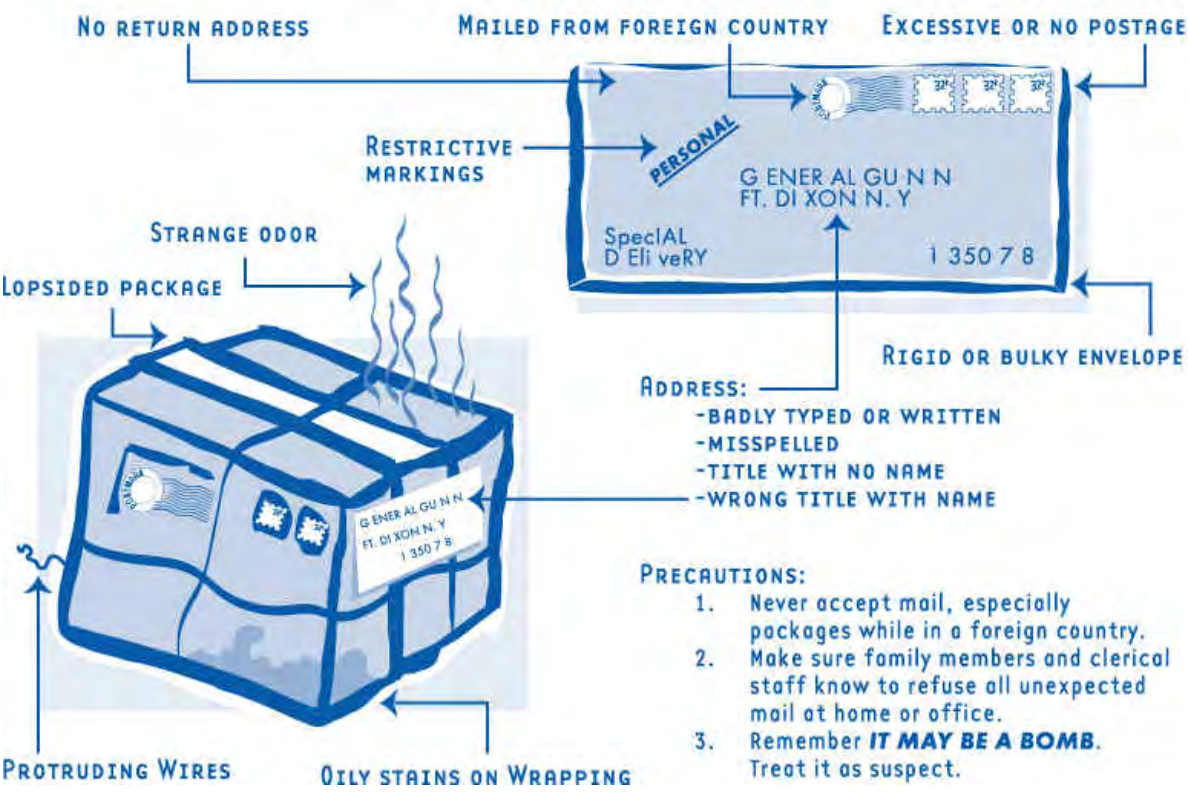
Notes and Precautions:

It is possible, although highly unlikely, that a staff member may someday receive a suspicious parcel or letter. Biological or chemical threats targeting individuals or departments can frequently be controlled by screening of materials and by following the procedures listed below. University Police and responding Public Safety agencies have plans in place to deal with these types of threats. Following the procedures below will activate those plans and promote the highest level of safety while minimizing the disruption associated with these incidents.

