TEXAS A&M UNIVERSITY
CORPUS CHRISTI

SAFETY MANUAL

Environmental, Health and Safety Department
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Reviewed: January 9, 2025

Texas A&M University-Corpus Christi is committed to a safe and healthy campus environment. This commitment comes from the highest level of the institution as indicated by the Safety Policy provided below and signed by the President of Texas A&M University-Corpus Christi.

Texas A&M University-Corpus Christi Safety Policy

Texas A&M University-Corpus Christi is committed to conducting all educational, research, service, and campus activities safely and in a manner that protects the health of students, faculty, staff and the public. Our human capital is our greatest asset and resource; therefore, we must establish goals that reflect this concern for the campus community. Our goal for accidents and lost-time injuries is zero. Though we may never achieve this goal, we must continuously strive to prevent accidents and injuries.

As the Chief Executive Officer for the Institution, safety begins with the President and extends to all of us. Each member of the Islander family, whether faculty, staff, or student, is responsible and accountable for understanding and applying appropriate safety practices and procedures for his or her own protection and the protection of others. Safety is a condition of employment for all employees and an expectation of each of our students.

Safety must be more than just a topic of discussion on our campus; it must become a core value of our teaching, research, and service enterprise. We must strive to create a safety culture that is characterized and recognized by ourselves and our peers as excellent. Safety is the business and responsibility of every campus citizen, and we must each perform our part in order that we can all be **successful. For example:**

- Students must wear appropriate safety equipment and follow prescribed protocols while in the laboratory, studio, shop, and clinic environment.
- Faculty must strive to create learning and research environments where safety is expected and valued; and
- Staff must help provide and maintain a safe campus environment and establish work rules and practices that follow recognized safety standards.
- Texas A&M University-Corpus Christi safety guidelines apply to all university employees, TAMUS, state, federal agency tenants, contractors, vendors, visitors, volunteers, student employees, and/or students.

EMERGENCY PHONE NUMBERS

Dialing from an On-Campus Phone	**9-911**
Emergency Assistance	911
Dialing from a Cell Phone or an off-campus phone	**911**
University Police	361-825-4444
University Health Center	361-825-2601
Facilities Services	361-825-2324
Poison Control	800-222-1222
Poison Non-Emergency	361-886-2600

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I. INTRODUCTION

Texas A&M University-Corpus Christi (TAMU-CC) Environmental, Health, and Safety (EHS) Department is responsible for managing EHS programs for TAMU-CC. The overall objective is to maximize the safety and health of employees, students, and visitors.

Programs and services provided by TAMU-CC EHS include the following:

- A staff person is assigned "ON CALL" rotation after hours, weekends, and holidays.
- Monitor safety regulations.
- Develop policies and/or protocols concerning EHS issues.
- Disseminate information concerning safety regulations, policies, and protocols.
- Submit reports and other required documentation to pertinent state agencies.
- Evaluate facilities to maintain safe work environments.
- Inspect safety equipment such as fire extinguishers and fume hoods.
- Report results of evaluations, tests, etc., along with recommended corrective measures to appropriate personnel for action.
- Dispose of hazardous waste.
- Review construction plans for compliance with codes and standards.
- Respond to emergencies such as accidents or chemical spills.
- Measure environmental parameters such as vapors or noise.
- Provide safety-related training.
- Evaluate injury reports for accident trends and perform investigations as appropriate.
- Access to on-line Safety Data Sheets (SDS) as an information resource on hazardous materials.
- Assist with emergency preparedness planning for major disasters and coordinate University plans with the local community.
- Assist departments in the development of Emergency Evacuation Plans.
- Participate in the University Safety Committee.
- Maintain a library of safety audiovisual programs and relevant safety regulations and nationally recognized codes and standards.

1.0 FACULTY, STAFF, AND STUDENTS

1.1 All University faculty, staff, and students are responsible for the following:

- Performing their jobs in the safest prescribed manner.
- Eliminating and/or reporting workplace hazards.
- Reporting accidents, incidents, and unsafe practices or conditions to supervisors.
- Complying with EHS policies and protocols.

2.0 TAMU-CC ADMINISTRATION

2.1 TAMU-CC Administration is responsible for the following:

- Providing the facilities and equipment required for a safe work environment.
- Reviewing and approving EHS policies and protocols.
- Correcting safety deficiencies by establishing priorities and committing resources, as appropriate.
- Making "working safely" a condition of employment.

3.0 SUPERVISORS, DEPARTMENT HEADS, AND DIRECTORS

3.1 Supervisors, Department Heads, and Directors are responsible for the following:

- Promoting safety and loss prevention.
- Eliminating or controlling occupational hazards.
- Periodically conducting safety and loss control evaluations.
- Ensuring that employees are adequately trained in safety policies and protocols.
- Ensuring that employees are provided with appropriate personal protective clothing and equipment for safe job performance.
- Participating in accident investigations, as necessary.

4.0 TAMU-CC SAFETY MANUAL

4.1 The TAMU-CC Safety Manual been developed by EHS as a reference manual. It describes programs, practices, and procedures to be followed to help ensure a safe and healthy work environment. It is the intent of the University to comply with all relevant occupational and environmental regulations and nationally recognized codes and standards. Using the manual's protocols will complement responsible efforts to foster safe work habits and to maintain safe work environments.

II. ACCIDENT REPORTING

1.0 ACCIDENTS AND ACCIDENT REPORTING GUIDELINES

1.1 For safety and liability purposes all medical emergencies and accidents involving students, visitors, tenants, contractors, and employees, regardless of severity, should be reported to the University Police Department (UPD) at extension (ext.) 4444 or 361-825-4444 from a non-campus phone. Additionally:

- Employees must report accidents and/or injuries to their supervisor who will submit a new incident report in Origami within 24-hours of the incident being reported: https://live.origamirisk.com/Origami/IncidentEntry/Welcome.
- Accidents involving university owned vehicles or utility carts, single or multiple, require an employee to complete and submit to their supervisor a Motor Vehicle Accident Report (System Form 9): https://www.tamucc.edu/institutional-excellence/compliance/risk-management/index.php. The supervisor will upload this report to the new incident report in Origami.
- Visitors, students, tenants, and/or non-TAMU-CC employees should report accidents and/or injuries to UPD or a TAMU-CC employee as soon as possible. Any TAMU-CC employee to whom an accident and/or injury is reported must submit a new incident report in Origami within 24-hours of the incident being reported.

1.2 When accidents are reported promptly, injured employees, students, and visitors receive timely medical care, and unsafe conditions receive prompt corrective actions. Report unsafe conditions or potentially hazardous situations to EHS at ext. 5555 or 361-825-5555 from a non-campus phone.

1.3 Obtain medical aid for the injured (if necessary).

- Call UPD 361-825-4444 or law enforcement entity (911) for an investigation of the accident.
- If the accident is reported to a local law enforcement agency, the driver will need to obtain a copy of the accident report.
- Submit all accident documentation to your supervisor to be included with the incident report in Origami.

1.4 For accidents involving motor vehicles:

- If there are no injuries, you are blocking traffic, and your vehicle can be driven, move the vehicle to a safe location nearby.
- If the accident occurs on a freeway lane, ramp, shoulder, median, or busy metropolitan street, you *must* move your car if it is safe and possible to do so.
- If the accident occurs on campus and results in fluids leaking onto the

ground, UPD will contact the EHS Department for spill response support.

1.6 If you cannot move your vehicle, try to warn oncoming traffic to prevent other accidents:

- Raise your hood
- Turn on your hazard lights
- Light flares

Exchange the following information with other drivers involved in the accident:

- Name, address, and phone number
- Vehicle identification number, license number, and description
- Insurance information
- Driver's license number

Call the police in the following circumstances:

- Someone is injured
- A car cannot be moved
- A driver is intoxicated
- A driver has no insurance
- A driver leaves the scene of the accident without exchanging information

1.7 Reporting a Boating Accident

- Contact the United States Coast Guard (USCG) on very high frequency – frequency modulation (VHF-FM) channel 16, or the USCG Command Duty Officer at 361-939-0450, or Search and Rescue at 361-289-8291.
- Report the accident to UPD at 361-825-4444.
- Notify your supervisor who will submit a new incident report in Origami.

It is the responsibility of each boat operator of a university vessel involved in an accident to contact Texas Parks and Wildlife Department (TPWD) or your nearest law enforcement agency if the accident results in:

- Death; (within 48 hours)
- Injuries to a person requiring medical treatment beyond first aid; or
- Damages to vessel(s) or property in excess of $2000.00

To report an accident, contact your local game warden, local law enforcement agency, or call the TPWD 24-hour police communications operator at 512-389-4848.

III. AMERICANS WITH DISABILITIES

1.0 AMERICANS WITH DISABILITIES ACT (ADA)

1.1 Within the standards required by the ADA, TAMU-CC makes reasonable accommodations for persons with physical disabilities so that they may more fully participate in programs and the benefits of employment. Safety is an important consideration in providing accommodations.

1.2 Elevators, automated door openers, lifts, ramps, etc., facilitate access. Sometimes this equipment becomes damaged or does not function properly. Please promptly notify Facilities Services (FS) for equipment repair at: https://www.tamucc.edu/finance-and-administration/facility-administration/facilities/index.php.

1.3 Handicap parking, sidewalks, wheelchair ramps, and building entrance areas may become blocked or congested with illegally parked bicycles, vehicles, or campus construction. Please contact UPD to report bicycle or vehicle related safety concerns at: https://www.tamucc.edu/university-police-department/. For construction related issues, please contact FS.

1.4 Many classrooms are equipped with wheelchair accessible desks or tables, sometimes with chairs that can be removed or replaced as needed. Wheelchairs or removable chairs that block aisles and exits create an unacceptable hazard. Please report instances to the person presenting the class or to EHS at: https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/.

1.5 Braille signage assists persons with visual disabilities to locate elevators, stairs, exits, classrooms, laboratories, restrooms, etc. The absence of signage could pose a safety issue if a person is not able to locate a specific area, e.g., an emergency exit, or inadvertently enters an inappropriate area. Contact Disabilities Services regarding Braille signage needs. FS prepares and installs Braille signage: https://www.tamucc.edu/finance-and-administration/facility-administration/facilities/index.php.

1.6 Evac-U-Trac evacuation chairs are in the Universities multistoried academic, administrative and auxiliary building. Refer to the Quick Reference Guide to Campus Emergencies for assisting persons with physical disabilities to safely vacate the building and for the locations of the Evac-U-Tracs (an emergency evacuation chair): https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/assets/documents/finalbooklet.pdf.

IV. ANIMALS ON CAMPUS

1.0 GENERAL INFORMATION

Pets and other animals are restricted at TAMU-CC facilities, grounds, and parking areas in accordance with University Procedure 33.04.99C0.01 (Non-Research Animals on University Property and in Facilities). This restriction supports University Procedure 41.01.01.C0.01 (Use of University Facilities) and the University's efforts to provide a safe work, learning, and research environment. It also helps minimize the health risks and concerns of members of the campus community and aids the maintenance, appearance, and cleanliness of campus facilities.

This restriction applies to all animals not related to academics and research on any TAMU-CC grounds or in any facility controlled by the university.

This restriction excludes:

- Law enforcement K-9 and equestrian units
- Animals used as an accommodation under law

Refer to University Procedure 08.01.02.C0.03 (Service and Emotional Support Animals).

1.1 General Provisions

- An animal must be under physical restraint to be allowed on campus. Specific policies may apply during special events such as concerts, athletics events, and guest speakers.
- Animals are not allowed in university buildings, except for service
- animals and functions approved to include animals. Service animals must be permitted to accompany people with disabilities in all areas where university events and activities occur. Restrictions may be placed on locations and activities where emotional support animals are permitted.
- The owner or responsible party must immediately remove and properly dispose of fecal matter deposited by any animal brought to campus.
- An individual who brings an animal onto university property or property controlled by the university will be responsible for damage or injury caused by that animal. If an animal disrupts the campus educational process, administrative process, or other campus function, the owner or responsible party must remove the animal immediately.
- An animal left unattended in a vehicle or other area that is perceived to be in distress is to be reported to UPD for appropriate response. A person who leaves an animal unattended may be prosecuted. Any animal found unattended in or on any campus facility may be impounded. Owners of an impounded animal will be held responsible for payment of any impoundment and/or license fees required to secure the release of their

animal.

- The abandonment of animals on any TAMU-CC property is strictly forbidden.
- The owner or responsible party who wishes to bring an animal on campus for a one-time display is required to comply with university procedures and follow the appropriate protocol for approval prior to bringing the animal on campus. This approval may require a certificate of insurance and animal health certificates. For additional information, please contact Administrative Services at 361-825-2183.
- It is the responsibility of FS – Grounds to collect and dispose of dead animals. To report a dead animal, call FS at 361-825-2324.
- Animals may be exercised or walked on campus paths and must always be on leash.

1.2 Wild or Feral Animals

- Wild or feral animals will be left alone if no immediate threat to human safety or property is evident. If an animal is exhibiting dangerous or destructive behavior or posing an immediate threat, UPD must be notified immediately. UPD will monitor the animal until another appropriate party is contacted and arrives on the scene. If the animal is deemed a threat and immediate intervention is required, UPD may elect to remove the threat.
- Individuals are discouraged from feeding wild and feral animals. This shall specifically apply to domesticated or feral cats, raccoons, opossums, skunks, squirrels, and any or all the fauna which occur either naturally or unnaturally on TAMU-CC campus. This shall not apply to food left out as bait for purposes of capturing or attracting animals for animal control or for educational purposes as approved and monitored for research purposes.

1.3 Stray Animals

- Stray animals should be reported immediately to UPD. Stray animals on campus grounds or in buildings will be turned over to local animal services.
- Any person who vandalizes, removes, or causes to deactivate an animal trap that has been set by UPD or FS, will be in violation of this procedure and will be responsible for replacement costs, and/or subject to disciplinary action.

V. ASBESTOS/LEAD PAINT

1.0 GENERAL INFORMATION

1.1 Asbestos is a mineral fiber that causes cancer and various respiratory illnesses. Older buildings constructed prior to 1980 may contain asbestos. Asbestos is commonly found in older appliances, insulation, shingles, siding, putties, and caulking. Generally, it is not a problem unless the material that contains it crumbles or flakes.
NOTE: *Call FS before performing work on campus that will disturb building fixtures, walls, or ceiling (e.g., installing computer cables in the ceiling). FS will help ensure that the work does not affect asbestos containing materials.*
IMPORTANT: *Do not handle asbestos or suspected asbestos or try to remove it yourself.*

1.2 TAMU-CC has an ongoing Asbestos Management Program that strives to eliminate or control the potential hazards associated with asbestos and lead paint. A copy of the TAMU-CC Asbestos Management Program is available from EHS. FS handles contracts for consultation and/or abatement. Direct any questions about identifying or removing asbestos to FS. Address any safety-related questions to EHS. The TAMU-CC Asbestos/Lead Paint Plan is located at: https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/ehs-useful-links-and-resources.php.

VI. BIOLOGICAL SAFETY

The Biological Safety Program is managed by each applicable department, the Institutional Biosafety Committee (IBC), and the EHS Department. Guidance documents, requirements, and training sessions are offered and should be consulted when employees or students work with or have the potential to be exposed to biohazardous materials.

1.0 BIOHAZARDOUS MATERIALS

1.1 Biohazardous materials are potentially hazardous biological agents and include the following:

- Etiologic agents which may cause disease in humans, animals or plants (including bacterial, fungal, parasitic, rickettsial, viral, and prion disease agents).
- Human body fluids or tissues (e.g. blood borne pathogens) including human cell culture (primary or continuous).
- Agents and molecules involved with recombinant deoxyribonucleic acid (DNA) biotechnology and genetic manipulation (including recombinant/transgenic agents including plants, animals, as well as pathogenic and non-pathogenic microorganism (eukaryotic and prokaryotic).
- Animals infected with zoonosis.
- Items contaminated with etiologic agents or human body fluids or tissues.

2.0 USAGE OF BIOHAZARDOUS MATERIALS

2.1 Possession and use of biohazardous materials requires prior approval by TAMU-CCs IBC.

3.0 BIOHAZARDOUS STORAGE

3.1 The University departments and EHS work together to ensure biosafety cabinets (BSC) are certified annually or as needed; contact Administrative Operations at ext. 2422 to schedule a BSC certification.

4.0 BLOODBORNE PATHOGENS AND THE HEPATITIS B VACCINATION PROGRAM

4.1 TAMU-CC, per the Bloodborne Pathogens (BBPs) standard as specified in the Texas Health and Safety Code §81.304, is required to provide BBPs training to employees who have a risk of exposure to blood or other potentially infectious material (OPIM). The University has developed an Exposure Control Plan (ECP) that identifies these employees. The ECP can be found at: https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/ehs-useful-links-and-resources.php. Employees identified are assigned the Texas A&M University System (TAMUS) BBP training #2111525 in TrainTraq. New employees must complete the training before reporting to their workstation where an exposure may occur. For

questions contact EHS at ext. 5555.

VII. BOATING SAFETY

The goal of the TAMU-CC Boating Safety Program is to ensure the safety and well-being of marine operators, passengers, and equipment through compliance with the Texas Water Safety Act and USCG boating regulations.

1.0 TEXAS WATER SAFETY ACT

Texas Registration and Title: All motorboats and all sailboats 14 feet in length or longer operated on public waters or docked, moored, or stored on public water must be currently registered, properly displaying authorized numbers and validation decal, and titled. All outboard motors must be titled.
Exemptions: All canoes, kayaks, punts, rowboats, or rubber rafts (regardless of length) when paddled, poled, or oared and sailboats under 14 feet in length when windblown.

1.1 Texas Certificate of Number

When operating a vessel required to be registered, the certificate of number (registration) or facsimile thereof must always be aboard and available for inspection by an enforcement officer. The certificate is valid until the expiration date shown thereon. When renewing certificate, the same number shall be reissued if the application is made within the 90-day period preceding the expiration date.

1.2 Display of Your Number

The number awarded a vessel must be painted on, or otherwise attached to each side of the vessel, near the bow, in such position as to provide easy identification. The number shall read from left to right, be in block characters of good proportion not less than three inches in height and be of a color that contrasts with the background. The numerals must be separated from the prefix and the suffix by hyphens or equivalent spaces such as the following example: TX 0123 AB and TX-0123-AB. Federal and State law prohibit any other number from being displayed on either side of the bow of the boat.

2.0 REQUIRED SAFETY EQUIPMENT

No person may operate or give permission for the operation of a vessel that is not provided with the equipment required by the Texas Water Safety Act and the TAMU-CC Safety Policy.

2.1 Lifesaving Devices

All Personal Floatation Devices (PFDs) must be USCG approved, in serviceable condition, readily accessible, and of the appropriate size for the intended user. University employees, students, and their passengers must wear a PFD while the vessel is underway. Underway means not at anchor, made fast to the shore, or aground. Vessels 16 feet and longer, excluding canoes and kayaks, are required to be equipped with one Type IV throw-able

PFD in addition to the Type I, II, III or V PFD required for each person on board.

2.2 Sound Producing Devices

Any vessel less than 12 meters in length is required to carry some means to make an efficient sound to signal intentions or position in periods of reduced visibility. Vessels 12 meters (39.4 ft.) or more in length are required to carry on board a whistle or horn, and a bell.

3.0 BOATING REGULATIONS

3.1 Inspection of Vessels

In order to enforce the provisions of the Water Safety Act, game wardens and other peace officers certified as marine safety enforcement officers by TPWD may stop, board, and inspect any vessel to determine compliance with applicable provisions.

3.2 Accidents and Casualties

Refer to Section II.1.7 (Reporting a Boating Accident) to report accidents and casualties.

3.3 Stop and Render Aid

The operator of any vessel involved in a boating accident must stop and render whatever assistance is necessary unless such action would endanger his own vessel, crew, or passengers. The operator must give his name, address, and vessel identification number in writing to any injured person and to the owner of any damaged property. Failure to do so in an accident that results in death or serious bodily injury is punishable as a TPWD felony. Failure to do so in an accident that does not result in death or serious bodily injury is punishable as a TPWD Class A misdemeanor.

3.4 Mandatory Boater Education Requirements

A successfully completed TPWD certified boater education course and photo identification (ID) is required for any person born after September 1, 1984, to operate on the public water of this state a (1) vessel powered by motor of 10 horsepower or more; (2) a windblown vessel over 14 feet in length.
EXEMPTIONS: A person is exempt from the mandatory boater education requirement if the person (1) is at least 18 years of age; (2) is accompanied by a person at least 18 years of age who is exempt from the course or who has completed the course; or (3) holds a master's, mates, or operator's license issued by the USCG. Before operating a university owned boat, the applicable employees and students are required to take the Safety Boat Operations Course offered by the College of Science and Engineering Field Operations.

4.0 OPERATION OF YOUR BOAT

It shall be unlawful for any person to:

4.1 Operate any motorboat or vessel at a rate of speed greater than is reasonable and prudent or greater than will permit him to bring such boat to a stop within the assured clear distance ahead.

4.2 Operate any motorboat to cause a hazardous wake or wash.

4.3 Operate any motorboat in a circular course around another boat whose occupant is fishing or around any person swimming.

4.4 Moor or attach any boat to any buoy, beacon, light marker, stake, flag, or other aid to safe operation placed on the public waters of this State by proper authorities, or to move, remove, displace, tamper with, damage, or destroy the same.

4.5 Anchor any boat in the traveled portion of any river or channel to prevent, impede, or interfere with safe passage of any other boat.

4.6 Operate a boat within an area designated as bathing, fishing, swimming, or otherwise restricted areas.

4.7 Operate a boat within an area designated as a "no wake" area except at headway speed without creating a swell or wake.

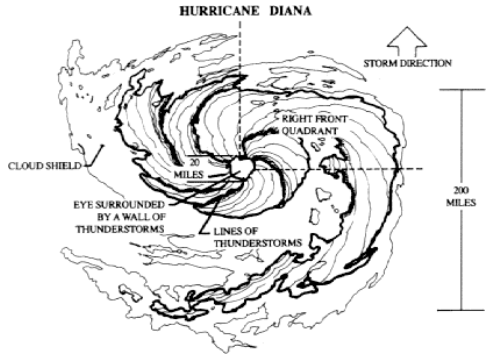
4.8 Operate a motorboat within 50 feet of a Diver Down Flag or operate a boat within 150 feet of a Diver Down Flag except at Headway/Steerage Speed.

4.9 Operating a university vessel under the influence of alcohol or a controlled substance is prohibited. No alcohol or controlled substances shall be permitted aboard a University vessel.

4.10 Fail to comply with the USCG Inland Rules of the Road.

5.0 HURRICANE OBSERVATIONS AND PRECAUTIONS

Hurricanes are enormous cyclonic storm systems covering thousands of square miles which usually develop in the tropical or subtropical latitudes during the summer and fall. To be a hurricane, the system must be producing winds of 64 knots or more. Less intense storms are designated tropical depressions or tropical storms. Tropical storms and hurricanes are named to aid in identifying them. Each hurricane is, essentially, an organized system made up of hundreds of individual thunderstorms. The core of the hurricane is called the eye, an area of relatively benign weather several miles across surrounded by turmoil. All the severe weather conditions produced by individual thunderstorms (heavy rain, hail, lightning, tornadoes, downbursts, etc.) are produced and magnified within the hurricane.



Working together, such storms generate tremendous tidal surges which can decimate coastal areas.

Historically, individual hurricanes have caused the loss of thousands of lives and billions of dollars in damage as they ran their course overpopulated areas. If you know a hurricane is approaching your area, prepare for the worst. The important point is, GET OFF THE OPEN WATER AS FAR AWAY FROM THE STORM AS POSSIBLE! If this is impossible, keep in mind that the right front quadrant of a hurricane usually, but not always produces the most violent weather.

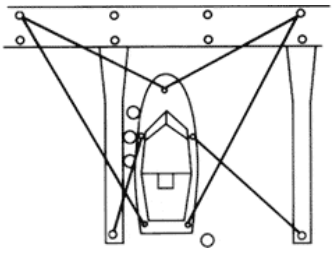
With today's modern communication net to warn them, people have a better chance to reach safety before a hurricane hits their area. Even so, you may have little more than 24 hours advance notice to get your boat secured against the storm's full force.

5.1 If your boat is easily trailer-able, store it ashore, far from the danger of high water. Follow these tips:

- If you must move your boat, first inspect the trailer to ensure it is in proper operating condition. Check tires (including spare), wheel bearings, tow hitch, and lights.
- If you can, put your boat and trailer in a garage. If they must be left out, secure them to strong trees or a "dead-man" anchor. Strip off everything that could be torn loose by a strong wind.
- Increase the weight of your trailered outboard boat by filling it with fresh water and leaving the drain plug (inboard boats must be drained to avoid motor damage). Insert wood blocks between the trailer frame and the springs for extra support with the added weight.

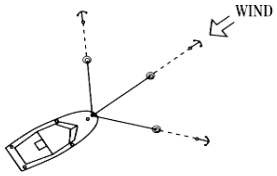
5.2 If your boat must stay in the water, you have three options:

- Berth at a dock which has sturdy pilings and offers reasonable shelter from open water and storm surge. Double up all mooring lines but provide enough slack so your boat can rise with the higher tides. Cover all lines with chafe protectors (double neoprene garden hose cut along the side) at points where the line is likely to wear and put out extra fenders and fender

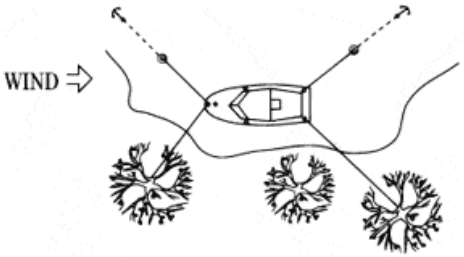


boards (the more the better).

- Anchor your boat in a protected harbor where the bottom can allow a good anchor hold. An advantage to anchoring is that the boat can more easily respond to wind and water changes without striking docks or other boats than when moored. Heavy and extra anchors are needed for this option and enough line should be on hand to allow a scope of at least 10:1 for each anchor.
- Hurricane Holes are ideal locations to moor your boat during a hurricane. These are deep, narrow coves or inlets that are surrounded by several sturdy trees which block the wind and provide a tie-off for anchor lines. The best location for a hurricane hole is one far enough inland to avoid the most severe winds and tides, yet close enough to reach under short notice. You may want to scout out a satisfactory hurricane hole ahead of time!



- ***Remember:***
  - Never stay with your boat. Your boat should be stripped of anything that can become loose during the storm. This would include un-stepping the mast in sailboats. Boat documents, radios, and other valuables should be removed from the vessel prior to the storm, since you never know how long it will take for you to get back to your boat once the storm passes.



  - Hurricanes are among the most destructive phenomena of nature; their appearance is not to be taken lightly. Advanced planning cannot guarantee that your boat will survive a hurricane safely or even survive at all. Planning can, however, improve survivability and is therefore certainly worth the time and money to do so.

5.3 General Weather Tips

- <u>Before Setting Out</u>:
  - Obtain the latest available weather forecast for the boating area. Where they can be received, the National Oceanic Atmospheric Administration (NOAA) Weather Radio continuous broadcasts (specifically VHF-FM) are the best way to keep informed of expected weather and sea conditions. If you hear on the radio that warnings are in effect, do not venture out on the water unless confident your boat can be navigated safely under forecast conditions of wind and sea.
- <u>While Afloat</u>
  - Keep an eye out for the approach of dark, threatening clouds which may foretell a squall or thunderstorm.
  - Check radio weather broadcasts periodically for latest forecasts and warnings.

- Heavy static on your amplitude modulation (AM) radio may be an indication of nearby thunderstorm activity.
- If a thunderstorm catches you afloat:
  - ✓ Put on a PFD (if not already wearing one).
  - ✓ Stay below deck if possible.
  - ✓ Keep away from metal objects that are not grounded to the boat's protection system.

6.0 EQUIPMENT REQUIREMENTS-SAFETY TIPS

6.1 Small Boats and Water Activities

Many hunters and anglers do not think of themselves as boaters, but use small semi-v hull vessels, flat-bottom jon boats, or canoes to pursue their sports. These boats tend to be unstable and easily capsized. Capsizing, sinking, and falling overboard from small boats account for 70% of boating fatalities and these facts mean you must have a greater awareness of the boat's limitations and the skill and knowledge to overcome them. Standing in a small boat raises the center of gravity, often to the point of capsizing. Standing for any reason or even changing position in a small boat can be dangerous, as is sitting on the gunwales, seat backs, or on a pedestal seat while underway. A wave or sudden turn may cause an occupant to fall overboard or the boat to capsize due to the raised center of gravity. When walking forwards or backwards in a boat, always walk along the backbone of the boat.

6.2 Staying Afloat

It is common belief that someone dressed in heavy clothing or waders will sink immediately if they fall overboard. This is not true. Air trapped in clothing provides considerable flotation, and bending the knees will trap air in waders, providing additional flotation. To stay afloat, **remain calm**, do not thrash about or try to remove clothing or footwear. This leads to exhaustion and increases the loss of air that keeps you afloat. Keep your knees bent, float on your back and paddle slowly to safety.

6.3 Cold Water Survival

- Sudden immersion in cold water can induce rapid, uncontrolled breathing, cardiac arrest, and other life-threatening situations which can result in drowning. Wearing a PFD will help reduce this condition. If you must enter the water, button up your clothing, wear a PFD, cover your head if possible and enter the water slowly.
- Hypothermia is the loss of body heat. Immersion in cold water accelerates the loss of heat. If your boat capsizes it will most likely float on or just below the surface of the water. Outboard powered vessels built after 1978 are designed to support you even if full of water or capsized. To reduce the effects of hypothermia, get in or on the boat. Try to get as much of your body out of the water as possible. If you cannot get in the boat, a PFD will enable you to keep your head out of the water. This is very important because about 50% of body heat loss is from the head.

- It may be possible to revive a drowning victim who has been under water for considerable time and shows no signs of life. Numerous documented cases exist where victims have been resuscitated with no apparent harmful effects after long immersions. Start cardiopulmonary resuscitation (CPR) immediately and get the victim to a hospital as quickly as possible.

Boating safety is no accident. To build sound knowledge, proficiency and confidence, and to learn the keys to safe boating, take a boating safety course.
For more information on boating safety and boating courses, contact your State Boating Agency, USCG District, or call the Boating Safety Hotline (1-800-368- 5647). For information on boating courses, you can also contact the BoatUS Foundation at: www.boatus.org.

6.4 Vessel Condition

The operator should assure that a vessel is in top operating condition and that there are no tripping hazards or sharp edges exposed. The vessel should be free of fire hazards and have clean bilges.

6.5 Loading your Vessel

Keep the load low and evenly distributed. Do not exceed the USCG "Maximum Capacities" label. If there is no capacity label use the following formula to determine the maximum number of persons, you can safely carry in calm weather: People = (Length of Boat X Width)/15. Length is determined by measuring a straight line from the foremost to the aftermost part of the vessel, parallel to the centerline, exclusive of sheer. Bowsprits, rudders, outboard motors and similar fittings are not included in the measurement. This formula, however, is applicable only to mono hull boats less than 20ft in length.

6.6 Anchoring

To anchor, bring the bow into the wind or current and put the engine in neutral. When the vessel comes to a stop, lower, do not throw, the anchor over the bow. The anchor line should be 5 to 7 times the depth of water.

6.7 Stern Anchoring

Anchoring a small boat by the stern has caused many to capsize and sink. The transom is usually squared off and has less freeboard than the bow. In a current, the stern can be pulled under by the force of the water. The boat is also vulnerable to swamping by wave action. The weight of a motor, fuel tank, or other gear in the stern increases the risk. Do not anchor by the stern!

6.8 Fueling Precautions

Fill portable tanks off the vessel. Close all hatches and other openings before fueling. Extinguish smoking materials. Turn off engine(s), all electrical

equipment, radios, stoves, and other appliances. Wipe up any spilled fuel immediately. Open all hatches to air out the vessel. Run the blower for at least four minutes and then check the bilges for fuel vapors before starting the engine. NEVER start the engine until all traces of fuel vapors are eliminated. Your nose is the best vapor detector.

6.9 Fuel Management
Practice the "*One-Third Rule*" by using one-third of the fuel going out, one-third to get back, and one-third in reserve.

7.0 MARINE RATED PARTS

Do not use Automotive Parts to replace such items as starters, distributors, alternators, generators, carburetors, fuel pumps, etc., because they are not ignition protected and could cause a fire or explosion.

8.0 AIDS TO NAVIGATION – ROAD SIGNS OF THE WATERWAY

Aids to navigation are placed along coasts and navigable waters as guides to mark safe water and to assist mariners in determining their position in relation to land and hidden dangers. Each is used to provide specific information. Several aids to navigation are usually used together to form a local system that helps the mariner follow natural and improved channels. They also provide a continuous system of charted marks for coastal piloting.

8.1 Lateral Marks are buoys or beacons that indicate the port and starboard sides of a route to be followed, they are used in conjunction with a conventional direction of buoyage. They follow the traditional 3R rule of "red, right, returning" when returning from seaward and proceeding toward the head of navigation. In the United States, returning from seaward and proceeding toward the head of navigation is generally considered as moving southerly along the Atlantic coast, westerly along the Gulf coast, and northerly along the Pacific coast. In the Great Lakes, the conventional direction of buoyage is generally considered westerly and northerly, except on Lake Michigan where southerly movement is considered as returning from sea.

8.2 The Western River System varies from the standard system in that aids are not numbered. It contains crossing day marks that indicate where the river channel crosses from one bank to the other. Lights on green aids may be green or white and those on red aids may be red or white.

8.3 The United States (US) Aids to Navigation System is intended for use with nautical charts. The meaning of an aid may not be clear unless the appropriate chart is consulted. Publications such as Light Lists and Coast Pilots contain additional, important information. Each USCG District also publishes a Local Notice to Mariners reporting changes to and deficiencies in aids to navigation and other marine information. DO NOT rely on buoys

alone to determine your position!

Conversion of Metric to US Units

Metric Measure	Feet in Decimals	Feet and Inches
50 Meters (M)	164.0 ft.	164' 1/2"
20 meters (M)	65.6 ft.	65' 7 1/2"
12 M	39.4 ft.	39' 4 1/2"
10 M	32.8 ft.	32' 9 3/4"
8 M	26.3 ft.	26' 3"
7 M	23.0 ft.	23' 11 1/2"
6 M	19.7 ft.	19' 8 1/4"
5 M	16.4 ft.	16' 4 3/4"
4 M	13.1 ft.	13' 1 1/2"
2.5 M	8.2 ft.	8' 2 1/2"
1 M	3.3 ft.	3' 3 1/3"

BE SAFE ON THE WATER...
Know the navigation rules, observe the courtesies of safe boating and:

KNOW...

Your **B**oat

The **E**quipment on the boat

The **S**afety devices and wear PFDs

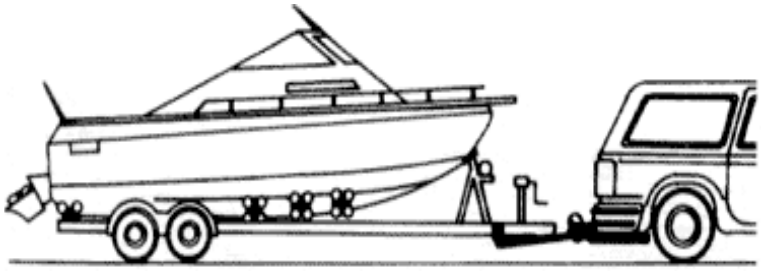
About **A**lcohol and other distress stressors

About **F**irst aid and emergency procedures

The **E**nvironment, area and weather.....BEFORE YOU GO!

9.0 SAFETY TIPS FOR TRAILERING YOUR BOAT

Choose the proper trailer for your boat. More damage can be done to a boat by the stresses of road travel than by normal operation. A boat hull is designed to be supported evenly by water. When transported on a trailer, your boat should be supported structurally as evenly across the hull as possible. This will allow for even distribution of the weight of the hull, engine, and equipment. It should be long enough to support the whole length of the hull but short enough to allow the lower unit of the boats engine to extend freely.



9.1 Rollers and bolsters must be kept in good condition to prevent scratching and gouging of the hull.

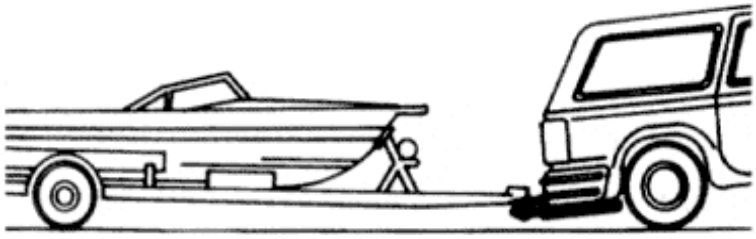
9.2 Tie-downs and lower unit supports must be adjusted properly to prevent the boat from bouncing on the trailer. The bow eye on the boat should be secured with a rope, chain, or turnbuckle in addition to the winch cable. Additional straps may be required across the beam of the boat.

9.3 The capacity of the trailer should be greater than the combined weight of the boat, motor, and equipment. The tow vehicle must be capable of handling the weight of the trailer, boat, and equipment, as well as the weight of the passengers and equipment which will be carried inside the vehicle. This may require that the tow vehicle be equipped with a(n):

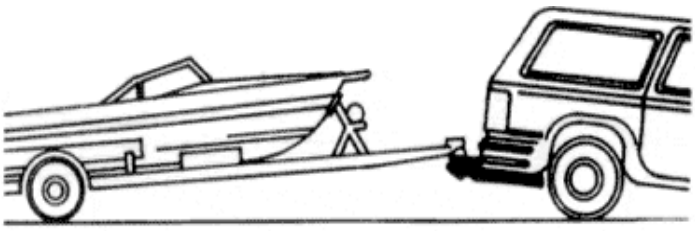
- Engine of adequate power.
- Transmission designed for towing.
- Larger cooling systems for the engine and transmission.
- Heavy duty brakes.
- Load bearing hitch attached to the frame, not the bumper (Check your vehicle owner's manual for specific information).

9.4 Check before you go out on the highway that:

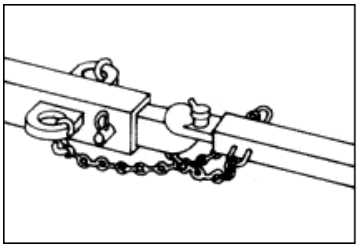
- The tow ball and coupler are the same size and bolts with washers are tightly secured (The vibration of road travel can loosen them).
- The coupler is completely over the ball and the latching mechanism is locked.
- The trailer is loaded evenly from front to rear as well as side to side. *Too much weight on the hitch will cause the rear wheels of the tow vehicle to drag and may make steering more difficult.*

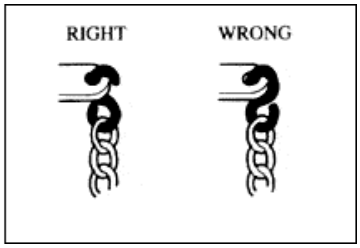


Too much weight on the rear of the trailer will cause the trailer to "fishtail" and may reduce traction or even lift the rear wheels of the tow vehicle off the ground.



The safety chains are attached crisscrossing under the coupler to the frame of the tow vehicle. If the ball were to break, the trailer would follow in a straight line and prevent the coupler from dragging on the road. Recommend using 3/8" galvanized chain.





- The lights on the trailer function properly.
- Check the brakes. On a level parking area roll forward and apply the brakes several times at increasing speeds to determine a safe stopping distance.
- The side view mirrors are large enough to provide an unobstructed rear view on both sides of the vehicle.
- Check tires (including spare) and wheel bearings. Improper inflation may cause difficulty in steering. The bearings should be inspected and greased after each use when trailer wheels are immersed in water (especially saltwater).
- Make certain water from rain or cleaning has been removed from the boat. Water weighs approximately eight pounds per gallon and can add weight that will shift with the movement of the trailer.
- Safety chains must be on each trailer. Chain size ≥ ⅜" galvanized.

9.5 Towing Precautions

- Allow more time to brake, accelerate, pass, and stop.
- Remember the turning radius is so much greater. Curbs and roadside barriers must be given a wide berth when negotiating corners.
- Prior to operating on the open road, practice turning, backing up, etc. on a level, uncongested parking area.

9.6 Prelaunch Preparations

For the courtesy of others, and to prevent rushing, prepare your boat for launching away from the ramp.

- Check the boat to ensure no damage was caused by the trip.
- Raise the lower unit (remove supports) to proper height for launching so

it will not hit the bottom.

- Remove tie-downs and make sure the winch is properly attached to the bow eye and locked in position.
- Put the drain plug in securely.
- Disconnect the trailer lights to prevent shorting of electrical system or burning out a bulb.
- Attach a line to the bow and the stern of the boat so the boat cannot drift away after launching and it can be easily maneuvered to the docking area.
- Visually inspect the launch ramp for hazards such as a steep drop off, slippery area and sharp objects.
- When everything has been double checked, proceed slowly to the ramp remembering that your boat is just resting on the trailer and attached only at the bow. The ideal situation is to have one person in the boat and one observer at the water's edge to help guide the driver of the tow vehicle.

9.7 Launching

- Keep the rear wheels of the tow vehicle out of the water. This will generally keep the exhaust pipes out of the water. If the exhaust pipes become immersed in the water, the engine may stall.
- Set the parking brake and place tire chocks behind rear wheels.
- Make sure someone else on shore is holding the lines attached to the boat.
- Lower the motor and prepare to start the engine (after running blowers and checking for fuel leaks).
- Start the boat motor and make sure water is passing through the engine cooling system.
- Release the winch and disconnect the winch line from the bow when the boat operator is ready.
- At this point, the boat should be able to be launched with a light shove or by backing off the trailer under power. Finish loading your boat at a sufficient distance from the ramp so others may use it.

9.8 Retrieval

The steps for removing your boat from the water are basically the reverse of those taken to launch it. However, keep in mind certain conditions may exist during retrieval that did not exist during launching. As you approach the takeout ramp, take special care to note such factors as:

- Change in wind direction and/or velocity.
- Change in current and/or tide.
- Increase in boating traffic.
- Visibility, etc.
- First, unload the boat at dock or mooring if possible.
- Next, maneuver the boat carefully to the submerged trailer and raise the lower unit of the engine.
- Then, winch the boat onto the trailer and secure it.
- Finally, drive the trailer with boat aboard carefully out of the ram to a designated parking area for cleanup, reloading, and an equipment safety

check. Practice will make launch and retrieval a simple procedure. The best advice is to retrieve your boat cautiously with safety as your main concern.

9.9 Storage

Since your boat may be sitting on its trailer for quite some time before it is used again, it is important to store it properly. To avoid damage from sun and weather, cover the boat with a tarp. To remove weight from the wheels, put cinderblocks or wood beams under the tongue and all four corners of the trailer frame.

9.10 Semi-Annual Inspection Reports

Every six months a semi-annual inspection report is to be filled out and submitted to EHS at ehs@tamucc.edu for each individual boat. Refer to Appendix A-1: Semi-Annual Inspection Report.