- Mail and package delivery to each department should be screened for suspicious letters and/or packages. Common features of threat letters/packages are:
- No return address
- Shows a city or state in the postmark that does not match the return address
- Hand written or poorly typed address
- Excessive or foreign postage
- Misspelling of common words
- Oily stains, discoloration or odor
- Restrictive markings such as "Confidential", "Personal", etc.
- Protruding wires or aluminum foil
- Incorrect titles or titles with no name
- Excessive weight and/or feel of a powdery or foreign substance
- Suspicious letters and packages should not be opened and should not be handled any more than is absolutely necessary. If there is nothing leaking from the suspicious item leave it alone and call University Police at **9-1-1**.
- If you open a letter/package that claims to have contaminated you, but there is no substance seen or felt in the envelope or on the letter, chances are that you have not been contaminated. Call University police at **9-1-1** and tell them exactly what you have done and what information you have in regard to the threatening letter. They will dispatch the appropriate personnel to your location to follow-up on your possible exposure and to document what has taken place. DO NOT handle the suspicious item any more and DO NOT let anyone else handle the item.
- If you open a letter/package that claims to have contaminated you and there is some sort of foreign substance in the envelope or package:
- Place the letter back into the envelope/package, close it back up, or cover the letter and substance with anything (cloth, paper, etc.). Do not remove this cover.
- Alert others in the area to leave.
- Wash all exposed skin with soap and water.
- If your clothes are covered with a significant amount of the substance, carefully remove the contaminated clothing and, if possible, place into a plastic bag.
- Call University Police at **9-1-1** to report the situation and tell the dispatcher you have opened the envelope/package, there is a substance inside, and what you have done up to that point.
- Police and Risk Management responders can evaluate the risk to those in the room at the time of potential exposure as well as any impact on the remainder of the building. Based upon that risk assessment, further emergency measures may be implemented as necessary. If the risk is found

to be minimal, other areas of the facility will not be disrupted and any necessary actions to return the area involved to normal activity will begin as soon as possible.

Suspect Letter and Package Indicators



Utility Failure

Notes and Precautions:

The University of Arizona has a maintained infrastructure of utilities that is generally uninterrupted. However emergencies such as electric power failure, natural gas leaks, and plumbing failure do occur. During these emergency situations, remaining calm and following the listed procedures will help minimize the disruption to everyday activities.

Power Outage:

- Remain calm.
- If possible, call Facilities Management at 621-3000.
- If you are in an unlighted area, proceed cautiously to an area that has lighting. Provide assistance to others in your area that may be unfamiliar with the space.
- If instructed to evacuate, proceed cautiously to the nearest exit.

Note: Major campus buildings are equipped with an emergency light system that within 10 seconds of electrical failure will provide enough illumination in main corridors and stairways for safe exiting.

Elevator Failure:

- All campus elevators are equipped with emergency phones connected directly to University Police. If you are trapped in an elevator, contact University Police via the emergency phone. Do not climb out of the elevator and get on top of the car. If you discover an emergency (i.e., trapped occupants) involving an elevator, phone University Police immediately (9-1-1).

Serious Gas Leak:

- Cease all operations and immediately vacate the area.
- Do not turn on or off any electrical appliances, lights, etc.
- From a distant phone immediately call University Police at 9-1-1 and Facilities Management at 621-3000.

Plumbing Failure/ Flooding:

- Call Facilities Management at 621-3000 immediately, tell respondent of the exact location and severity of leak.
- If there are electrical appliances and outlets near the leak, use extreme caution.
- If there is any possible danger, evacuate the area.
- If you know the source of the water and can safely stop it (i.e. unclog the drain, turn off the water, etc.) do so cautiously.
- Be prepared to assist as directed in protecting objects that are in jeopardy. Take only essential steps to avoid or reduce immediate water damage, by covering, removing or elevating them.

Appendix C

UA DEPARTMENTAL EMERGENCY STATUS REPORT

To be completed by Building Manager, Dean, Director or Department Head at the time of the incident

Department_____
Building name: _____Floors:_____
Completed by:_____
Available at:
Location_____Phone_____

URGENT NEEDS: e.g., rescue, severe flooding from break, Describe:
_____
_____

Personnel Status:

Number of personnel present or accounted for:_____
Number of persons missing:_____
Names:_____
_____
_____
_____
_____
_____
_____
_____
_____

Number requiring medial assistance:_____
Nature of injuries: Urgent □ Minor □

Is anyone trapped?
In building □ Yes □No Where:_____
In elevator □ Yes □No Where:_____

Building Status:

Fires (if so pull alarm) □Yes □No

Structural

- Major damage (partial building or floor collapse) □
- Moderate Damage (furniture overturned, light Fixture down) □
- Minor damage (cracks, books off shelf) □

Utilities

Electricity	□ OFF	□ON
Water	□OFF	□ON
Gas	□OFF	□ON
Emergency Power	□OFF	□ON

Communication

Phones	□OFF	□ON

Hazardous Materials

Chemical spills	□YES	□NO

Where:_____

Biological spills	□YES	□NO

Where:_____

Radiation Contamination	□YES	□NO

Where:_____

Observations/Needs:_____
_____
_____
_____

Complete this form and hand it to the first Police Officer or Fire fighter who arrives at your assembly location. This information will assist the first responders with the initial scene assessment.