9.11 Predeparture Inspection Checklist

A Predeparture inspection must be carried out before each individual boat is launched. Refer to Appendix A-2: Predeparture Inspection Checklist.

10.0 BOATING PLAN

When going on a boating trip, make sure that you submit a Boating Plan to your supervisor. The Boating Plan has a complete description of your vessel as well as your departure and estimated time of arrival, where you are going to dock, and when you will be back. This will make identification easier should the need arise. Refer to Appendix A-3: Boating Plan.

VIII. CONFINED SPACES

1.0 POLICY

1.1 It is the policy of TAMU-CC that any individual entering into a confined space on TAMU-CC property will do so in accordance with the procedures outlined in the Code of Federal Regulations (CFRs) under Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.146, Permit Required Confined Spaces (PRCSs).

1.2 Training is provided through TrainTraq course # 2112101.

1.3 The OSHA regulation provides guidelines for all entries into confined spaces on TAMU-CC grounds and facilities, so that it is accomplished in a safe and healthful manner.

2.0 PURPOSE

2.1 Confined spaces can present unique and very dangerous safety situations to those that must enter.

2.2 By their definition, confined spaces can typically be difficult to enter and exit.

2.3 Confined spaces can also contain atmospheric gases and other hazards that make them particularly hazardous for personnel entry.

2.4 The Confined Space Regulation involves training, signage, and safety equipment, as appropriate; to be sure that employees are vigilant in their work in and around confined spaces and do not inadvertently or innocently enter a confined space. The potential for serious injury is high, thus it is important that TAMU-CC employees who may enter any confined space, work with their department and the EHS Department to ensure that all necessary safety precautions are considered and taken.

3.0 DEFINITION AND LOCATIONS

3.1 A confined space is defined as:

- A space with the existence of **all** the following conditions:
  - Large enough and so configured that an employee can bodily enter and perform assigned work, and
  - Has limited or restricted means for entry or exit, and
  - Is not designed for continuous employee occupancy.

3.2 Locations

- TAMU-CC has undertaken the effort to identify and maintain a detailed listing that permanently identifies locations meeting the criteria for a

confined space.

- In addition, TAMU-CC will identify and label PRCSs. Only appropriately trained individuals may enter PRCSs.
- If you are unsure about whether you will be entering a confined space, you must **STOP** and contact your supervisor or EHS, before entering the area.

4.0 EXAMPLES OF A CONFINED SPACE

4.1 Some examples of confined spaces at TAMU-CC include manholes, boilers, tanks, vats, sewer pipelines, and vaults without existing general ventilation.



5.0 TRAINING

5.1 All employees that participate or have duties in the Confined Space Program will receive training to ensure that everyone has the understanding, knowledge, and skills necessary to safely perform activities in the confined space.

5.2 The level of training will be in accordance with the Confined Space Program.

IX. CONSTRUCTION SAFETY

1.0 GENERAL CONSTRUCTION GUIDELINES

1.1 Construction work can be particularly hazardous. Personal protective equipment (PPE), fire safety, electrical safety, confined space entry, emergency preparedness, biological safety, chemical safety, hazardous waste disposal, vehicle safety, and other precautions are essential for safe construction work. Refer to other chapters in this manual for more information. Follow these guidelines when visiting or working at construction sites:

- Do not walk, stand, or work under suspended loads. If you raise a load, be sure to crib, block, or otherwise secure the load as soon as possible.
- Avoid placing unusual strain on equipment or materials.

1.2 Be prepared for unexpected hazards. ***BE ALERT!***

2.0 BARRIERS AND GUARDS

2.1 Barriers and guards are necessary to protect employees, students, contractors, and visitors from physical hazards. If you suspect a hazard is not sufficiently protected, notify FS at 361-825-2324 or EHS at 361-825-5555 immediately.

NOTE: *Barriers, guards, and warning signs are required to ensure safety against existing hazards.*

2.2 Standard types of barriers and guards include the following:

- Guardrails, handrails, and handholds
- Sawhorses
- Tape
- Toe boards
- Cones
- Other physical barriers and solid separators (dust barriers, hazard barriers, temporary walkways, etc.)

NOTE: *Signs that state DANGER, WARNING, or CAUTION are also important when barriers or guards are necessary. Remember to make signs legible, visible, and brief.*

2.3 <u>Areas that need barriers and guards</u>

Any area that poses a physical threat to workers and/or pedestrians requires barriers or guards. Areas that typically require permanent or temporary protection include the following:

- Stairways
- Hatches
- Chutes
- Open Manholes
- Elevated platforms

- Areas with moving machinery
- Excavation sites
- Construction sites
- Temporary wall or floor openings

2.4 Using barriers and guards

- The following list provides guidelines for using barriers and guards:
  - When necessary, reroute pedestrian and vehicular traffic to completely avoid a construction site.
  - Guard any ground opening into which a person could fall with a guardrail, load-bearing cover, or other physical barrier.
  - Ensure that temporary floor openings, such as pits and open manholes, are guarded by secure, removable guardrails. If guardrails are not available, have an attendant guard the opening.
  - Ensure that all stairways, ladder ways, hatchways, or chute floor openings have handrails or hinged covers.
  - Ensure that enclosed stairways with four or more steps have at least one railing, and that open stairways with four or more steps have two railings.
  - Ensure that all platforms and walkways that are elevated or located next to moving machinery are equipped with handrails, guardrails, and toe boards.
  - Barricade any wall openings through which a person or tools could fall. Use gates, doors, guardrails, or other physical barriers to block the opening.
  - Barricade any excavation.
  - Mark and/or guard potholes and sidewalk damage as appropriate.

3.0 HEAVY EQUIPMENT SAFETY

3.1 When using heavy equipment, there are five basic guidelines that employees must always follow to ensure safety:

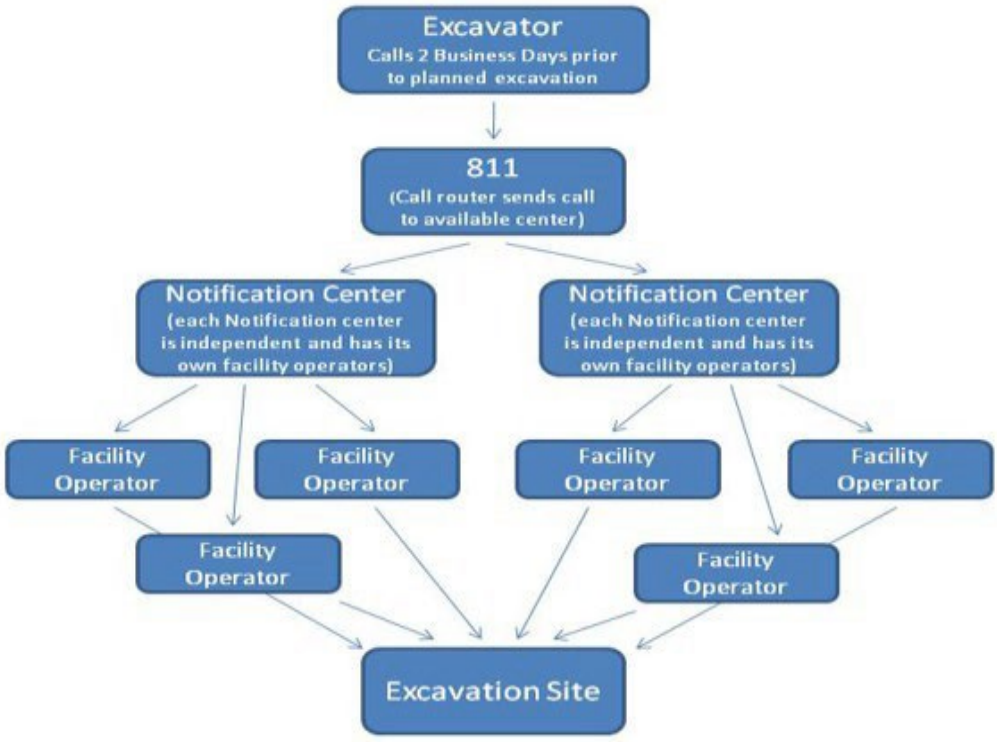
- Know how to properly operate the equipment you are using. Training on proper operation shall be documented.
- Do not use heavy machinery when you are drowsy, intoxicated, or taking prescription medication that may affect your performance.
- Use only equipment that is appropriate for the work to be done.
- Inspect your equipment to ensure that it is in good working condition before beginning a job. In addition, ensure that regular inspections and maintenance are conducted as appropriate.
- Do not stress or overload your equipment.

3.2 Accidents do not just happen, they are caused. Therefore, employees should also follow these guidelines:

- Ensure the following before leaving equipment unattended:
  - All buckets, blades, etc. are on the ground
  - Transmission is in neutral
  - Engine is off

- Equipment is secure against movement
- Never get on or off moving equipment
- Do not attempt to lubricate or adjust a running engine
- Turn the engine off before refueling
- Keep all shields and safety guards in place
- Avoid underground utilities and overhead power lines
- Always check with the utility company before digging

Dial 8-1-1.



If necessary, Facility operators send personnel to site to locate and mark underground lines

4.0 FORKLIFTS

The following sections provide basic guidelines for working with forklifts, front-end loaders, and backhoes. Refer to the product documentation that accompanied your

equipment for more information and specific instructions.

4.1 Only authorized employees may operate forklifts. The following list provides general safety guidelines:

- Do not allow riders. Do not raise people on a forklift.
- Always wear your safety belt.
- Never leave keys in an unattended forklift.
- Do not speed.
- Drive up and back down ramps.
- Do not walk, stand, or work under the elevated portion of a forklift (even if it is not loaded).
- Ensure that the forklift has an overhead barrier to protect the operator from falling objects.

4.2 In addition, follow these guidelines for safe forklift operation:

- Always work within the capacity limits of your forklift. Consult with the manufacturer before modifying the operation or capacity limits of a forklift.
- Do not operate a forklift in areas with hazardous concentrations of acetylene, butadiene, hydrogen, ethylene, or diethyl ether, or another explosive environment.
- Never lift a load while moving. Wait until you are completely stopped before raising the mast.
- Be sure the top load sits squarely on the stack. An uneven load could topple.
- Travel with loads slightly tilted back to provide stability.
- Travel with loads at the proper height. A stable clearance height is usually 4 to 6 inches at the tips and 2 inches at the heels of fork blades.
- Lift stacked loads in the same manner as loads on the floor.
- When preparing to leave the forklift unattended, lower the mast, neutralize the controls, shut the power off, and set the brakes. The forklift is "unattended" when the operator is more than 25 feet away or the forklift is out of view.
- When ascending or descending a grade in excess of 10 percent, drive the forklift with the load upgrade.
- If you cannot see over a load, drive in reverse. Do not try to look around a load and drive forward.

4.3 Contact EHS for Forklift training and certification requirements.

5.0 BACKHOES

5.1 Only authorized employees may operate backhoes and front-end loaders. The following list offers general safety guidelines for both types of machinery:

- Always operate at a safe speed.
- Travel with the bucket low to the ground.

- Always lower the bucket before servicing the equipment or leaving the loader unattended.
- Use a rigid-type coupler when towing loads.
- Always check with the utility company before digging. Dial 8-1-1
- Be extremely careful when operating near banks and slopes.
- When cutting a bank, be careful not to cause a cave-in. Do not drive on an overhang.

6.0 HOISTS

Only authorized employees may use hoists to move heavy objects and equipment.

6.1 General Hoisting Guidelines

- Never walk, stand, or work beneath a hoist.
- Isolate hoisting area with barriers, guards, and signs as appropriate.
- Never exceed the capacity limits of your hoist.
- Wear gloves and other PPE, as appropriate, when working with hoists and cables.
- Always hold tension on the cable when reeling it in or out.
- When the work is complete, always rig the hoist down and secure it.
- When the load block or hook is at floor level or its lowest point of travel, ensure that at least two turns of rope remain on the drum.
- Be prepared to stop operations immediately if signaled by the safety watch or another person.

6.2 Picking Loads up with Hoists

- Ensure that the hoist is directly above a load before picking it up. This keeps the hoist from becoming stressed. Picking up loads at odd angles may result in injury to people or damage to the hoist.
- Do not pick up loads by running the cable through, over, or around obstructions. These obstructions can foul the cable or catch on the load and cause an accident.

6.3 Avoiding Electrical Hazards with Hoists

- Do not hoist loads when any portion of the hoisting equipment or suspended load can come within 6 feet of high-voltage electrical lines or equipment.
- If you need to hoist near high-voltage electrical lines or equipment, obtain clearance from your supervisor first.

6.4 Inspecting Hoists

- Ensure that a certified inspector inspects hoists annually.
- Hoists should be inspected before use. If there is any question about the working condition of a hoist, do not use it.

- Hoist inspectors should note the following:
  - The hooks on all blocks, including snatch blocks, must have properly working safety latches.
  - All hooks on hoisting equipment should be free of cracks and damage.
  - The maximum load capacity for the hoist must be noted on the equipment.
  - Cables and wiring should be intact and free of damage.

7.0 MOBILE CRANE SAFETY PROCEDURES

7.1 In the initial survey of crane operations, look for crane stability, physical obstructions to movement or operation, and proximity of electrical power lines, as well as the following:

- **Leveling**: Has the crane operator set the crane up level and in a position for safe rotation and operation?
- **Outriggers**: Are the outriggers, where applicable, extended and being used in accordance with manufacturer's recommendations?
- **Stability**: The relationship of the load weight, angle of boom, and its radius (the distance from the cranes center of rotation to the center of load) to the center of gravity of the load. Also, the condition of crane loading where the load moment acting to overturn the crane is less than the moment of the crane available to resist overturning.
- **Structural Integrity**: The crane's main frame, crawler, track and outrigger supports, boom sections, and attachments are all considered part of structural components of lifting. In addition, all wire ropes, including stationary supports, help determine lifting capacity and are part of the structural elements of crane operations.
- **Access to Job Site**: The site must be secured by barricades (caution tape or fencing) to prevent unauthorized entry to the area by faculty, staff, students, visitors, and construction personnel. The barricades must encompass the length the boom is extended and the area the boom will swing.

7.2 Crane operators and personnel working with cranes need to be knowledgeable of basic crane capacities, limitations, and specific job site restrictions, such as access restrictions to job site, location of overhead electric power lines, and high wind conditions. Personnel working around crane operations also need to be aware of hoisting activities or any job restrictions imposed by crane operations and ensure job site coordination of cranes. Crane operators should be aware of these issues and, prior to starting crane activity, take time to observe the overall crane operations with respect to load capacity, site coordination, and any job site restrictions in effect.

7.3 Accidents can be avoided by careful job planning. The person in charge must have a clear understanding of the work to be performed and consider all potential dangers at the job site. A safety plan must be developed for the job and must be explained to all personnel involved in the lift.

8.0 FALL PROTECTION GUIDELINES

8.1 This Program prescribes the duty to provide fall protection, sets the criteria and practices for fall protection systems, and identifies required training. Training can be accessed in TrainTraq, course #2112055.

8.2 OSHAs fall protection rules for General Industry (29 CFR 1910 Subpart D *Walking and Working Surfaces*; Subpart F *Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms*; Subpart I *Personal Protective Equipment*; and Subpart R *Special Industries*) require that employers assess the workplace to determine if the walking or working surfaces on which employees are to work have the strength and structural integrity to safely support the workers. Once the employer has determined that the surface is safe for the employees to work on, the employer must provide the proper fall protection for the fall hazard that is present. This means that employers must protect employees from fall hazards whenever an affected employee is 4 feet or more above a lower level.

8.3 Standards for fall protection deal with both the human and equipment-related issues in protecting workers from fall hazards. Employers and employees are required to do the following:

- Where protection is required, select fall protection systems appropriate for given situations.
- Use proper construction and installation of safety systems.
- Supervise employees properly.
- Use safe work procedures.
- Train workers in the proper selection, use, and maintenance of fall protection systems.

8.4 According to the Bureau of Labor Statistics, falls are the leading cause of worker fatalities in the construction industry. Each year, on average, over 30% of all construction deaths are caused by falls.

8.5 OSHAs fall protection rules for the Construction Industry (29 CFR 1926 Subpart L *Scaffolds*, Subpart M *Fall Protection*, Subpart P *Excavations*, and Subpart R *Steel Erection*) identify areas or activities where fall protection is needed. These include, but are not limited to, ramps, runways, and other walkways, excavations, hoist areas, holes, formwork and reinforcing steel, leading edge work, unprotected sides and edges, overhand bricklaying and related work, roofing work, precast concrete erection, wall openings, residential construction, and other walking/working surfaces. 29 CFR 1926 Subpart M sets a uniform threshold height of 6 feet, thereby providing consistent protection. This means that employers must protect employees from fall hazards and falling objects whenever an affected employee is 6 feet or more above a lower level. Protection also must be provided for workers who are exposed to the hazard of falling into dangerous equipment.

9.0 SCAFFOLDING GUIDELINES

9.1 When employees must conduct work above the ground and away from solid platforms, scaffolds may be appropriate. OSHA addresses scaffold requirements for General Industry in 29 CFR 1910 Subpart D *Walking and Working Surfaces* and for the Construction Industry in 29 CFR 1926 Subpart L *Scaffolds*. These requirements can become extremely complex and do change periodically so please seek the assistance of EHS when scaffolds must be used.

10.0 TRENCHING GUIDELINES

10.1 Excavation Requirements

- 29 CFR 1926 Subpart P controls the trenching and excavation requirements for construction (excluding tunnels). It also provides requirements for employee entrance, working environment, and egress to/from open surface trenches and excavations.

10.2 Pre-excavation requirements

- The estimated location of utility installations such as sewer, telephone, fuel, electric, water lines, or other underground installations that reasonably may be encountered during excavation work shall be determined prior to opening an excavation.
- Utility companies or utility locator should be contacted to precisely locate such utilities. Call 811 for underground utilities.
- Excavation may proceed with CAUTION if:
  - Utility Company/Locator cannot be located or contacted.
  - Company/Locator cannot locate utility

10.3 Excavation opening requirements

- When excavating operations approach the location of underground utilities, the exact location shall be determined by a safe and acceptable means.
- While excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.

10.4 Excavation access/egress

- A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
- Ramps/runways constructed of two or more structural members shall have members connected together to prevent displacement.
- Structural members used for ramps and runways shall be of uniform thickness.
- Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.
- Ladders shall:

- Be of proper design
- Be secured from movement or slippage
- Extend at least 3' above the top of the excavation

10.5 Employee protection

- Employees exposed to public vehicular traffic shall be provided with and wear a vest or other suitable garments marked with high visibility materials.
- No employee shall be permitted underneath loads handled by digging or lifting equipment.
- When mobile equipment is operated near an excavation; barricades, hand and mechanical signals, or stop logs shall be used to protect employees in excavations.

10.6 Hazardous atmospheres

- Excavations of greater than 4' in depth that are in or near hazardous materials, liquids, or gases shall be tested for the presence of hazardous atmospheres prior to employee entry. Testing shall include:
  - Oxygen deficiency (less than 19.5% oxygen)
  - Presence of combustible gasses
  - Presence of toxic gasses
- Ventilation and respiratory protection shall be provided where hazardous atmospheres are encountered.

11.0 CONTRACTORS, SUBCONTRACTORS, AND VENDOR INFORMATION

Welcome to TAMU-CC. We want to make your visit here both productive and safe. We request that you read, understand, and call the EHS Department if you have any questions regarding this document. We at TAMU-CC follow all applicable state, federal, and local EHS regulations. Upon being granted facility access, you and all your employees also agree to observe all applicable regulations. You are responsible to communicate the information to all your employees. Go to https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/ and click on "Safety" to access the TAMU-CC Site Safety Plan (SSP). A SSP approved by EHS is required before commencing your project. TAMU-CC reserves the right to stop any on-site work activity for EHS reasons.

11.1 Emergency Numbers: In case of an emergency, call:

- UPD
  - 361-825-4444 off campus
  - Ext. 4444 from campus phone
- EHS
  - 361-825-5555 off campus
  - Ext. 5555 from campus phone
- FS
  - 361-825-2324 off campus
  - Ext. 2324 from campus phone

11.2 Excavation, Trenching, and Shoring Procedures

- Our Quick Reference Guide to TAMU-CC Emergencies is located at https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/. Please read, understand, and follow the emergency procedures.
- Trenches and holes must be barricaded or isolated with orange safety fencing when there is no hole watch, or at the end of the workday. Before starting any work that requires you to dig a hole in the ground, you are required to follow all applicable regulatory requirements for trenching/shoring (e.g. sloping, benching, hazardous atmospheres, protective systems, and soil classification, etc.).

11.3 Hazard Communication

- You and your employees are not allowed to bring any chemicals without EHS approval. Each chemical must be accompanied with a SDS.
- When using chemicals, you are required to communicate its hazards to the people in the area by providing the building coordinator or his/her designee a SDS for the chemical.
- Before you work in an area, you and your employees are required to find out whether there are any chemicals in that area. If there are, you should contact your FS point of contact (POC) at 361-825-2324 or EHS at 361-825-5555 to receive a copy of the SDS for those chemicals and read them to understand the hazards.

11.4 Elevated Work

- You and your employees are required to be trained in Fall Protection Safety before working from elevated locations.
- You are required to provide your employees with proper safeguarding (e.g., aerial lift, fall protection equipment, etc.).

11.5 Fire Safety

- Before planning any work that involves open flames, or production of heat and/or sparks you are required to obtain a "Hot Work Permit" from EHS by calling 361-825-5555. Hot work includes, but is not limited to brazing, cutting, grinding, soldering, heating asphalt, torch applied roofing, and welding. Make sure to plan your work schedule because you will be asked to monitor the area for at least 30 minutes after completing the hot work.

11.6 Safe Operating Procedures

You and your employees are required to follow all applicable federal, state, and local regulations regarding workplace safety.

- Electrical Safety: You and your employees are required to be trained in Electrical Safety before working on electrical equipment at TAMU-CC. You are also required to wear appropriate electrical protective equipment such as V-rated gloves, leather gloves, flame resistant smock, electrical hazard (EH) rated shoes, etc. according to National Fire Protection Association (NFPA) 70E standards.

- Control of Energy Sources: You and your employees are required to be trained in lockout/tagout (LOTO) and equipped with LOTO devices. You and your employees are required to lock and tag out all sources of energy before working on equipment.
- BBP Prevention Plan: You and your employees are required to be knowledgeable of the BBP Prevention Plan. When you see any blood or OPIMs in the area, do not touch it. Notify UPD at 361-825-444.
- Confined Spaces: You and your employees are required to be trained and follow the OSHA PRCSs standard (29 CFR 1910.146).
- Powered Industrial Truck Safety: You and your employees are required to be trained before operating any powered industrial truck at TAMU-CC.
- PPE: You are required to provide your employees with proper PPE for each task. If you have any questions, contact EHS at ext. 5555.
  NOTE: Using TAMU-CC tools and equipment is not allowed.

11.7 Crane and Hoist Safety

Coordinate crane and hoist operations with UPD, EHS, and FS. The work location must be sufficiently cordoned off preventing public access. In addition, no one is allowed to be directly beneath a load while it is being raised or lowered.

11.8 Hazardous Materials and Hazardous Waste Rules

- DO:
  - Coordinate all hazardous waste removal/transportation through EHS.
  - Post SDSs at the worksite and make them available to your employees.
  - Report all chemical spills to EHS.
  - Call EHS when you have any questions regarding hazardous materials or waste.
  - Follow safe work practices according to all applicable state, federal, and local regulatory requirements.
  - Properly handle, label, store, and dispose of hazardous materials and waste. Container labeling must be consistent with OSHA requirements.
  - Wear proper PPE when required.
- DON'T:
  - Do not leave any hazardous materials or waste stored or unattended without permission and guidance from EHS.
  - Do not introduce, work with, and/or store any hazardous materials or waste in a work area without first obtaining EHS approval.
  - Do not discharge any hazardous materials or waste into any sink, drain, or sewer.
  - Do not leave any hazardous materials or waste on site upon completion of work. All hazardous materials brought to campus and waste generated by you must be properly transported offsite in accordance with all state, federal, and local regulatory requirements.
  - Do not store hazardous materials or waste so as to impair or impede the use of emergency equipment such as eyewash stations, sprinklers, fire extinguishers, alarms, etc.

11.9 Security

- Work area: You are required to coordinate with UPD and EHS before blocking off any area (e.g., roof, street, sidewalk, parking lot, etc.) on campus.
- Loading/unloading in an area that is not a loading zone: Call UPD for assistance.

11.10 Storm Water Management

- Construction General Permit: Storm water discharges from construction activities may require a permit from the Texas Commission on Environmental Quality (TCEQ). Permit information can be found at: https://www.tceq.texas.gov.
  - Construction activities that disturb less than 1 acre and are not part of a larger common plan of development that would disturb 1 or more acres, are not required to obtain coverage under this general permit.
  - Construction activities which disturb at least 1 but less than 5 acres, or are part of a larger common plan of development that will disturb at least 1 but less than 5 acres, are regulated under the Construction General Permit and require that a Notice of Intent be submitted to TCEQ and a Site Notice for Small Construction Activities be posted at the site.
  - Construction activities which disturb 5 or more acres, or are part of a larger common plan of development that will disturb 5 or more acres, are regulated under the Construction General Permit and require that a Notice of Intent be submitted to TCEQ, a Site Notice for "Primary Operators" of Large Construction Activities be posted at the site, and a Site Notice for "Secondary Operators" of Large Construction Activities be posted at the site.
- Storm Water Pollution Prevention Plan (SWP3): Operators of construction activities that qualify for coverage under the Construction General Permit and that discharge storm water associated with construction activities into surface water in the state must:
  - Develop a SWP3 according to the provisions of the general permit that covers the entire site and begin implementation of that plan prior to commencing construction activities.
  - Post a signed copy of a TCEQ approved site notice in a location at the construction site where it is readily available for viewing prior to commencing construction activities and maintain the notice in that location until completion of the construction activity and final stabilization of the site.
  - Ensure the project specifications allow or provide that adequate Best Management Practices (BMPs) may be developed and modified as necessary to meet the requirements of the general permit and the SWP3.
  - Ensure all contractors and subcontractors are aware of the SWP3 requirements.
  - Ensure that the SWP3 identifies the applicable personnel responsible

for implementation of control measures described in the plan.
  - Contact EHS to submit your SWP3.
- Litter Control: Maintain a clean, litter-free worksite. Do not over fill dumpsters allocated for construction materials.
- Overflows and Infiltration: TAMU-CC will continue to take measures to prevent overflows of sanitary sewage to the Municipal Separate Storm Sewer System (MS4). These measures include:
  - Regular maintenance of sanitary sewer lines including visual inspection and cleaning of grease traps and known problem areas as needed to prevent overflows.
  - Respond to emergencies using appropriate equipment and materials to control overflows.
  - Proper disposal of waste materials.
  - Implement necessary repairs immediately or as soon as practicable.

EHS at TAMU-CC is available to answer any questions you have regarding all EHS programs for this campus. ***When in doubt, please ask***.

X. ELECTRICAL SAFETY

1.0 GENERAL ELECTRICAL SAFETY

The danger of injury through electrical shock is possible whenever electrical power is present. When a person's body completes a circuit and thus connects a power source with the ground, an electrical burn or injury is imminent. Most fatal injuries result from high-voltage exposure; however, people can sustain severe injuries from low voltage power if it has a high current flow. Electrical safety is important in every work environment.

1.1 The following sections cover circuit breaker loads, electrical grounding, electrical safety guidelines, and electrical emergency response. Electrical Safety Training can be found in TrainTraq course # 2112045.

2.0 DEFINITIONS

2.1 The following definitions help clarify general electrical safety:

- Amps: The standard unit for measuring electrical current.
- Watt: A unit of electrical power, equal to the power developed in a circuit by a current of amp flowing through a potential difference of one volt.
- Voltage: Electromotive force expressed in volts.
- Circuit Breaker: A device that automatically interrupts the flow of an electrical current.
- Breaker Box: An insulated box on which interconnected circuits are mounted.
- Electrical Panel: An insulated panel on which electrical wires are mounted.
- Current Flow: The rate of flow of an electrical charge, generally expressed in amps.
- Electrical Load: The amount of power delivered by a generator or carried by a circuit, a device to which the power is delivered.
- Ground-Fault Circuit Interrupter (GFCI): A GFCI detects grounding problems and shuts electricity off to prevent a possible accident.
- High Voltage: The term high voltage applies to electrical equipment that operates at more than 600 Volts (for terminal-to-terminal operation) or more than 300 Volts (for terminal to ground operation). Low voltage, high current AC or DC power supplies are also considered to be high voltage.
- Hazardous Energy Sources: This term applies to stored or residual energy such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure.
- Lockout: The placement of a lock on an energy-isolating device. This act prevents workers from operating a piece of equipment until the lock is removed.

- Tagout: The placement of a tag on an energy-isolating device. A tagout device is a prominent warning device of a lockout.
- Energy-Isolating Device: A mechanical device that prevents the transmission or release of energy. Examples include the following:
  - Manually operated circuit breakers
  - Disconnect switches
  - Line or block valves
- Pushbuttons: Selector switches and other control circuit devices do not isolate energy. Energy-isolating devices should be lockable by means of a hasp or other type of attachment. It should not be necessary to dismantle or reassemble a device to lock it.
- Authorized Employee: A person who locks out or tags out equipment for service or maintenance. Authorized employees have been formally trained in proper LOTO procedures.

3.0 CIRCUIT BREAKER LOADS

1.1 Most office and laboratory locations have 20-amp circuit breakers that serve two or more outlets. These breakers can handle most office equipment; however, the widespread use of personal computers and associated hardware can create an electrical overload. To determine your current electrical load, follow these steps:

- Check office/laboratory equipment for a manufacturer's rating label that indicates total watts or amps. Take special care to check appliances that use electricity to generate heat.
- Convert the watts rating to amps: Amps = Watts ÷ Voltage (typically 120 Volts)
- Total the amps for each circuit.
  - If the total equals more than 15 amps per 20-amp circuit, you may be overloading the circuit. Move enough equipment to a different circuit to reduce the circuit load; otherwise, have FS inspect the circuit wiring.

4.0 ELECTRICAL GROUNDING

4.1 Proper electrical grounding can help prevent electrical injury. Most electrical equipment is grounded with either a three-prong plug, or a two-prong plug and insulation. Because a grounding system may be defective without your knowledge, use a GFCI to ensure electrical safety. GFCIs are required in moist or potentially damp environments, near water sources, etc. Contact FS for assistance if a GFCI may be needed.

5.0 ELECTRICAL PANELS

5.1 Electrical panels or breaker boxes require special safety considerations, including the following:

- Know where your panel box is located.

- Do not tape circuit switches to keep a breaker from tripping.
- Ensure that breaker circuits are accurately labeled within panel boxes.
- Ensure that panel box doors are securely attached.
- Do not block panel boxes. There should be at least 36 inches of clear space in front of a panel box.
- Make sure there are no missing pop-outs on the electrical panel.
- Report tripped breakers and refer any electrical questions to FS at 361-825-2324.
- Do not take it upon yourself to re-set a breaker.

6.0 ELECTRICAL SAFETY GUIDELINES

6.1 Follow these guidelines for general electrical safety:

- Be familiar with the electrical hazards associated with your workplace.
- Unplug electrical equipment before repairing or servicing it.
- If a prong breaks off inside an outlet, do not attempt to remove it yourself.
- Call FS for assistance.
- Ensure that outlets are firmly mounted. Report any loose outlets to FS.
- Report all electrical problems, including tripped breakers, broken switches, and flickering lights, to FS.
- All appliances used in TAMU-CC buildings must be listed through Underwriter's Laboratories (UL) or Factory Mutual (FM) and labeled as such.
- Do not use an appliance that sparks, smokes, or becomes excessively hot.
- Keep electrical equipment away from water, unless the appliance is specifically designed for use around water, such as a wet-dry shop vacuum.
- Use GFCIs when within 6 feet of a water source.
- Be aware of overhead power lines when working with tall equipment (e.g., grain augers, cranes, sailboats, etc.).
- Follow authorized LOTO procedures, as appropriate.

6.2 Follow these guidelines for electrical plug and cord safety:

- Do not plug a power strip into another power strip or an extension cord.
- Do not remove the prongs of an electrical plug. If plug prongs are missing, loose, or bent, replace the entire plug or the cord and plug.
- Do not use an adapter or extension cord to defeat a standard grounding device (e.g., only place three-prong plugs in three-prong outlets; do not alter them to fit in a two-prong outlet.).
- Use extension cords only when necessary and only on a temporary basis. Do not use extension cords in place of permanent wiring. Request new outlets if your work requires equipment in an area without an outlet.
- Use extension cords that are the correct size or rating for the equipment in use. The diameter of the extension cord should be the same or greater than the cord of the equipment in use.
- Do not run electrical cords above light fixtures, ceiling tiles, or through walls.
- Keep electrical cords away from areas where they may be pinched and

where they may pose a tripping or fire hazard (e.g., doorways, walkways, under carpet, etc.).

- Avoid plugging more than one appliance into each outlet. Do not overload the circuit breaker.
- Discard damaged cords, cords that become hot, or cords with exposed wiring.
- Never unplug an appliance by pulling on the cord; pull on the plug.
- Always unplug and secure an extension cord when not in use.

7.0 ELECTRICAL EMERGENCY RESPONSE

7.1 The following instructions provide guidelines for handling three types of electrical emergencies:

- Electric Shock: When someone suffers serious electrical shock, he or she may be knocked unconscious. If the victim is still in contact with the electrical current, immediately turn off the electrical power source. ***IMPORTANT:*** *Do not touch a victim that is still in contact with a power source; you could electrocute yourself. Have someone call for emergency medical assistance immediately. Administer first aid, as appropriate.*
- Electrical Fire: In case of an electrical fire, try to disconnect the electrical power source, if possible. If the fire is small, you are not in immediate danger, and you have been trained in fighting fires, use any type of fire extinguisher **except water** to extinguish the fire. ***IMPORTANT:*** *Do not use water on an electrical fire. Instead use a fire extinguisher approved for electrical fire use.*

- Power Lines: Stay away from live power lines and downed power lines. Be particularly careful if a live power line is touching a body of water. The water could conduct electricity. If a power line falls on your car while you are inside, remain in the vehicle until help arrives.

8.0 CONTROL OF HAZARDOUS ENERGY SOURCE PROCEDURES

Contractors/sub-contractors must comply with OSHA regulation 29 CFR 1910.147.

8.1 Preplanning for Lockout (Preparation for Shutdown): An initial survey shall be made to determine which switches, valves, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors. Before lockout commences, job authorization should be obtained from the supervisor.

- Only supervisors or authorized individuals trained in LOTO procedures shall prescribe the appropriate duties and responsibilities relating to the actual details that affect the LOTO. Energy isolating devices shall be

operated only by authorized individuals or under the direct supervision of authorized individuals. Where voltages greater than 480V are involved, the electrical supervisor shall be responsible for turning off the main power controls.

- All energy isolating devices shall be adequately labeled or marked to indicate their function. The identification shall include the following:
  - Equipment supplied
  - Energy type and magnitude
- Where system complexity requires, a written sequence in checklist form should be prepared for equipment access, LOTO, clearance, release, and start-up.

8.2 LOTO Procedures Preparation:

- Notify all affected employees/building occupants that a lockout is required and the reason, therefore.
- Contact necessary departments and personnel.
- Only authorized personnel are to secure a LOTO device. Authorized personnel include managers, supervisors, and/or heating, venting, and air conditioning (HVAC) Technicians.
- Machine or Equipment Shutdown
  - If the equipment is operating, shut it down by the normal stopping procedure (e.g., depress stop button, open toggle switch, etc.). Disconnect switches should never be pulled while under load, because of the possibility of arcing or even explosion.
  - Personnel knowledgeable of equipment operation should be involved with shut down or re-start procedures.
- Machine or Equipment Isolation Verification
  - Operate the switch, valve, or other energy-isolating device so that the energy source(s) (electrical, mechanical, hydraulic, etc.) is/are disconnected or isolated from the equipment. Stored energy (e.g., that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must also be dissipated, disconnected, or restrained by methods such as grounding, repositioning, blocking, bleeding-down, etc. Pulling a fuse or tripping a breaker is not a substitute for locking out. A pulled fuse or tripped breaker is no guarantee the circuit is dead, and even if it were dead, there is nothing to stop someone from inadvertently replacing the fuse or reengaging the breaker.
    CAUTION: Intermittently operating equipment such as pumps, blowers, fans, and compressors may seem harmless when dormant. Do not assume that because equipment is not functioning, it will stay that way.

8.3 Release from LOTO

- Before lockout or tagout devices are removed and energy is restored to the machine or equipment, inspect the work area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
- Check work area to ensure that all employees are in the clear. Notify

affected employees that LOTO devices have been removed.

- The employee who applied the device shall remove each LOTO device from each energy-isolating device. The energy isolating devices may be opened or closed, to restore energy to equipment.
- Contact authorized personnel when energy is restored and return LOTO device (Proper Documentation Required).

8.4 LOTO Interruption (Testing of Energized Equipment)

- In situations where the energy isolating device is locked out and/or tagged out and there is a need for testing or positioning of the equipment or process, the following sequence shall apply:
  - Make sure to clear any equipment, tools, or materials.
  - Make sure all personal are clear of danger.
  - Remove the control of locks/tags according to established procedures.
  - Proceed with test, etc.
  - De-energize all systems and re-apply LOTO device(s) before continuing the work.

8.5 Procedure Involving More Than One Person

- In the preceding steps, if more than one individual is required to lock out equipment, each shall place a personal lock and tag on the group lockout device when he/she begins work and shall remove those devices when he/she stops working on the machine or equipment. The supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it shall be the responsibility of the supervisor to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the supervisor shall not remove a crew lock until it has been verified that all individuals are clear.
- Scheduled Leave
  - If the owner of the device (owner being the person who installed the LOTO device) is going on scheduled leave and someone else may need to work on the locked-out unit, they must remove their lock, and have it replaced by a new owner who is on regular duty.

8.6 Conditions for LOTO removal by Authorized Personnel

- Only the owner of the device shall remove LOTO devices.
- Exceptions to the conditions of removal:
  - Owner incapacitated by illness or injury then his/her supervisor shall remove the LOTO device.
  - Owner is no longer employed by TAMU-CC, then his/her supervisor shall remove the LOTO device.
  - If Authorized Personnel determine that circumstances warrant removal of a LOTO device (every effort must be made to contact the owner of the device). After the above conditions have been met the Authorized Personnel may remove the device.

9.0 HIGH VOLTAGE PROCEDURES

9.1 In addition to the guidelines associated with general electrical safety and

LOTO procedures, there are more stringent safety requirements for high voltage procedures. Below are some safety tips for working around high voltage. For more information, please refer to Title 29 CFR 1910.269 or NFPA 70, the National Electric Code.

- Ensure that only authorized employees work around high voltage equipment.
- Label entrances with a High Voltage sign.
- Ensure that terminal voltage ratings can withstand surges caused by electrical faults or switching transients.
- Be careful around output circuits even when the input power is off. Parallel power sources and energy storage devices can still be dangerous.
- Be careful when working with power supplies that serve more than one area.
- Before working in a high voltage area, inspect the power supply and check all protective devices.
- Do not work alone near high voltage.
- Label equipment to identify power sources. Label input power sources to identify connected power supply loads.
- Attach emergency shutdown instructions and phone numbers to equipment that is remotely controlled or unattended while energized.

9.2 Before entering a power supply or associated equipment enclosure to work on hazardous energy sources, complete the following:

- De-energize the equipment.
- Open and lock out the main input power circuit breaker.
- Check for auxiliary power circuits that could still be energized.
- Inspect automatic shorting devices for proper operation.
- Short the power supply with grounding hooks.

10.0 MINIMUM CLEAR WORKING SPACE

10.1 The minimum depth of clear working space in front of electrical equipment is three feet but may be greater under certain conditions. Refer to 29 CFR 1910.303, Table S-1 for guidance.

- FS has arc flash suits and a rescue pole available for high voltage work.

XI. ENVIRONMENTAL MANAGEMENT

1.0 GENERAL INFORMATION

1.1. Environmental Management is a set of processes that enables an organization to reduce its environmental impact and increase its operating efficiency. The Environmental Committee reviews and drafts environmental policy recommendations and programs to assist the University with improving compliance, pollution prevention, environmental education, stewardship, and sustainability.

1.2. Environmental impacts are well regulated by both the TCEQ and Environmental Protection Agency (EPA). The EHS Department has developed programs to help the campus comply with federal and state regulations and reduce its impact on the environment.

2.0 SPILL CONTROL PROCEDURES

IMPORTANT: STOP THE SPILL BEFORE IT GETS TO THE STORM DRAIN. DO NOT USE ANY SURFACTANTS ONCE THE SPILL GETS ON THE WATER.

2.1 In the event of an oil or other hazardous material spill, immediately pick up the Spill Kit, take it to the scene, and follow these steps:

- Notify EHS
- Put on PPE (e.g., protective clothing, splash goggles, and gloves)
- Protect the storm drain from the spill: cover it with the drain cover.
- Contain the spill: use absorbent socks to stop it from entering the storm drain.
- Absorb spill: use absorbent socks, pads, or pillows to absorb the spill.

2.2 Clean up: Once all spill materials have been absorbed, place all used absorbent materials in the disposal bag.

- Absorb any excess fluid with absorbent pads.
- Spray appropriate cleaning product (e.g., Simple Green) on contaminated surface.
- Absorb cleaning fluid substances with absorbent pads and dispose of them in the disposal bag.
- If the drain cover is contaminated, clean it with cleaning product and absorbent pads, then dispose of waste in disposal bag.
- Complete the "Hazardous Waste" label; identify the contents as "Spill Debris" and add the name of the chemical substance(s), put the date on the label, and affix it on the disposal bag.
- Close hazardous waste bag with nylon tie.
- EHS will collect and dispose of the hazardous waste properly.
- The Department responsible for the spill will need to replace their spill kit items.

XII. FIRE AND LIFE SAFETY

Fire and life safety at TAMU-CC is governed by federal, state, and local standards and by System Regulations. Ultimate jurisdiction for fire and life safety lies with the Texas State Fire Marshal and Corpus Christi City Fire Marshal as Authority Having Jurisdiction (AHJ). TAMU-CC has designated FS and EHS for fire and life safety responsibilities, such as, day to day fire prevention, inspection, and program oversight. However, every individual, whether faculty, staff, student, or visitor on our campus shares a role in fire and life safety. EHS serves as the POC for the State and City Fire Marshal. TAMU-CC is committed to providing a safe environment for building occupants and emergency response personnel.

1.0 PROGRAM REQUIREMENTS

1.1 The basis for the fire and life safety program at TAMU-CC is provided for by TAMUS regulation 34.01.01 (Health and Safety Programs).