APPENDIX "D" Incident Command

The Incident Command System (ICS) is a modular emergency management system designed for all hazards and levels of emergency response. This system creates a combination of facilities, equipment, personnel, procedures, and communication operations with a standardized organization structure. The system is used locally, statewide and through the United States as the basis for emergency response management. Out use of ICS at the University of Arizona facilitates the University's ability to communicate and coordinate response actions with other jurisdiction. In addition, the system facilitates coordination with external emergency response agencies.

Every incident, regardless of size has an Incident Commander. The initial Incident Commander is someone with the most information and who is responsible for overseeing the initial incident, until relieved by a higher authority, or first responders. The **Incident Commander is in complete control of the incident, regardless of rank or title.** ***All individuals associated with the emergency must listen to and follow the instructions of the IC.***

The following components characterize the Incident Command System:

- Common terminology applied to organization elements, position, titles, facility designations and resources.
- Generic position whereby multiple individuals are trained for each emergency response role and follow prepared action checklists.
- Modular organization based on activating only those organizational elements required to meet current objectives.
- Integrated communication so that information systems operate smoothly among all response agencies involved.
- Unified command structure so that organization elements are liked to for a single overall structure with appropriate span-of-control limits.
- Manageable span of control whereby supervisory demand is held in the one-to-three to one-to-seven range.
- Comprehensive resource management for coordinating and inventorying resources for field responses.
- Consolidated action plans, which contain strategy to meet objectives at both the field response and EOC levels.

1. ICS Structure

ICS is structured with expandable functional sections:

- Incident Commander and Command Staff;

- Operations Section
- Planning Section
- Logistics Section
- Finance/Administration

a. Incident Commander

The Indent Commander (IC) has the authority and responsibility to manage the incident response effort, with general guidance from the Emergency Operations Center (EOC). Designation of the "IC" being automatically as the first emergency responder arrives on the scene. This may evolve and be passed on to others depending upon the complexity, length, and severity of the incident.

The IC in consultation with emergency responders, determines the classification of the incident, the required response, and expands the emergency response organization as needed.

The Incident Command assumes all emergency response responsibilities until they are formally delegated to others. If a situation escalates, additional positions are assigned and resources obtained. Determination of personnel to assume the role of Incident Commander will be based on response time, the availability of qualified personnel, the nature of the incident, the level of training, and the demands of the position.

b. Command Staff

The Incident Commander may assign an immediate command staff consisting of the following positions and responsibilities:

- Safety Officer – provides overall operational safety authority
- Information Officer – acts as sole media contact; distributes information
- Liaison Officer – interfaces with cooperating agencies
- Scribe – to record the events

c. General Staff

Operations Section: The Operations Section is responsible for all incident tactical activities. The Operations Section is divided into groups (e.g. fire, law enforcement, emergency medical, facilities management, the Campus Emergency Response Team).

Planning Section: The Planning Section collects and analyzes data regarding operations and prepares extended incident actions plans. Incident Assessment, Resource Status, Recovery and Documentation are units under this division.

Logistics Section: The Logistics Section is responsible for meeting the resource needs of the Operations Section. This can include procuring specialized equipment and supplies, communication services, providing food and water to response personnel, and meeting the transportation requirement of the incident.

Finance Section: The Finance Section is activated for the purposes of determining the short and long term fiscal impacts of the emergency, and for providing payments to vendors for the use of supplies and equipment.

d. Campus Emergency Response Team (CERT):

The CERT plays an active, supportive role in campus emergencies. The CERT Chair, the Sr. Vice President for Campus Life, manages and activates CERT usually after notification by the Chief of Police. CERT supports the Incident Commander and the emergency by brining together key campus personnel to help plan and coordinate campus emergency efforts.