2.0 APPLICABLE CODES AND STANDARDS

2.1 The Texas State Fire Marshal's Office has adopted the NFPA *Life Safety Code©,* NFPA 101, NFPA 1, and all referenced codes and standards as the primary guide for fire and life safety. It is important to note that these codes and standards are not all inclusive, are not a building code, and that other codes and standards may also apply. Some of these include, but are not limited to:

- International Building Code
- International Fire Code
- International Mechanical Code
- Americans with Disabilities Act
- Texas Accessibility Standards Act

3.0 FIRE AND LIFE SAFETY PROGRAM

3.1 The fire and life safety program at TAMU-CC involves numerous activities, programs, and procedures to help ensure that our campus is a safe place to learn, work, live, and play. These program areas include fire prevention, fire suppression, emergency preparedness, preplanning, education, and response. The following information is provided as a general guideline for activities associated with fire and life safety. Additional information may be obtained by contacting EHS or by going to our website for the latest information. Links are provided throughout this document.

4.0 APPLIANCES

4.1 An appliance can be defined as any instrument or piece of equipment or device designed for a particular use and powered by electricity (e.g. computers, copy machines, refrigerators, freezers, space heaters etc.).

Adhere to the following guidelines when using appliances on campus.

- Always use appliances that are UL or FM labeled.
- Adequate space should be given around appliances to allow for air circulation.
- Clothes dryers should have the lint removed after each load and excess build-up of lint around the dryer should be cleaned regularly.
- Large appliances such as, but not limited to, refrigerators, freezers, and microwaves must be plugged directly into wall outlets.
- Frequently inspect the electrical connection of appliances to ensure a good connection with the receptacle.
- Frequently inspect the condition of appliances. If appliances begin to spark or produce an electrical smell, turn power off immediately and discontinue using the appliance.
- A list of unauthorized and potentially hazardous appliances includes, but is not limited to:
  - Air purifiers without appropriate safety features such as, but not limited to, pre-filter and low or no ozone emission certification (consult EHS when in doubt)
  - Coffee cup warmers
  - Floor fans (small desk fans may be used)
  - Hot plates (allowed in breaks room only)
  - Space heaters without a tilt switch
  - Scent warmers
  - Toaster ovens

5.0 ARSON

5.1 If arson is suspected, no matter how small the incident, contact UPD. Do not alter the fire scene in any way unless you are trying to extinguish a live fire. The state fire marshal will investigate any possible arson.

6.0 BUILDING EVACUATION PLAN/DRILLS

6.1 Facilities at TAMU-CC have an emergency evacuation plan as specified in the TAMU-CC Emergency Operations Plan.

6.2 To ensure that building occupants are prepared for an emergency evacuation, drills must be conducted on a regular basis. Evacuation drills may be used to vacate a building for several reasons such as fires, gas leaks, chemical spills, bomb threats, or other similar emergencies and emphasis should be placed on orderly evacuation rather than on speed.

6.3 Standard Operating Procedures:

FIRE DRILL TEAM:

- UPD: at least 1 officer
- FS: at least 1 person

- EHS: at least 1 person
  - Equipment: university issued hand-held radio, safety vests, ear plugs, and evacuation signs.

PROCEDURES:

- EHS coordinates and has an agreement with UPD and FS on the building, time, and date.
- Prior to the scheduled time, EHS will call UPD dispatcher and FS to confirm that the UPD officers and FS personnel are available for the drill(s).
- All team members switch their radios to "Emergency" channel, put on the safety vest, and head toward the selected building.
- On arrival, everyone on the team reports to the dispatcher.
- A team member pulls the alarm.
- Team members stand at the exits and guide the evacuators to a location at least 100 ft. away from the building.
- UPD officer(s) sweep the entire building.
- One FS person stays at the fire alarm panel to read and document all indications on the fire alarm panel.
- Building occupants with mobility impairment who are on upper levels will be moved to the Area of Refuge by a fellow occupant designated with this task. The occupant designated with this task will stay with them until the drill is completed.
- Upon completion of the building sweep, the officer notifies FS to reset the system.
- FS resets the pull station, fire alarm panel, HVAC system, and the elevators.
- After the fire alarm system is back to normal, the officer notifies the building occupants of the "All Clear" and team members allow building tenants to return to the building.
- The officer notifies the dispatcher of the "All Clear" via radio system.
- Everyone on the Fire Drill Team reports to the dispatcher on the clearing.
- Fire Drill Team conducts debriefing.
- EHS submits all necessary work requests and maintains records.

7.0 CANDLES AND INCENSE

7.1 The use of candles, incense burners, oil lamps and other items are restricted. General guidelines include:

- Candles, incense burners, oil lamps or other personal items that have open flames or that smolder, are prohibited in work areas (individual or group), conference rooms, restrooms, etc. in all campus buildings. This restriction applies to such items regardless of whether the item has been lit.
- Candles, flame effects, or pyrotechnics used for banquets, ceremonies, science demonstrations, theatrical productions, indoor fireworks, or other entertainment are addressed as Hot Work and subject to Hot Work

permitting requirements. Requestors must submit an Event Safety Review Form to EHS at least 14 days prior to the expected Hot Work date at https://app.smartsheet.com/b/form/abd3394246384515855a1154c49bb8a9. Requestors will need to provide fire extinguishers and a fire watch. Once approved, EHS will inspect the site at least 30 minutes prior to the Hot Work start time and issue a Hot Work permit before Hot Work may commence. The request to use the aforementioned items may also be subject to approval by the State Fire Marshal.

- This use of candles does not apply to such devices used in the course and scope of University or Agency sponsored research or activities necessary to conduct business operations. If the burning of a candle(s) is permitted under the above-mentioned exemption, the candle must be in a glass or similar container and kept away from combustible materials
- Students living in residence halls and University-owned apartments are governed by the Student Code of Conduct as set forth by the Division of Student Engagement and Success. No items are permitted on the premises including candles (with or without a wick), kerosene lamps, oil lamps, gasoline, propane, etc. Additionally, items that create embers or ashes (e.g. incense) are not permitted on the premises.

8.0 COMBUSTIBLE STORAGE

8.1 One of the most common violations of general fire safety practices is that of improper or excessive storage of combustible materials. By storing excess combustible materials improperly, employees not only increase the potential for having a fire, but they also increase the potential severity of a fire. To reduce the hazards associated with combustible storage, follow these guidelines:

- Eliminate excess combustible materials such as paper and cardboard.
- Never store combustible materials in hallways, stairwells, or mechanical rooms.
- When stacking combustible materials, leave at least 24" from the top of the storage to the ceiling and 18" from a sprinkler head.

9.0 COMPRESSED GAS CYLINDERS

9.1 Compressed gas cylinders, in service or in storage, shall be adequately secured (chained) to prevent falling or being knocked over. Ropes, cords, rubber, and other combustible material are not approved for this purpose. Compressed gas cylinders shall have their caps in place except when they are in use or are being serviced or filled.

10.0 DECORATIONS

10.1 When decorating your area, there are several things that you must be aware

of:

- Never hang anything from fire sprinkler piping or heads.
- Never obstruct fire alarm devices.
- Any combustible decorations such as curtains or drapes must be of a fire-resistant material.
- Never obstruct an exit or the visibility thereof.
- Never staple or tack light strings.
- Decorations should not be placed in exit corridors or stairways.

10.2 Holiday Decorations

Holiday decorations are often fire hazards if not utilized properly. Follow these guidelines to improve fire safety during the holidays:

- Do not use live cut Christmas trees in university buildings. Use an artificial tree that is fire resistant.
- Do not place holiday decorations where they may block emergency egress (e.g., stairways, corridors, near doors, etc.).
- Only use decorations that are fire retardant.
- Practice good housekeeping by minimizing paper and other combustible decorations.
- Avoid using extension cords. If you must use an extension cord, use a heavy gauge cord and place it in plain view. Make sure the cord does not pose a tripping hazard. Unplug the cord before leaving the area.
- Use only UL or FM labeled electrical decorations.
- Do not light candles or use other decorations with open flames.
- Turn off the decorative lights when the room is unoccupied.

11.0 LITHIUM-ION POLYMER (LiPo) BATTERIES

11.1 LiPo batteries can be hazardous and liable to cause serious injuries to persons or property. Read and follow manufacturer's instructions.

ALWAYS:

- Use a fireproof LiPo safety bag, metal box, or other fireproof container when you are charging, discharging, or storing batteries.
- Examine the charger regularly for damage to the cord, plug, enclosure, or other parts.
- Examine the batteries for bulges or other damage. Do not charge if damaged.
- Disconnect the charger from the outlet when not charging the battery.
- Keep the battery at ambient temperature.
- Remove the battery from the device when not in use.
- Avoid short circuits.
- Avoid direct contact with the electrolyte contained within the battery. The electrolyte and electrolysis vapors are harmful to your health.

NEVER:

- Use a damaged charger.

- Use, store, or charge a swollen battery, a leaky battery or one which has been damaged.
- Leave your batteries charging while unattended. If a battery starts to become puffy, smoke, or catches fire, unplug the charger if safe to do so. If the battery catches fire pull the fire alarm and use a fire extinguisher if safe to do so.
- Charge the battery immediately after use while it is still hot. Let it cool down to room temperature.
- Use the charger to charge any other battery.
- Overcharge the battery. When the battery is fully charged, disconnect the charger and remove the battery.
- Charge the battery near inflammable materials or on an inflammable surface (carpet, wooden flooring, wooden furniture, etc.) or conducting surface.
- Charge the battery while it is still connected to the device.
- Cover the charger while the battery is charging.
- Use the battery if the plastic cover has been torn or compromised in any way.
- Insert or remove the battery while the device power is on.
- Expose the battery to excessive physical shock or heat.
- Dispose of the battery in a fire.
- Allow the battery to encounter any kind of liquid.
- Put the battery in a microwave oven or in a pressurized container.
- Attempt to dismantle, pierce, distort, repair, or cut the battery.
- Place any heavy objects on the battery or charger.
- Clean the charger with a solvent, denatured alcohol, or other inflammable solvents.
- Expose your device to extreme temperatures or place near a source of heat.

12.0 ELECTRICAL SAFETY

12.1 Extension Cord and Power-Strip Use

- Many times, it is necessary to use extension cords or power strips with surge protectors to reach a work area or to provide additional outlets. It is important not to overload outlets. When in use, protect cords and follow the manufacturer's recommendations.
- Extension cords are for temporary use only (defined as an 8-hour workday or less). Adhere to the following guidelines at all times:
  - Unplug and properly store cords when not in use.
  - Install permanent code compliant wiring if extension cord use is expected to exceed 30 days.
  - Extension cords or power strips must be plugged directly into a wall receptacle **– no daisy chaining is permitted** (e.g., plugging a power strip into another power strip).
  - Extension cords should be used for portable equipment only.

- Extension cords and power strips should be examined regularly for damage and removed from service if damage is found.
- Extension cords and power strips must be UL or FM listed.
- Extension cords shall not be run above ceilings or lay on top of light fixtures or other heat producing equipment and shall not be run under carpet or other similar materials.

12.2 Electrical Panel Access

- A working space of not less than 30" wide (or width of equipment if equipment exceeds 30" wide), 36" deep and 78" high shall be provided in front of electrical service and disconnect equipment. No storage shall be permitted within this designated workspace.

13.0 EMERGENCY ACCESS AND EGRESS

13.1 Emergency access and egress are critical during an emergency such as a fire. During a fire, timing and quick response are essential to save lives and property. Effective emergency access ensures that fire trucks can reach a building in time to extinguish the fire. Unobstructed emergency egress ensures that building occupants can exit a building to safety.

13.2 Emergency access always helps ensure that facilities and equipment remain available and unobstructed to ensure effective fire detection, evacuation, suppression, and response. Emergency egress is defined as a continuous and unobstructed way to travel from any point in a public building to a public way. A means of egress may include horizontal and vertical travel routes, including intervening rooms, doors, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, courts, and yards.

13.3 Corridors, Stairways, and Exits

- An exit corridor and/or stairway is a pedestrian pathway that allows direct access to the outside of a building and/or allows access to a building entrance and subsequent pathways to the outside of a building (e.g., an exit corridor is the quickest, easiest, and most direct pathway for leaving a building). Because exit corridors or passageways are the primary means of egress during an emergency, employees must follow the safety guidelines outlined in this section.
- Follow these guidelines to promote safe evacuation in corridors, stairways, and exits:
  - Keep all means of egress clean, clutter-free, and unobstructed.
  - Do not place hazardous materials or equipment in areas that are used for evacuation.
  - Do not use corridors or stairways for storage or office/laboratory operations.
  - Do not place locks, chains, or other devices that can defeat or obstruct an exit without prior written permission from EHS.

- Corridors may not be used as an extension of the office or laboratory.

14.0 FLAMMABLE AND COMBUSTIBLE LIQUIDS

14.1 NFPA Definitions:

- Flash Point: The lowest temperature at which vapors above a volatile combustible substance will ignite in air when exposed to a spark or flame.
- Flammable Liquid: Any liquid that has a closed cup flash point below 100˚ F.
- Combustible Liquid: Any liquid that has a closed cup flash point at or above 100˚F.

14.2 Flammable liquids are further classified as Class I, Class IA, Class IB, and Class IC liquids. Combustible liquids are further classified as Class II, Class III, Class IIIA, and Class IIIB liquids. You can identify if you are working with flammable or combustible materials by referencing the flash point on the product label or SDS.

14.3 When working with these materials, precautions should be taken to prevent the ignition of flammable vapors by sources such as the following: open flames, hot surfaces, radiant heat, smoking, cutting and welding, sparks, static electricity. Make sure you are in a well-ventilated and/or exhausted area to allow dangerous vapors to dissipate or escape the area. Only acceptable containers that meet the requirements set forth in the Flammable and Combustible Liquids Code published by the NFPA should be used with flammable and combustible liquids. The allowable size of these containers is dependent upon the class of liquid and the container type and is specified in the Flammable and Combustible Liquids Code (NFPA 30). Flammable and Combustible liquids must be stored inside a flammable liquid storage cabinet in amounts as defined in NFPA 30.

15.0 FIRE DETECTION AND NOTIFICATION

15.1 These systems utilize several different types of detection devices including heat, flame, and smoke detectors; relays from suppression/extinguishing systems; and manual pull stations to activate the notification portion of the system. Building fire alarm systems are monitored by UPD and FS at the Central Plant.

15.2 Detection Devices

- *Heat detectors* respond to the convected energy in hot smoke and fire gases (e.g., heat). Heat detectors are normally located in laboratories, mechanical rooms, storage areas, break rooms, and areas that could produce high levels of dust, steam, or other airborne particles.
- *Smoke Detectors* respond to the solid and liquid aerosols produced by a fire (e.g., smoke). Since smoke detectors cannot distinguish between

smoke particles and other particles such as steam, building occupants must be aware of detector locations and be considerate when working around them. Smoke detectors are normally found in exit corridors, office areas, assembly areas, and sleeping areas.

  - Protect smoke detectors with some type of cover when construction work, such as dust or fume producing activities, may affect smoke detectors. Inform UPD and EHS when planning to cover a smoke detector. Remove protectors immediately at the end of the activity or at the end of each day. Consult with EHS about the Global Risk Consultants Red Tag Program when disabling fire protection equipment.

- *Flame detectors* respond to the presence of a flame. Flame detectors may be found in specific areas where a fire will develop rapidly, and the hazard is greater than what is expected in normal locations within buildings such as chemical storage rooms. These devices are commonly used in conjunction with a fire extinguishing system.
- *Manual pull stations*, when activated, will initiate the buildings fire alarm notification system. Pull stations are generally located near exit stairways, near building exits, or in long corridors. Occupants should be familiar with the location of these devices should one need to initiate a building evacuation.

15.3 Building Notification

- The building notification system may consist of horns, bells, speakers, strobes, or a combination of these devices. It is important to maintain a clear line of sight to any of these devices to ensure they can be seen and/or heard.

16.0 FIRE DOORS

16.1 Fire doors serve as a barrier to limit the spread of fire and restrict the movement of smoke. Unless these doors are held open and released by the building fire alarm system fire doors should always remain closed. Do not tamper with fire doors or block them with equipment, potted plants, furniture, etc.

16.2 Fire doors are normally located in stairwells, corridors, and other areas required by Fire Code. The door, door frame, locking mechanism, and closure are rated between 20 minutes and three hours. A fire door rating indicates how long the door assembly can withstand heat and a water hose stream. All fire doors will have a label affixed to the door indicating the manufacturer, rating, serial # of the door, and other information. It is important to not remove, paint, or in any way damage or destroy the label.

16.3 For your safety and to maintain the integrity of fire doors there are several important items to remember:

- Know which doors are fire doors and keep them closed to protect building occupants and exit paths from fire and smoke.
- Never block a fire door with a non-approved closure device such as a door stop, blocks of wood, or potted plant.
- For fire doors with approved closure devices, make sure that nothing around the door can impede the closure.
- Never alter a fire door or assembly in any way. Simple alterations such as changing a lock or installing a window can lessen or completely void the fire rating of the door.
- Doors to offices, laboratories, and classrooms help act as smoke barriers regardless of their fire rating. Keep these doors closed whenever the room is unoccupied.
- A closed door is the best way to protect your path to safety from the spread of smoke and fire.

17.0 FIRE EXTINGUISHERS

17.1 Fire Extinguishers, when used properly, play a vital role in containing and/or extinguishing small fires. Portable fire extinguishers are designed to be used on small, contained fires, by properly trained individuals. Lives could be saved, and property damage reduced, when fire extinguishers are used correctly.

17.2 Know the location of the closest extinguisher. A quick response is crucial to effectively put out a fire. You should not have to travel any farther than 75 feet to get to an extinguisher. This distance may be reduced in labs and other high hazard areas.

17.3 There are five classifications for fires. These are:

- **Class A**: Fires involving ordinary combustibles, such as paper, wood, plastic, cloth, and trash.
- **Class B**: Fires that involve flammable or combustible liquid such as gasoline, solvents, oil, paint, and thinners.
- **Class C**: Fires that involve energized electrical equipment or appliances.
- **Class D**: Fires involving flammable metals, such as magnesium and sodium.
- **Class K**: Fires that involve cooking media, such as vegetable oils.

17.4 There are fire extinguishers designed for each type of fire. Some extinguishers can be used on more than one type of fire. However, there is no extinguisher that is designed to be used on all types of fires. It is important to know your fire extinguisher and its limitations.

- Class A extinguishers are to be used only on Class A fires. This extinguisher contains only water and compressed air and is not to be used on B, C, D, or K fires.
- Carbon Dioxide extinguishers are recommended for Class B and C fires.

Halon or other similar type fire extinguishers are also rated to be used on B and C fires.

- Dry Chemical extinguishers come in two types. One type is rated for B-C fires, and the other is rated for A, B, and C fires. The ABC or multipurpose extinguisher is the most common extinguisher found on campus.
- Class D extinguishers are specialized to be used only on flammable metals. Never attempt to extinguish a Class D fire with anything other than a **Class D** extinguisher.
- Class K extinguishers are designed to be used on flammable cooking oils. They are to be used in conjunction with a commercial fire suppression system.

17.5 Maintenance:

- Once used, fire extinguishers must be serviced or replaced. If an extinguisher has been used, is missing, needs to be relocated, or needs any other type of service, contact EHS for assistance.

17.6 Portable fire extinguishers are located throughout buildings across the campus. They are installed according to NFPA codes and standards. Extinguishers are readily accessible in hallways, near exits, and in areas containing high fire hazards. The area directly below and in front of a fire extinguisher must remain clear at all times.

17.7 Using an extinguisher:

- To use a fire extinguisher, remember the ***PASS***-word.
  - **P**ull the ring-pin (held in place by a plastic seal) to "un-lock" the operating lever.
  - **A**im the nozzle at the base of the fire.
  - **S**queeze the lever completely.
  - **S**weep the extinguishing agent from side to side until the fire is extinguished.
- The normal operating distance of different extinguishers will vary considerably. A dry chemical extinguisher will have a discharge range of 8-10 feet, while a Carbon Dioxide may only reach 5-6 feet. Remember:
  - Only attempt to extinguish small, contained fires.
  - Make sure you are properly trained, and capable of fighting the fire.
  - Be certain that you have the correct extinguisher for the type of fire.
  - Always keep a clear, unobstructed exit.
  - Never turn your back on a fire.
  - Fires may re-ignite, so be prepared.

17.8 Training:

- Learn how to use a fire extinguisher before an emergency occurs. Upon request, EHS provides hands on training in the use of portable fire extinguishers. Participants will learn about the different types of extinguishers and how to use each type. All extinguishers have a label

that states the type of fire for which they can be used. Fire extinguisher training will elaborate on this topic to further assist occupants in selecting the proper type of extinguisher. For information on the training please contact EHS at ext. 5555.

18.0 FIRE HYDRANTS

18.1 Fire hydrants are located throughout the campus and play a vital role in fire suppression operations. It is important to maintain a clear path to all hydrants and allow clear distances around hydrants to allow uninhibited operation should an emergency occur. It is also important that vehicles are not parked within 15 feet of fire hydrants or other fire safety equipment.

19.0 FIRE LANES

19.1 A fire lane is an area designated for emergency personnel only. Fire lanes allow emergency personnel to quickly gain access to buildings and/or fire protection systems. Parking in or blocking any fire lane is prohibited. Red painted curbs identify campus fire lanes.

20.0 FIRE AND LIFE SAFETY INSPECTIONS

20.1 Fire and life safety inspections are conducted at least annually in TAMU-CC facilities. The goal of these inspections is to help identify potentially unsafe practices and conditions. Although unannounced, these are not surprise inspections. We want to work with building occupants to help ensure a fire safe environment in which to work.

20.2 Some of the items that inspectors will be looking for include but are not limited to:

- Access to the facility for emergency responders.
- Means of egress and verifying that egress components are unobstructed and in working condition.
- Electrical safety (extension cords, power strips etc.).
- Storage of materials (24" from ceiling; 18" from sprinkler heads).
- General Housekeeping.
- Presence of ignition sources.

20.3 At the conclusion of the inspection a report is generated and sent back to the department(s) occupying the building. A follow up inspection verifies that the necessary actions were taken to remediate initial inspection deficiencies.

21.0 FIRE PREVENTION

21.1 Fire safety is everyone's responsibility. In fact, you are your office's best fire inspector. The following section will provide ways you can help prevent fires.

- Fire prevention starts with good housekeeping. Loose papers, trash, and other combustible items such as cardboard boxes are a fuel source for fire. If these combustible items are stored neatly and properly the risk of fire can be greatly reduced. Here are some things to be mindful of when it comes to combustible items:
  - Never store combustible items within 24 inches of the ceiling.
  - If you have sprinkler heads in your building keep **ALL** storage at least 18 inches below the sprinkler heads.
  - Keep combustible items away from electrical sources that may produce heat and/or sparks (e.g., outlets, multiple adapters, etc.).
  - Keep quantities of combustible items to a minimum.
  - Never store combustible items in an exit corridor, or in/under stair enclosures.
  - Combustible items should not be stored in mechanical, electrical, or data equipment rooms.

22.0 FIRE REPORTING

22.1 If you discover a fire in a facility on campus you should:

- Locate and activate the nearest manual pull station to initiate a building evacuation. Pull stations should be located near building exits
- Call ext. 4444 from any campus phone or 361-825-4444 if calling from a cell or off campus phone to report the fire and provide any information such as:
  - Building Name
  - Room Number
  - Type of Fire
  - Any injuries
  - Any other information requested by the emergency operator
- If you are trained in the proper use of portable fire extinguishers and are not in immediate danger you may attempt to extinguish the fire.

23.0 FIRE SUPPRESSION

23.1 TAMU-CC uses various types of fire suppression equipment including portable fire extinguishers, water sprinklers, special gas extinguishing systems, cooking hood systems, and fire hose/standpipe systems. The following sections discuss each type of fire suppression equipment.

23.2 Sprinkler Systems:

- The purpose of a water sprinkler system is to contain and to minimize the spread of a fire but is often successful in extinguishing fires. Sprinkler heads are normally activated by heat. Generally, if one is activated not all the sprinklers in a building will discharge. Only in specialized sprinkler systems are they connected to smoke detectors or manual pull stations.

23.3 To ensure that sprinklers are effective in the event of a fire:

- Maintain a minimum of 18 inches of clearance below the sprinkler head.
- Do not hang drapes, curtains, tarps, etc. that will interfere with the spray pattern of the sprinkler.
- Never attach or hang anything from sprinkler piping or sprinkler heads.
- Do not paint or damage sprinkler heads in any manner.

23.4 Fire Extinguishing Systems:

- Special work areas such as computer server rooms or bulk chemical storage rooms may contain specialized gaseous fire extinguishing systems such as carbon dioxide (CO2), FE-13™, FM-200™, or Halon 1301 in lieu of water based fire suppression systems. These systems work by displacing the oxygen in the room to a level that will no longer support a fire. To ensure that the system operates as designed, the area or room(s) protected must have its structural integrity preserved in order to maintain the required concentration level of the gas. There should be no penetrations through walls, ceilings, or floors and doors should be kept in the closed position. An FM-200 system is installed in The Network Operation's Center (NOC).
- Once a system is activated, the low level of oxygen is also dangerous to humans. Caution should be used when working in areas where these oxygen-depriving extinguishing agents are used. Manually operated systems, such as a pull-station or push button, should have signs posted indicating it will activate the agent. ***Do not*** enter a room that has discharged an oxygen-depriving agent until it has been ventilated, and appropriate tests of the atmosphere have verified it is safe to enter.

23.5 Fire Hoses and Standpipe Systems:

- A standpipe system is an arrangement of piping, valves, hose connections, and allied equipment installed in a building or structure for the purpose of manually extinguishing a fire. Local fire department responders will use the standpipe system in the event of a fire in a building. Access to these systems should always be maintained and should not be blocked by any equipment, chairs, desks, etc.

24.0 LIQUIFIED PETROLEUM GAS (LPG)

24.1 The Texas Railroad Commission regulates the sale and use of LPG, including butane and propane. In addition, the LPG Code (NFPA 58) provides regulations on the use of LPG as well. These regulations govern several types of LPG-powered equipment and procedures including the following:

- Forklifts
- Floor buffers
- Cooking and heating equipment
- Laboratory equipment

24.2 Exhaust fumes may contain (amongst other contaminants) carbon monoxide, which can present a health hazard due to toxicity, or CO2, which can present a health hazard due to asphyxiation. Exhaust can also create smoke which may activate a smoke detector. Take special precautions to ensure adequate ventilation when using these machines indoors.

24.3 Because LPG is extremely flammable, it is a potential fire hazard. Do not store LPG near heat, flame, or other ignition sources. In addition, do not leave portable LPG containers larger than 16 oz. in a building overnight. Instead, place portable LPG containers and LPG equipment outside in a storage area that is at least 25 feet away from other buildings, combustible materials, roadways, railroads, pipelines, utility lines, and the property line. This storage area should prevent unauthorized entry and have a portable fire extinguisher within 25 feet.

24.4 When using portable LPG containers, the requirements listed below shall be followed:

- Inspect containers for excessive denting, bulging, gouging, and corrosion and check hoses for cracks and deterioration; containers displaying any of these signs must be removed from service.
- Label all containers as Flammable and as LP-Gas, Propane, or Butane.
- Cylinders shall be located to minimize exposure to excessive heat, and physical damage.
- Cylinders shall be stored away from exits, stairways, or areas normally used, or intended for use, as a means of egress for occupants.
- LPG containers shall not be stored in buildings frequented by the public.
- Containers shall be stored outside in a lockable ventilated enclosure of metal exterior construction; protection against vehicle impact shall be provided.

24.5 LPG powered Industrial Trucks

- Use of LPG powered industrial trucks shall follow the guideline for containers in the previous section, in addition to the following:
  - LPG cylinders shall be refueled outdoors.
  - The number of cylinders on an industrial truck shall not exceed 2.
  - The size of a cylinder on an industrial truck shall not exceed 45 pounds.
  - Cylinder pressure relief valve discharge shall be directed upward within 45 degrees of vertical and shall not impinge on the cylinder, exhaust system, or any other part of the truck.
  - The discharge opening shall be provided with a protective cover.
  - Industrial trucks shall not be parked or left unattended without the cylinder shutoff valve being closed.
  - Do not park industrial trucks inside a public building or near areas of excessive heat or near sources of ignition.

25.0 OPEN FLAME BURNING

25.1 Open flame burning is restricted across all TAMU-CC properties. Requests to host events with open flames must be submitted to EHS for approval at least 14 days prior to the event date using the Event Safety Review Form at https://app.smartsheet.com/b/form/abd3394246384515855a1154c49bb8a9. Once approved, open flame burning will be treated as Hot Work. Requestors will need to provide fire extinguishers and a fire watch. EHS will inspect the site at least 30 minutes prior to the event start time and issue a Hot Work permit before open flame burning may commence.

26.0 COMMERCIAL PYROTECHNICS/FLAMES DURING MAJOR OUTDOOR EVENTS

26.1 The use of commercial pyrotechnics/flames on TAMU-CC properties are regulated and require a permit issued by the City of Corpus Christi in addition to EHS approval prior to any performance or use. The use of consumer fireworks on campus is prohibited. Requestors must submit an Event Safety Review Form to EHS at least 14 days prior to the event date for approval at https://app.smartsheet.com/b/form/abd3394246384515855a1154c49bb8a9.

26.2 For further information on the use of pyrotechnics/flames contact EHS at x5555 or 361-825-5555.

27.0 TENTS

27.1 Erection of tents on the TAMU-CC campus shall be in accordance with the NFPA as outlined in the Life Safety Code and the International Building Code. For more information, contact the EHS Department.

27.2 Flame Resistance and Structure

- All tent fabric must be flame resistant.
- A certificate or other proof of approval by a testing laboratory is acceptable as evidence of the required fire resistance. A copy of the certificate must be provided to EHS upon request or when the Event Safety Review Form is submitted. These certificates should be available from the tent supplier.

27.3 Floor Coverings

- The area enclosed by any tent and not less than 10 feet outside of such tent, must be cleaned of all flammable or combustible material or vegetation prior to erecting the tent. The premises must be kept free from such flammable or combustible materials during the period for which the area is used.

XIII. GRAPHIC ARTS MEDIA

1.0 GENERAL INFORMATION

1.1 The art supplies and chemicals associated with graphic media are often hazardous. Depending on the type of art supplies used, artists can develop the same types of occupational diseases as industrial workers. Studies show that people who work with hazardous graphic media chemicals improperly can develop a variety of ailments.

1.2 The risk of chemical hazards is directly linked to the following factors:
- Duration and frequency of exposure
- Chemical toxicity
- Chemical amount

1.3 Employees and students may be exposed to graphic media hazards through skin contact, inhalation, and ingestion.

1.4 Follow these safety guidelines for working with graphic media materials:
- Wear protective clothing and follow SDS precautions as appropriate.
- Use nontoxic or less toxic solvents and chemicals when possible.
- Eliminate toxic metals such as lead and cadmium. Instead, use cadmium-free silver solders and lead-free paint, glazes, and enamels.
- Use water-based instead of solvent-based materials.
- Use liquid materials to replace powders.
- Use wet techniques (such as wet sanding) instead of dry techniques.
- Apply coatings by brushing or dipping instead of spraying.
- Eliminate cancer-causing chemicals.

2.0 SOLVENTS

2.1 Solvents are used to dissolve oils, resins, varnishes, and inks. They are also used to remove paint and lacquer. Due to their common usage, solvents are one of the most underrated media hazards. Most organic solvents are poisonous if swallowed or inhaled in enough quantities. They also cause dermatitis and narcosis.

2.2 Use the least toxic solvent possible. Denatured or isopropyl alcohol, acetone, and odorless mineral spirits are less toxic than solvents such as chloroform or ethylene.

3.0 AEROSOL SPRAYS

3.1 Aerosol sprays, such as fixatives, paint sprays, and adhesive sprays are extremely dangerous if someone inhales the fine mists produced by these products. Air brushes and spray guns are equally hazardous. Use aerosol

sprays in a well-ventilated area and wear an organic vapor respirator to protect yourself from the hazardous vapors.

4.0 ACIDS AND ALKALIS

4.1 The acids and alkalis used in ceramics, photo chemicals, paint removers, and similar materials can be very caustic to the skin, eyes, respiratory system, and gastrointestinal system. Likewise, the acids and alkalis used to etch metals and glass can be very dangerous. Strong acids, such as hydrochloric, sulfuric, and perchloric acid, require special handling as outlined in the SDS. Alkalis, such as caustic potash, caustic soda, quicklime, and unslaked lime, also require special treatment. Remember to add acid to water, not water to acid, when mixing chemicals.

5.0 PAINTS AND PIGMENTS

5.1 Many paints and color pigments contain hazardous chemical compounds. Lead paint, for example, is extremely dangerous, and should never be used in its powder form. Other paint components, such as chromate, cadmium, and cobalt pigments, are equally hazardous. Do not inhale powdered paint or spray paint vapors or accidentally ingest pigment by placing the brush tip in your mouth. In addition, do not eat, drink, or smoke while painting. Any of these activities could result in chronic poisoning.

5.2 The table below outlines common paint pigments and their hazardous chemical component:

Hazardous Chemical	**Pigment (Paint Name)**
Arsenic	Emerald Green Cobalt Violet
Antimony	True Naples Yellow
Cadmium	All Cadmium Pigments
Chromium	Zinc Yellow Strontium Yellow Chrome Yellow
Cobalt	Cobalt Violet Cobalt Green Cobalt Yellow Cerulean Blue
Lead	Falk White Lead White Chemnitz White Mixed White
Manganese	Manganese Blue Manganese Violet Burnt Umber Raw Umber Mars Brown
Mercury	Vermilion Cadmium Vermilion Red

6.0 PHOTOGRAPHY

6.1 Many of the chemicals used for photographic processing can cause severe skin and lung problems. The greatest hazards associated with photography include the preparation and use of concentrated chemical solutions. Never touch chemical powders or solutions with unprotected hands. In addition,

take care not to stir up and inhale chemical dusts.
IMPORTANT: *Good ventilation is essential when working with photographic chemicals.*

The following are common photographic agents and their hazards:

- Developer: May cause skin irritation and allergic reactions.
- Stop-bath: May cause burns and throat irritation.
- Fixer: Highly irritating to lungs.
- Intensifier: Very corrosive and may cause lung cancer.
- Reducer: Contact with heat, concentrated acids, or ultraviolet radiation produces poisonous gas.
- Toners: Highly toxic.
- Hardeners and stabilizers: Often contain formaldehyde which is poisonous, a skin irritant, and a known carcinogen.

7.0 PLASTICS, ACRYLICS, AND EPOXY RESINS

7.1 Plastic hazards result from making plastic and working with finished plastic. The greatest hazards associated with making plastic come from the monomers, solvents, fillers, catalysts, and hardeners that are commonly toxic. The hazards involved with finished plastics result mainly from the methods used to work the plastic. For example, overheating or burning plastic produces toxic gases. Polishing, sanding, and sawing plastic produces harmful dusts.

7.2 Certain types of plastics, such as acrylics and epoxy resins are also hazardous. The components in acrylic, for example, include irritants, explosives, and flammables. The main hazard associated with acrylic compounds, however, is inhalation. Always maintain good ventilation when working with acrylic.

7.3 The epoxy resins used in laminating, casting, glues, and lacquer coatings are also skin irritants, sensitizers, and suspected cancer-causing agents. Avoid skin contact and inhalation when working with epoxy resins.

8.0 POTTERY AND CERAMICS

8.1 Pottery clay contains silicates that can be hazardous if inhaled. Many low-fire clays and slip-casting clays also contain talc, which may be contaminated with asbestos. Long-term inhalation of asbestos can cause cancer and respiratory diseases. When mixing clay dust or breaking up dry grog, use exhaust ventilation and/or wear an N series dust respirator. Work with wet clay when possible.

8.2 Pottery glazes also contain free silica, including flint, feldspar, and talc. Wear a toxic dust respirator when mixing or spraying glazes.

8.3 Toxic fumes and gases are often produced during the firing process. Ensure that all kilns are well ventilated. In addition, use infrared goggles or a shield to look in the kiln peep hole. Proper eye protection will help prevent cataracts.

9.0 WOODWORKING

9.1 The hazards associated with woodworking include sawdust inhalation, exposure to toxic solvents and adhesives, and excessive noise from woodworking tools. Long term inhalation of sawdust can cause chronic respiratory diseases. Depending on the type of wood, short term sawdust inhalation may also produce allergic reactions. Toxic preservatives, such as arsenic compounds and creosote, may cause cancer and reproductive problems. Epoxy resins and solvent-based adhesives also pose potential hazards. Use dust collectors around woodworking machines, ensure proper ventilation, and wear PPE, as appropriate.

10. TRAINING

10.1 Students enrolled in the Department of Arts and Theatre and Dance are provided safety training through Canvas.

XIV. HAZARDOUS MATERIALS (HAZMAT) TRANSPORTATION

1.0 GENERAL INFORMATION

1.1 The US Department of Transportation (DOT) and the International Air Transport Association (IATA) have detailed regulations for shipping HAZMAT or dangerous goods. When shipping within the US or internationally, it is critical to comply with all shipping regulations to protect the shipper, the carrier, and the environment and to prevent stiff penalties from being imposed.

1.2 All HAZMAT employees require some level of training specific to the transportation-related function they perform (e.g. classification, packaging, marking, labeling, paperwork, etc.). It is crucial that TAMU-CC personnel responsible for shipping are properly trained to package and ship their materials.

2.0 REGULATIONS

2.1 The Hazardous Materials Regulation (HMR) Parts, 171 – 180 of Title 49 in the CFRs contain all the regulations pertaining to the transport of HAZMAT. The purpose of the HMR is to provide the shipper with instructions on how to properly package, mark, label, and document HAZMAT to be placed in commerce (e.g. ground, air, water, and rail).

2.2 The IATAs Dangerous Goods Regulation is the guide that is recognized by all airlines that carry dangerous goods in all countries. This regulation provides procedures for the shipper and the operator by which dangerous goods can be safely transported by air on all commercial air transport.

2.3 Both regulations serve the same purpose, to provide safety to the shipper and carrier and to minimize the risk of contamination to the environment.

3.0 WHO NEEDS TRAINING?

3.1 A HAZMAT employee is a person who is employed by a HAZMAT employer, such as TAMU-CC, and who directly affects HAZMAT transportation safety. At TAMU-CC this is a person who:

- Loads, unloads, or handles HAZMAT.
- Classifies HAZMAT, prepares HAZMAT packages, and/or prepares shipping papers for transport by carriers; and/or
- Is responsible for safely transporting HAZMAT in university vehicles.

NOTE: Contact EHS for training information.

4.0 WHAT TRAINING IS OFFERED?

4.1 Only trained persons may ship or receive shipments of HAZMAT and/or

dangerous goods.

- General Awareness – This training enables the employee to recognize and identify HAZMAT shipments. The training is consistent with the hazard communication (HAZCOM) program required by 49 CFR.
- Dry Ice Shipping – This training is specific to shipments of Dry Ice. Dry Ice is a regulated HAZMAT and/or dangerous good when shipped by air and therefore requires special packaging, marking, and labeling.
- Limited Quantities – Limited quantities are shipments that must meet specific requirements (e.g. a specific amount) in order to be classified as a limited quantity shipment. This training will assist in classification, packaging, marking, labeling, and documentation of a limited quantity shipment.
- Excepted Quantities – These shipments are materials that are less than 30 milliliters or 30 grams of a HAZMAT. This training will assist in classification, packaging, marking, labeling, and documentation of a limited quantity shipment.
- Function Specific Training – Function specific training is for individuals shipping specific HAZMAT repetitively and focuses on the needs of the shipper. This training is available as requested and developed for the specific needs of the shipper.
- HAZMAT Training – Each department that ships HAZMAT is encouraged to have at least one person attend a 40-hour HAZMAT Transportation course. The training consists of 24 hours of 49 CFR, eight hours of the IATA Dangerous Goods Regulation, and eight hours of either Infectious Substance Training or Radioactive Material Training.
- Refresher Training – DOT requires refresher training every three years. IATA requires refresher training every two years. To ensure TAMU-CC meets the refresher training requirements as required by both regulations, the TAMU-CC HAZMAT Shipping Program requires anyone shipping HAZMAT to be retrained every two years.

5.0 HAZARDOUS MATERIALS DEFINED

5.1 HAZMAT means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has been designated as hazardous under Title 49, United States Code (USC), Section 5103 of the Federal Hazardous Materials Transportation Law (49 USC 5103). HAZMAT, for the purpose of transportation, are those in one or more of the following groups as classified by the Federal Motor Carrier Safety Administration (FMCSA):

- Class 1: Explosives
- Class 2: Gases
- Class 3: Flammable liquid
- Class 4: Flammable Solid, Spontaneously Combustible, and Dangerous When Wet

- Class 5: Oxidizer, Organic Peroxide
- Class 6: Poison (Toxic), Poison Inhalation Hazard, Infectious Substance
- Class 7: Radioactive
- Class 8: Corrosive
- Class 9: Miscellaneous Hazardous Material

6.0 DOT REQUIREMENTS SIMPLIFIED

6.1 The DOT regulations stipulate

- How a HAZMAT is **packaged** (e.g., cardboard box, metal drum).
- How the package is **marked –** what words are written on the side.
- How the package is **labeled –** what colored diamond-shaped label is applied.
- How the material is **described** on shipping papers, which are required for shipment.
  - This information is summarized in the HAZMAT Tables in section 172.101 of the DOT regulations.
  - Do not assume that just because the material you are shipping is not listed in the HAZMAT tables that this means the material you are shipping is not regulated.
  - If you are unsure of the classification of your material, always contact EHS.

7.0 HAZMAT SHIPPING QUESTIONS

7.1 For assistance in resolving questions about the proper shipment of HAZMAT contact EHS at 361-825-5555.

7.2 The Texas Hazard Communication Act (THCA) is a state "worker right-to-know" law that requires public employers to provide their employees with specific information and training on the hazardous chemicals to which employees may be exposed in the workplace.

7.3 TAMU-CC employees are assigned HAZCOM training in TrainTraq by administrative location (adloc) or job duties. The TAMU-CC HAZCOM Program is located on the EHS website at https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/assets/documents/hazard-communication-program-09-01-2024.pdf.

- New employees must complete the training prior to reporting to their workstation where a chemical exposure may occur.

XV. HAZARDOUS WASTE

Disposal of hazardous waste is regulated by various federal and state agencies. Laboratory waste very often includes hazardous chemical, biological, or radiological materials. Thus, proper disposal of laboratory waste is not only prudent, but also mandatory. Environmentally sound disposal methods prevent harm to the water, land, air, and by extension, to people. Proper disposal techniques also protect waste handlers from harm.

Laboratory waste disposal can be broken down into five categories – hazardous chemical waste, biological waste, radioactive waste, glass waste, and metal (sharps) waste – which are discussed below.

1.0 HAZARDOUS CHEMICAL WASTE

The term "hazardous waste" refers to hazardous *chemical* waste. If waste chemicals contain infectious materials or biological hazards, the waste must be treated first as biological waste. Once the biological hazard has been eliminated, then the waste can be treated as hazardous waste. Any waste containing radioactive materials must be treated as radiological waste.

Disposal of hazardous waste is governed by the EPA and by the TCEQ through Federal and State regulations.

Refer to the "Origami and Other Resources" tab on the EHS website at https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/ for more information on hazardous waste disposal procedures and regulations as well as information on waste reduction and minimization.

2.0 BIOLOGICAL WASTE

The EHS Department oversees the handling and disposal of hazardous and non-hazardous biological waste as described in the TAMU-CC Management and Disposal of Biological Waste manual. The Texas Department of State Health Services (DSHS) and the TCEQ regulate the disposal of biohazardous materials. Biohazardous materials include organisms or substances derived from biological materials or organisms that may be harmful to humans, animals, plants, or the environment.

3.0 GLASS WASTE

3.1 Glassware should never be disposed of in the regular trash. Pasteur pipettes and broken glass can break through trash bags and cut individuals who handle trash. Follow these guidelines when disposing of broken glass

- Do not pick up broken glass with bare or unprotected hands. Use a brush and dustpan to clean up broken glass. Remove broken glass in sinks by using tongs for large pieces and cotton held by tongs for small pieces and slivers.

- Glass contaminated with biological agents must be decontaminated by thermal or chemical treatment before disposal.
- Glassware contaminated with chemical or radiological materials must also be decontaminated prior to disposal. If decontamination is not possible, the glass should be disposed of as hazardous or radioactive waste.
- Place non-contaminated broken glass in a rigid, puncture resistant container such as a sturdy cardboard box. Mark the box "Non-contaminated Broken Glass." Once the box is three-quarters full, seal it shut. The box should then be placed in the dumpster by laboratory personnel. *Custodial staff are **not** responsible for disposing of glass waste containers*

NOTE: *If broken glass is commingled with metal sharps, it must be treated as metal sharps waste and encapsulated before for disposal.*

4.0 METAL SHARPS WASTE

4.1 All materials that could cause cuts or punctures, must be contained, encapsulated, and disposed of in a manner that does not endanger other workers. Needles, blades, etc. are considered biohazardous even if they are sterile, capped, and in the original container. The following guidelines apply to handling and disposing of sharps:

- Metal sharps must be segregated from all other waste.
- Metal sharps that have been used with chemical or biological materials should be decontaminated prior to disposal whenever possible.
- Metal sharps that have radiological contamination must be disposed of as radiological waste.
- Dispose of metal sharps in a rigid container, such as a sturdy plastic jar or a metal can.
- When the container is three-quarters full, encapsulate the metal sharps with Plaster of Paris or some other solidifying medium such as Isolyser® which, when fully reacted, will encase the waste in a solid protective matrix. The encapsulating agent must completely fill the container. The container and solidified contents must withstand and applied pressure of 40 psi without disintegration.
- Once the contents are encapsulated, seal the metal sharps container, label it "Encapsulated Sharps," and take it to the dumpster.

NOTE: *Laboratory personnel are responsible for sharps disposal. Custodial staff are **not** responsible for encapsulating and/or disposing of metal sharps waste.*

5.0 RADIOACTIVE WASTE

Radioactive materials, depending upon the license, are regulated by the State of Texas or the Nuclear Regulatory Commission, and these regulations/rules are enforced by EHSs Radiological Safety Program. All radioactive wastes shall be

disposed through EHS or via written procedures approved by EHS. Contact EHS for more information on proper disposal of radiological waste.

XVI. HEARING CONSERVATION

1.0 GENERAL INFORMATION

Excessive noise levels may permanently damage a person's hearing. Whenever possible, employees should avoid noise exposure or reduce noise to an acceptable level. The following table outlines the American Conference of Governmental Industrial Hygienists (ACGIH) limits for acceptable noise exposure indicated as decibels (dB) and time limits. At no time should any exposure to continuous, intermittent, or impact noise in excess of 140 dB be allowed.

Duration/Day (Hours)	Sound Level (dB)
8	85
4	88
2	91
1	94
1/2 (30 minutes)	97
1/4 (15 minutes)	100
7 minutes	103
3 minutes	106
1 minute	109
Less than 1 minute	112 +

1.1 Hearing loss can be permanent – wear protective equipment when noise levels are high.

1.2 Before using PPE, such as ear plugs or muffs, to reduce noise exposure, try to reduce noise levels by changing work procedures. Maintenance practices such as the following can reduce noise levels:

- Replacing worn or loose machine parts.
- Performing high-noise operations during hours when people are less likely to be affected.
- Maintaining and lubricating equipment to eliminate rattles and squeaks.
- The following table from the Centers for Disease Control (CDC) illustrates various noise levels:

	DECIBEL - dB(A)	EQUIPMENT
Double protection recommended above 105 dB(A)	112	Pile driver
	110	Air arcing gouging
	108	Impact wrench
	107	Bulldozer - no muffle
	102-104	Air grinder
	102	Crane - uninsulated cab
	101-103	Bulldozer - no cab
	97	Chipping concrete
	96	Circular saw and hammering
	96	Jack hammer
	96	Quick-cut saw
	95	Masonry saw
	94	Compactor - no cab
Hearing protection recommended above 85 dB(A)	90	Crane - insulated cab
	87	Loader/backhoe - insulated cab
	86	Grinder
	85-90	Welding machine
	85	Bulldozer - insulated cab
	60-70	Speaking voice

Table 1: Some typical noise levels found on construction sites

1.3 Engineering controls, such as the following, can also reduce noise levels:

- Replacing noisy materials.
- Using large, low speed fans.
- Considering the noise level of new equipment or processes before purchasing or implementing.
- Placing heavy machines on rubber mountings.
- Using sound-absorbing acoustical tiles or baffles.
- Placing noisy machinery or operations in a separate area or room.
- Enclosing noisy conveyors.
- Providing and maintaining signage at entrances to high noise areas.

1.4 Areas that may require hearing protection include machine shops, the central plant, landscape maintenance, etc. Supervisors should ensure that a variety of hearing protection is provided to allow employees sufficient choice. Observe all warning signs and wear hearing protection whenever necessary. Do not interfere with, remove, or modify noise abatement equipment. Keep all equipment properly maintained and report any malfunctions immediately.

1.5 Refer to Section XX (Personal Protective Equipment) for more information on hearing protection. Direct all questions regarding hearing conservation to EHS.

XVII. HEAT RELATED ILLNESSES

1.0 GENERAL INFORMATION

1.1 Heat Stress and Strain

People may suffer from heat related illnesses at any time of the year but particularly during hot, humid conditions. Because the climate at TAMU-CC is conducive to these conditions, people must take preventive measures to reduce their risk. To prevent heat related illness, supervisors must assist workers in acclimating to conditions which could cause heat related illness. Employees should limit strenuous physical activity during the hottest portion of the day, wear a brimmed hat when in the sun, take frequent breaks, and drink plenty of fluids.

1.2 Examples of heat related illnesses are heat exhaustion, heat stroke, heat cramps, dehydration, and heat rash.

1.3 Heat Exhaustion

- Heat exhaustion is usually caused by strenuous physical activity and hot, humid conditions. Because heat exhaustion is the body's response to insufficient water and salt, it should be treated as quickly as possible.
- Signs and symptoms of heat exhaustion include the following:
  - Exhaustion and restlessness
  - Headache
  - Dizziness
  - Nausea
  - Cold, clammy, moist skin
  - Pale face
  - Cramps in abdomen and lower limbs
  - Fast, shallow breathing
  - Rapid, weak pulse
  - Falling body temperature
  - Fainting

- Take the following steps to administer first aid for heat exhaustion:
  - Have the victim lie down in a cool or shaded place.
  - If the victim is conscious, have him/her slowly sip cool water.
  - If the victim is unconscious or is conscious but does not improve, seek medical aid as soon as possible.

1.4 Heat Stroke

- Heat stroke is usually caused by exposure to extreme heat and humidity and/or a feverish illness. Heat stroke occurs when the body can no longer control its temperature by sweating. Heat stroke is extremely dangerous and may be fatal if not treated immediately.
- The signs and symptoms of heat stroke include the following:

- Red, hot, and dry skin
- Throbbing headache
- Dizziness and light-headedness
- High temperature
- Rapid heartbeat, which may be weak or strong
- Rapid, shallow breathing
- Muscle weakness or cramps
- Unconsciousness

- Immediately take the following steps to administer first aid for heat stroke:
  - If possible, move the victim to a cool place.
  - Seek medical attention as soon as possible.
  - Remove the victim's clothing.
  - If the victim is conscious, place him in a half-sitting position and support the head and shoulders.
  - If the victim is unconscious, place him on the side with the head facing sideways.
  - Fan the victim and sponge the body with cool water.

1.5 Environmental Factors

- Air temperature
- Humidity
- Radiant heat source
- Air circulation

1.6 Work Related Factors

- Workload
- Type of work
- Level of physical activity
- Time spent working

1.7 Clothing Factors

- Weight (heavy vs. breathable)
- Color (dark vs. light)
- PPE in addition to clothing

1.8 Personal Factors

- Age
- Weight/fitness
- Use of drugs, alcohol, caffeine, medication
- Prior related illness

1.9 Prevention

- Drink plenty of fluids
  - Don't rely on your thirst
  - Drink 5-7 ounces every 20 minutes
- Acclimatization: adjust to the heat

    - The body takes 3-5 days to get used to the heat
    - Be careful if returning from vacation or absence
- Choose proper clothing
    - Choose light colors and lightest weight possible
    - Select proper PPE
- Take heat into account when scheduling tasks
    - Implement work/rest cycles
    - Conduct heaviest tasks early in the morning or at dusk
- Eat properly
- Sleep and rest

XVIII. HOT WORK PERMITS

This program applies to all employees and contractors conducting hot work on TAMU-CC premises.
***NOTE**: Areas permanently established and arranged to conduct hot work are exempt. Those areas will be inspected once a year.*

1.0 DEFINITIONS

1.1 Hot Work – Any work which produces open flames, heat, and/or sparks that could ignite materials in the work area.

1.2 Hot Work Permit – A means to communicate fire hazards and recordkeeping of activities that involve hot work. TAMU-CC uses the Global Risk Consultants forms.

1.3 Combustible – A material capable of sustaining burning when ignited and in the presence of air.

1.4 Flammable – A liquid having a flashpoint below 100 degrees Fahrenheit.

1.5 Hot Work Operator – A person who operates welding, brazing, grinding, and/or cutting equipment.

1.6 Fire Watch – A person who has been trained to use fire extinguishers and familiar with inherent hazards of the work site and of the hot work operation, the closest exit routes from the building, and the pull stations.

1.7 Permit Authorizing Individual (PAI) – EHS personnel knowledgeable in hot work operations and are capable of identifying site-specific flammable and combustible materials, fire hazards, or hazardous processes present or likely to be present in a hot work area.

2.0 GENERAL INFORMATION

2.1 A Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to:

- Brazing
- Cutting
- Grinding
- Soldering
- Torch applied roofing
- Welding when the hot work is done outside of a designated hot work area.

2.2 An area classified and marked as a "Designated Hot Work Area" must meet

the following criteria:

- The area is of a non-combustible, fire resistive construction and essentially free of combustible and/or flammable materials.
- The area is segregated from adjacent areas.
- The area is equipped with at least one fire extinguisher.
- The area is evaluated, approved, and inspected periodically by EHS.

2.3 The following areas are "Designated Hot Work" areas:

- Motor Pool building, bays 2, 3, and 4. All combustible materials must be stored in the storage room or at least 35 feet from the hot work area.
- Robert Furgason Engineering building, room number 114 (southeast corner).
- Center for the Arts building, room number 116.
- Central Plant, Main room.
- Plumber shop in FS.

2.4 The PAI is responsible to:

- Ensure all flammable and/or combustible materials are at a clearance radius of at least 35 feet from the hot work area or that they will be fully covered with fire resistive blankets.
- Determine if a fire watch is required.
- The PAI cannot be the person doing the hot work.

2.5 A Fire Watch must be posted by a PAI if any of the following conditions exist:

- Combustible materials cannot be removed or fully covered with fire resistive blankets or screen from within 35 feet of the hot work.
- Wall or floor openings within 35 feet of hot work expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.
- Any other condition that is deemed necessary by the PAI.
- If a building does not have a fire sprinkler system.

2.6 The duties of the Fire Watch are to:

- Remain present and undistracted during hot work operations.
- Be alert for any condition that could lead to a fire, including possible problems in adjacent areas.
- Guard passersby from welding hazards.
- Interrupt the work if a hazardous condition develops, and deal with the situation appropriately.
- Remain on the scene for at least thirty minutes after completion of hot work in order to detect, extinguish, or report a fire resulting from stored heat or sparks.
- If required by PAI, return to the scene one hour after the hot work is completed to give a final check to ensure there is not a fire hazard in the

area, sign the permit, and return the permit to EHS.

2.7 The following operations do not require a Hot Work Permit:
- Bunsen burners in laboratories
- Fixed grinding wheels
- Electric soldering irons

3.0 PROCEDURE

3.1 The hot work operator is responsible to request a Hot Work Permit, by calling EHS at ext. 5555, when he/she performs hot work outside of a designated hot work area at any time.

3.2 A permit is issued by a PAI.

3.3 The hot work operator is responsible to prepare the work area according to the permit requirements.

3.4 If an alarm system bypass is required, only an official designee of the TAMU-CC FS may temporarily bypass the fire alarm system. Specific devices or sections of the system required to be bypassed will be determined by the FS technician performing the bypass. Notification must be provided to EHS prior to bypassing so that EHS can notify the local fire marshal. All bypassed alarm systems must be restored by 5:00pm Monday through Friday. A designated fire watch must be posted while the fire alarm is by-passed.

3.5 The PAI is responsible for making sure all applicable conditions satisfy the requirements for issuing a hot work permit. If any of the applicable conditions does not meet the requirements, the hot work permit will not be issued.

3.6 Floor openings or drains must be adequately covered to prevent slag or sparks from falling to the area below or entering drains. In the case of work being performed in an elevated area, the area below shall be barricaded.

3.7 In areas where heavy dust may be present, the dust accumulation must be cleaned prior to the start of work.

3.8 The hot work permit is only valid for one day and within the period permitted.

3.9 The signed permit shall be maintained on the job site at all times during the hot work.

3.10 When the hot work is completed, the area shall be returned to normal condition.

3.11 Hot Work is not allowed within:

- Within 50 feet of areas where flammable vapors may be present.
- The immediate vicinity of any piping line, valve, fitting, vessel, or equipment that contains or has contained a flammable or combustible liquid or gas.
- Areas where the lower explosive limit (LEL) reading is above 10%.

XIX. OFFICE SAFETY

1.0 GENERAL OFFICE SAFETY

Report safety issues pertaining to this section to the EHS Department at ext. 5555 or 361-825-5555.

1.1 A large percentage of workplace accidents and injuries occur in office buildings. Like a shop or laboratory, an office requires a few preventive measures to ensure a safe and healthy work environment. Common causes of office accidents include the following:

- Slipping, tripping, and falling hazards
- Burning, cutting, and pinching hazards
- Improper lifting and handling techniques
- Unobservant and inattentive employees
- Improper office layout and arrangement
- Dangerous electrical wiring
- Exposure to toxic substances
- Horseplay

REMEMBER: *The office building is not a sterile working environment; common workplace hazards can be dangerous when you ignore them.*

1.2 Refer to other chapters in this manual, such as Electrical Safety, General Safety, Fire Safety, and others for more information on workplace safety. Always use common sense when safety is a concern.

2.0 GOOD HOUSEKEEPING PRACTICES

2.1 Many office accidents are caused by poor housekeeping practices. By keeping the office floor both neat and clean, you can eliminate most slipping, tripping, and falling hazards. Other good housekeeping practices include the following:

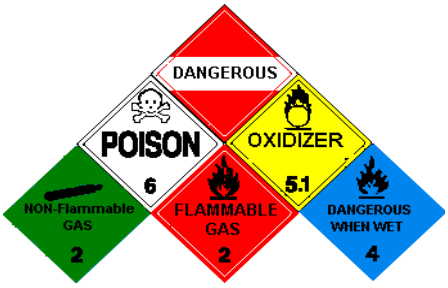
- Office lighting should be adequate and available. Replace burned out light bulbs, and have additional lighting installed, as necessary.
- Electrical cords and phone cords should not cross walkways or otherwise pose a tripping hazard. If you cannot move a cord, then have a new outlet installed or secure the cord to the floor with cord covering strips. Do not tape cords down as a long-term solution or run them underneath carpet.
- Report or repair tripping hazards such as defective tiles, boards, or carpet immediately.
- Clean spills and pick up fallen debris immediately. Even a loose pencil or paper clip could cause a serious falling injury.
- Keep office equipment, facilities, and machines in good condition.
- Store items in an approved storage space. Take care to not stack boxes too high or too tight and ensure that boxes are clearly labeled with their contents.

- Arrange office furnishings in a manner that provides unobstructed areas for movement.
- Keep stairs, steps, flooring, and carpeting well maintained.
- Glass doors should have some type of marking to keep people from walking through them.
- Clearly mark any difference in floor level that could cause an accident.
- Do not place wastebaskets or other objects in walkways.

3.0 HAZARDOUS OBJECTS AND MATERIALS

3.1 Hazardous chemicals and materials should not be stored in the general office. Hazardous chemicals and materials include, but are not limited to, the following:

- Carcinogens
- Combustibles
- Flammables
- Gas cylinders
- Irritants
- Oxidizers
- Reactives



4.0 PREVENTING CUTS AND PUNCTURES

4.1 Cuts and punctures happen when people use everyday office supplies without exercising care. Follow these guidelines to help reduce the chance for cuts and punctures:

- When sealing envelopes, use a liquid dispenser, not your tongue.
- Be careful when using kitchen knives, scissors, staplers, letter openers, paper cutters, and box openers. Any of these items could cause a painful injury.
- Avoid picking up broken glass with your bare hands.
- Wear gloves and use a broom and a dustpan.
- Place used blades or broken glass in a rigid container, such as a box, before disposing in a wastebasket.

5.0 PREVENTING MACHINE ACCIDENTS

5.1 Only use machines that you know how to operate. Never attempt to operate an unfamiliar machine without reading the machine instructions or receiving directions from a qualified employee. In addition, follow these guidelines to ensure machine safety:

- Secure machines that tend to move during operation.
- Do not place machines near the edge of a table or desk.
- Ensure that machines with moving parts are guarded to prevent accidents. Do not remove these guards.
- Unplug defective machines and have them repaired immediately.

- Do not use any machine that smokes, sparks, shocks, or appears defective in any way.
- Close hand-operated paper cutters after each use and activate the guard.
- Take care when working with copy machines. If you must open the machine for maintenance, repair, or troubleshooting, remember that some parts may be hot. Always follow the manufacturer's instructions for troubleshooting.
- Unplug paper shredders before conducting maintenance, repair, or troubleshooting.

5.2 Some items can be very dangerous when worn around machinery with moving parts. Avoid wearing the following items around machines within unguarded moving parts.

- Loose belts
- Jewelry
- Long, loose hair
- Long, loose sleeves or pants
- Scarves
- Ties

6.0 PREVENTING SLIPS, TRIPS, AND FALLS

Same level slips, trips, and falls are occupational hazards that can be found in almost every type of work setting. Preventing slips, trips, and falls requires a combination of hazard identification and correction, as well as personal responsibility. Common injuries from slips, trips, and falls include sprains, strains, bruises, contusions, fractures, abrasions, and lacerations with the injuries occurring at the knee, ankle, foot, wrist, elbow, back, shoulder, and head. As outlined in the General Safety chapter of this manual, the easiest way to avoid slips, trips, and falls is to pay attention to your surroundings and to avoid running or rushing.

6.1 Slips occur when there is too little friction or traction between your feet and the walking surface. The most common causes of slips are wet surfaces, ice or other weather hazards, spills, and poor tread on footwear. Preventive measures include:

- Shorten your stride, walk with feet pointed out slightly, and make wider turns on wet surface.
- Clean spills up immediately. If you are unfamiliar with the contents of the spill, contact EHS at ext. 5555.
- Weather hazards:
  - Walk slowly so you can react to traction changes.
  - Wear slip-resistant shoes or boots and dry off shoes as soon as practical after entering a building (wet shoes on dry floors are as dangerous as dry shoes on wet floors).
- Wear sunglasses on sunny days so you can see slippery areas more easily.
- Poor tread on footwear, or generally poor traction:

- Wear slip-resistant footwear, apply abrasive strips to smooth walking surfaces, and post warnings.

6.2 Trips commonly occur when your foot strikes an object, and your momentum throws you off balance. To minimize the potential for this type of injury:

- When carrying packages do not allow them to obstruct your view.
- If glasses fog due to atmospheric changes, clear them immediately.
- Use only proven walkways.
- Close desk and file drawers when not in use.
- Report burned out or missing lights.
- Be aware of elevator threshold positions.
- Report any uneven or broken pavement, sidewalks, or handrails to EHS.
- Text and email can wait. Put your phone in your pocket while on the move.
- Clearly mark any difference in floor level that could cause an accident.

6.3 Falls usually take place from one level to another. Preventive measures include:

- Arrange office furnishings in a manner that provides unobstructed areas of movement.
- Keep stairs, steps, flooring, and carpeting well maintained.
- **NEVER** stand on a chair to reach a high object. Always use a ladder.
- When using ladders, select the proper type and size, and use it properly
- Walk up and down stairs and never jump from the last step.
- Use handrails.
- Use the elevator while carrying objects requiring both hands.
- Report any unsafe conditions to EHS.

There is one more precautionary tip that applies in all these cases, and that is to **PAY ATTENTION TO WHAT YOU ARE DOING**. This is among the most common causes of injuries and is the easiest to correct. The best walking surfaces and ideal weather conditions won't be of any help if you are not watching where you are going. **Refrain from texting or talking on your cell phone while on the move**.

4.0 PREVENTING STRESS

4.1 To reduce stress and prevent fatigue, it is important to take short breaks throughout the day. If possible, change tasks at least once every two hours. Stretch your arms, neck, and legs often if you do the same type of work for long periods of time. Tip for healthy eyes use the 20-20-20 rule. Every 20 minutes look away from your monitor, and stare at something 20 feet away for 20 seconds. For a quick pick-me-up, breathe deeply several times by inhaling through your nose and exhaling through your mouth. In addition, always try to eat your lunch somewhere other than your desk.

4.2 Other examples of stress-relieving exercises that can be done at your desk

include the following:

- Head and Neck Stretch: Slowly turn your head to the left and hold it for three seconds. Slowly turn your head to the right and hold it for three seconds. Drop your chin gently towards your chest and then tilt it back as far as you can. Repeat these steps five to ten times.
- Shoulder Roll: Roll your shoulders forward and then backward using a circular motion. Repeat in each direction five to ten times.
- Upper Back Stretch: Grasp one arm below the elbow and pull gently towards the other shoulder. Hold this position for five seconds and then repeat with the other arm.
- Wrist Wave: With your arms extended in front of you, raise and lower your hands several times.
- Finger Stretch: Make fists with your hands and hold tight for one second, then spread your fingers wide for five seconds.

5.0 LIFTING

Use proper lifting techniques to avoid injury when performing a lift. In general, employees should seek assistance when lifting objects that weigh 50 pounds or more. Use your good judgment to determine if you need assistance, a dolly, back support belt, or other tool to safely lift an object.

5.1 The back supports the weight of the entire upper body. When you lift objects or move heavy loads, your back must support even more weight. If you exceed your body's natural limits, your back cannot support both your body and the extra load. The excess, unsupported pressure is transferred to the lower back, where injury is imminent. By using the muscles in your arms and legs and exercising proper lifting techniques, you can move loads safely and protect your back from possible injury.

5.2 Follow these guidelines to help avoid back injuries:

- Avoid moving objects manually. Plan jobs and arrange work areas so that heavy items may be moved mechanically.
- Keep in good physical condition. If you are not accustomed to lifting and vigorous exercise, do not attempt difficult lifting tasks.
- Think before you act. Use proper lifting techniques and lifting aides such as back support belts, dollies, etc. Get help if you need it.
- When lifting heavy objects, follow these steps and refer to the illustration below:
  - Test the object's weight before handling it. If it seems too heavy or bulky, get assistance.
  - Face the object, place one foot behind the object and one foot along its side.

- Bend at the knees.
- Get a firm, balanced grip on the object. Use the palms of your hands and use gloves if necessary.
- Keep the object as close to your body as possible (pull the load in close before lifting).
- Lift by straightening your legs and slightly unbending your back.
- If the object is too heavy or bulky, get help.
- Do not twist the back or bend sideways.
- Do not perform awkward lifts.
- Do not lift objects at arm's length.
- When moving objects, proceed with caution through doors and around corners.

6.0 EQUIPMENT AND FURNITURE SAFETY

6.1 As mentioned earlier, common office machines, such as the following, require special safety consideration: copiers, microwaves, adding machines, typewriters, and computers. If there is ever any question of how to properly use a piece of equipment or furniture, always refer to the manufacturer's guidelines for further instruction. If you notice a piece of equipment is damaged or working improperly, unplug the machine, do not use the damaged equipment, and refer to manufacturer's guidelines. All equipment should only be repaired by a certified repair person.

- Other office equipment that requires safety consideration includes furniture such as file cabinets and shelves, desks, and chairs.

6.2 <u>File Cabinets and Shelves</u>

- Because file cabinets and shelves tend to support heavy loads, treat them with special care.
- Follow these safety guidelines for file cabinets:
  - Secure file cabinets that are not weighted at the bottom. Either attach them to the floor or to the wall.
  - Ensure that file cabinet drawers cannot easily be pulled clear of the cabinet.
  - Do not block ventilation grates with file cabinets.
  - Open only one drawer at a time to keep the cabinet from toppling.
  - Close drawers when they are not in use.
  - Do not place heavy objects on top of cabinets. Be aware that anything on top of a cabinet may fall off if a drawer is opened suddenly.
  - Close drawers slowly using the handle to avoid pinched fingers.
  - Keep the bottom drawer full. This will help stabilize the entire cabinet.
  - Remove drawers before attempting to move a file cabinet.
- In addition, follow these safety guidelines for office shelves:
  - Secure shelves by attaching them to the floor or wall.
  - Place heavy objects on the bottom shelves. This will keep the entire

structure more stable.
- Ensure that there is at least 18 inches between the top shelf items and the ceiling. This space will allow ceiling sprinklers (if present) to function properly if a fire occurs.
- Do not block ventilation grates with shelves.
- Never climb on shelves (even lower shelves). Use an approved ladder.

6.3 Desks

- **Follow** these safety guidelines for office desks:

  - Keep desks in good condition (e.g., free from sharp edges, nails, etc.).
  - Ensure that desks do not block exits or passageways.
  - Ensure that glass-top desks do not have sharp edges.
  - Ensure that desks with spring-loaded tables function properly. The table should not spring forth with enough force to cause an injury.
  - Do not climb on desks. Use an approved ladder.
  - Keep desk drawers closed when not in use.
  - Repair or report any desk damage that could be hazardous.

6.4 Chairs

- **Safety** guidelines for office chairs include the following:
  - Do not lean back in office chairs, particularly swivel chairs with rollers.
  - Do not climb on any office chair. Use an approved ladder.
  - Office desk chairs should have adjustable back supports and seat height. Make sure that your chair's back support position and seat height are comfortable.
  - Take care when sitting in a chair with rollers. Make sure it does not roll out from under you when you sit down.
  - Repair or report any chair damage that could be hazardous.
  - Do not roll chairs over electrical cords.
  - Chairs on casters should have five legs for stability.

6.5 Ladders and Stepstools

- **Always** use an approved ladder or stool to reach any item above your extended arm height. Never use a makeshift device, such as a chair, desktop, file cabinet, bookshelf, or box, as a substitute for a ladder.
- Follow these guidelines when using ladders:
  - Do not load a ladder above its intended weight capacity.
  - Place ladders on slip-free surfaces. Secure the ladder if a slip-free surface is not available.
  - Avoid placing ladders in walkways. Secure a ladder if its location could cause an accident.
  - Keep areas around ladders clean and free of debris.
  - Do not use a ladder in front of a door unless the door is locked and barricaded.

7.0 WORKSTATION ARRANGEMENT

7.1 With the extensive use of computers and other automated desk devices in the workplace, employees must take special care to ensure proper workstation arrangement. For the purpose of this manual, a workstation consists of the equipment and furniture associated with a typical desk job (e.g., desk, chair, and computer components).

7.2 Cumulative trauma disorders or repetitive stress injuries, such as carpal tunnel syndrome may result from the stress of repetitive motion. Therefore, it is very important to arrange your workstation properly and to take breaks frequently.

7.3 Ergonomic surveys/reviews of the workstation arrangement can be requested from EHS.

8.0 OPERATOR'S POSITION

8.1 Your seating position at work is important to your comfort and safety. To reduce the painful effects of repetitive motion, follow these guidelines when working with computers or typewriters:

- Always sit up straight. Make sure your chair is adjusted to provide adequate support to your back.
- Place your feet flat on the floor or on a footrest. Lower legs should be approximately vertical, and thighs should be approximately horizontal. The majority of your weight should be on the buttocks.
- Ensure that there is at least 1 inch of clearance between the top of your thighs and the bottom of the desk or table.
- Keep your wrists in a natural position. They should not rest on the edge of the desk.
- Keep the front edge of your chair approximately 4 inches behind your knees.

9.0 EQUIPMENT ARRANGEMENT

9.1 By properly arranging your equipment, you can also help reduce the harmful effects of repetitive motion. Follow these guidelines for arranging office equipment:

- Lighting: Lighting around computer workstations should illuminate the work area without obscuring the monitor or causing glare. Position computer screens, draperies, blinds, and pictures to reduce glare during work hours (e.g., place the monitor at a right angle to the window).
- Computer monitor images should be clear and well-defined. Adjust the

screen's brightness, contrast, and display size to meet your needs. If a screen flickers or jumps, have it repaired or replaced. Place the monitor away from your face. The center of the monitor should be approximately 15 to 25 degrees below your line of vision.

- Keyboards: Position computer keyboards so that the angle between the forearm and upper arm is between 80 and 120 degrees. Place the keyboard in an area that is accessible and comfortable.
- Wrist Support: Use wrist supports made of padded material. The support should allow you to type without bending your wrists.
- Document Holders: Keep documents at approximately the same height and distance from your face as the computer screen.
- Telephones: Neck tension is a common problem caused by holding the telephone between the head and neck. Use a headset or speakerphone if you use the telephone for extended periods of time.

9.2 Contact EHS if you have any questions regarding your workstation arrangement. If you develop pain that you believe arises from work you do at the office, contact your supervisor.

XX. PERSONAL PROTECTIVE EQUIPMENT

1.0 PERSONAL PROTECTIVE EQUIPMENT DEFINED

Contact EHS for questions or assistance with topics covered in this section at ext. 5555 or 361- 825-5555.

1.1 PPE includes all clothing and work accessories designed to protect employees from workplace hazards. Protective equipment should not replace engineering, administrative, or procedural controls for safety. It should be used in conjunction with these controls. Employees must wear protective equipment as required and when instructed by a supervisor.
IMPORTANT: *PPE that is used to prevent exposure or contamination should always be removed before coming in contact with other individuals or going in or near elevators, break rooms, classrooms, bathrooms, etc. Do not launder PPE at home.*

2.0 APPROPRIATE APPAREL

2.1 Dress in a manner that does not impair safety. Loose clothing, long hair, dangle jewelry, and sandals may be dangerous around moving equipment.

2.2 Always wear clothing that is appropriate for your job.

3.0 ARM AND HAND PROTECTION

3.1 Arms and hands are vulnerable to cuts, abrasions, temperature extremes, burns, bruises, electrical shock, chemical spills, and amputation. The following forms of hand protection are available for employees:

- Disposable exam gloves
- Rubber gloves
- Nitrile gloves
- Neoprene gloves
- Leather gloves
- Non-asbestos heat-resistant gloves
- Metal-mesh gloves for meat cutters
- Cotton gloves
- Electrical V-rated gloves and leather glove protectors

3.2 Always wear the appropriate hand and arm protection. For arm protection, wear a long-sleeved shirt, a laboratory coat, chemical-resistant sleeves, or gauntlet-length gloves.

3.3 Follow these guidelines to ensure arm and hand safety:

- Inspect and test new gloves for defects.
- Always wash your hands before and after using gloves.
- Do not wear loose fitting gloves near moving machinery; the gloves may become caught.
- Do not wear gloves with metal parts near electrical equipment.

IMPORTANT: *Gloves are easily contaminated. Avoid touching surfaces such as telephones, doorknobs, etc. when wearing gloves.*

4.0 BODY PROTECTION

4.1 Hazards that threaten the torso tend to threaten the entire body. A variety of protective clothing, including laboratory coats, long pants, rubber aprons, coveralls, and disposable body suits are available for specific work conditions.

- Rubber, neoprene, and plastic clothing protect employees from most acids and chemical splashes.
- Laboratory coats and coveralls protect employees and everyday clothing from contamination.
- Welding aprons provide protection from sparks.

4.2 Do not launder contaminated chemically, biologically, or radiologically protective clothing at home or in any facilities outside of the university.

5.0 EAR AND HEARING PROTECTION

5.1 If you work in a high noise area, wear hearing protection. Most hearing protection devices have an assigned rating that indicates the amount of protection provided. Depending on your level of exposure, you may choose from the following devices:

- Disposable earplugs
- Reusable earplugs
- Headband earplugs
- Sealed earmuffs

5.2 Earplugs may be better in hot, humid, or confined work areas. They may also be better for employees who wear other PPE, such as safety glasses or hats. Earmuffs, on the other hand, may be better for employees who move in and out of noisy areas, because the muffs are easier to remove. Before resorting to hearing protection, attempt to control noise levels through engineering or operational changes.

5.3 To avoid contamination, follow these guidelines when using earplugs:

- Wash your hands before inserting earplugs.
- Replace disposable earplugs after each use.
- Dispose of reusable earplugs after each use.

5.4 For more information, refer to Section XVI (Hearing Conservation).

6.0 EYE AND FACE PROTECTION

6.1 Employees must wear protection if hazards exist that could cause eye or face injury. Eye and face protection should be used in conjunction with equipment guards, engineering controls, and safe practices. Visitors to campus who are exposed to eye hazards shall be provided with protective eyewear, by the University on a temporary basis.
NOTE: *Safety glasses are required in laboratories. Chemical goggles must be worn when handling chemical materials.*

6.2 Always wear adequate eye and face protection when performing tasks such as grinding, buffing, welding, chipping, cutting, or pouring chemicals. Safety glasses with side shields provide protection against impact, but chemical safety goggles provide protection against impact, splashes, and hazardous atmospheres.

6.3 Guidance information regarding eye protection:

- If you wear prescription glasses, wear goggles or other safety protection over the glasses.
- Safety glasses with side-shields provide primary protection to eyes and are four times as resistant as prescription glasses to impacts.
- Goggles protect against impacts, sparks, dust, and irritating mist. Wear chemical splash goggles, not just safety glasses, when working with chemicals.
- A welding helmet protects from flash burn due to welding, soldering, or brazing, but does not provide primary eye protection; safety glasses or goggles should be worn with the helmet.
- A face shield is designed to protect the face from some splashes or projectiles but does not eliminate exposure to vapors. A face shield should be worn with goggles or safety glasses, when exposed to or handling caustics, acids, or cryogenic liquids.
- To reduce eye strain from glare and outdoor sun exposure use safety glasses with UV protection to minimize the ultraviolet light exposure.
- Safety eye wear or face wear shall meet the American National Standards Institute (ANSI) Z87 standard. Personal "street wear" which has the new Food and Drug Administration (FDA) approved impact-resistant lenses cannot be substituted for use with industrial type equipment. FDA impact resistant lenses do not meet the ANSI Z87 standards.
- To protect against radiant energy when welding, brazing, or cutting, the use of the welding type filter lenses shall conform to the following shade specifications:
  - Arc welding over 400 amps Shade 14
  - Arc welding 200-400 amps Shade 12

- Arc welding 75-200 amps Shade 10
- Arc welding 30-75 amps Shade 8
- Heavy gas welding and cutting Shade 8
- Arc welding up to, 30 amps Shade 6
- Medium gas welding and cutting Shade 6
- Light gas welding, cutting, and brazing Shade 5

- Full face shields, chemical splash goggles, or hoods with shields, as appropriate, shall be worn when exposed to or handling caustics, acids, or cryogenic liquids.

7.0 FOOT PROTECTION

7.1 To protect feet and legs from falling objects, moving machinery, sharp objects, hot materials, chemicals, or slippery surfaces, employees should wear closed-toed shoes, boots, foot-guards, leggings, or safety shoes as appropriate. Safety shoes are designed to protect people from the most common causes of foot injuries – impact, compression, and puncture. Special foot protection is also available for protection against static electricity, sparks, live electricity, corrosive materials, and slipping

NOTE: *Foot protection is particularly important in laboratory, agricu construction, and custodial work.*

IMPORTANT: *Do not wear sandals, crocs, or open-toed shoes in laboratories, shops, food prep, food serving, or other potentially hazardous areas.*

8.0 HEAD PROTECTION

8.1 <u>Accidents</u> that cause head injuries are difficult to anticipate or control. If hazards exist that could cause head injury, employees should try to eliminate the hazards, but they should also wear head protection.

8.2 <u>Safety hats</u> protect the head from impact, penetration, and electrical shock. Head protection is necessary if you work where there is a risk of injury from moving, falling, or flying objects or if you work near high-voltage equipment.

8.3 <u>Hard hats</u> should be water resistant, flame resistant, and adjustable. Wear one of the following hard hats as appropriate for your work situation:

- Class G - General service, limited voltage (2,200 Volts) protection
- Class E - Utility service, high-voltage (20,000 Volts) protection
- Class C - Special service, no voltage protection

8.4 <u>Follow these guidelines for head safety:</u>

- Check the shell and suspension of your headwear for damage before each

use. Look for cracks, dents, gouges, chalky appearance, and torn or broken suspension threads. Discard damaged hats or replace broken parts with replacements from the original manufacturer.

- Discard any hat that has been struck or dropped from a great height, even if there is no apparent damage.
- Do not wear a hard hat backwards, unless this is necessary to accommodate other protective equipment (e.g., welders face shield).
- Do not paint the plastic shell of a hard hat or alter it in any way.

9.0 RESPIRATORY PROTECTION PROGRAM

9.1 TAMU-CC uses engineering, administrative, and procedural controls to protect people from dangerous atmospheres, including harmful mists, smoke, vapors, and oxygen-deficient atmospheres. When these controls cannot provide adequate protection against harmful atmospheres, respiratory protection is necessary.

9.2 Personnel requiring respiratory protection will be enrolled in the TAMU-CC Occupational Health Program (OHP).

9.3 EHS refers to 29 CFR 1910.134 as a guide for Respiratory Protection.

9.4 <u>Usage requirements</u>

- People who use respiratory protection must be physically capable of using and wearing the equipment. A physician or other licensed health care professional must determine if an employee is healthy enough to use a respirator. In addition, all people required to wear respirators must be formally trained and instructed in proper equipment usage. This training should include instruction on common respiratory hazards and symptoms of exposure.
- Before wearing a respirator, employees must be fit tested to ensure their respiratory protective equipment is the proper size and fits appropriately. Fit testing must be done annually or more frequently based on substantial weight gain/loss or facial surgery. Fit testing is outsourced.
  NOTE: *Only use respirators that are approved by the National Institute for Occupational Safety and Health (NIOSH).*

9.5 <u>Selecting a respirator</u>

- EHS will help departments to select the respirator. When selecting a respirator, consider the following factors:
  - Type of hazards
  - Identity and concentration of the contaminant
  - Time constraints
  - Activity of the person wearing the respirator

- Degree of protection provided by each type of respirator

IMPORTANT: *Respirators are available in different sizes. Always fit test a respirator to select the correct size.*

9.6 Using respirators safely

- Your respirator is necessary to prevent the inhalation of particulates, gases, vapors, aerosols, or other contaminants. Be sure you have notified EHS of all hazardous chemicals or materials you will be working with to ensure you have been provided the best possible respiratory protection.
- It is important to remember the following:
  - Only use the respirator you were approved to wear and that has been properly fit tested.
  - You must be familiar with the respirator, its use and limitations, and how to properly maintain and care for your respirator.
  - You may not have facial hair that interferes with the seal of a tight-fitting respirator. If you were fit tested without facial hair or with a minimal amount of facial hair, you must not wear your respirator with additional hair growth.
- You should contact EHS to be fit tested again if you have facial or dental surgery, significant weight gain or loss, facial scarring, or anything else that might affect the fit and seal of your respirator.

9.7 Safety Tips

- Inspect respirator before and after each use to ensure that all parts are present or attached and are functioning properly.
- Rubber and plastic parts should be checked for signs of wear and tear (cracking, stiffness, etc.). If you identify any worn or weak parts, do not use the respirator.
- Perform a positive pressure and negative pressure seal check every time you put on the respirator.

NOTE: *To perform a positive pressure check, cover the exhalation valve of the respirator with the palm of your hand. Exhale gently for about 10 seconds to build up a slight pressure. If air leaks out, the respirator is not sealing properly and should be repositioned before entering the hazardous area.*

NOTE: *To perform a negative pressure check, cover the filter or cartridge openings of the respirator with the palms of your hands. Inhale gently and hold your breath for about 10 seconds. You should notice a slight suction. If the face piece does not collapse inward or you feel an air leak, the respirator is not sealing properly and should be repositioned before entering the hazardous area.*

9.8 Leave the respiratory protection area if any of the following occur:

- If your respirator is damaged.
- If your breathing becomes difficult.
- If you become dizzy.
- If you detect a respirator failure (smell something you did not notice

before, eyes begin to water, etc.).
- If you feel your seal has been broken (air getting in or out around your face piece).

IMPORTANT: *DO NOT REMOVE OR REPOSITION YOUR MASK UNTIL YOU HAVE LEFT THE HAZARD AREA.*

9.9 Storage, Cleaning, and Care

- Store respirator in a clean, cool area (away from dust, sunlight, extreme temperatures, moisture, and chemicals). A zip lock bag works well.
- Do not hang respirator by headband.
- The respirator should be cleaned regularly with respirator wipes or a detergent solution. All parts should air dry or be wiped dry with a lint free cloth.
- Clean and disinfect the respirator after each use and do not share.

XXI. RADIATION EMITTING DEVICES/LASER SAFETY

1.0 RADIOLOGICAL SAFETY AT TAMU-CC

Contact EHS at ext. 5555 or 361- 825-5555 for questions or information included in this section.

1.1 The EHS Department is responsible for administering the TAMU-CC radiological safety program. All departments or units that acquire or use sources of radiation (ionizing or non-ionizing) must comply with established TAMU-CC procedures.

1.2 The rules, responsibilities, and procedures which comprise the TAMU-CC radiation safety program also apply to those TAMUS personnel and operations authorized in a license or by registration issued to TAMU-CC and administered by TAMU-CC EHS.

1.3 Currently TAMU-CC does not have research programs requiring a license, only registrations.

1.4 For specifics refer to the following procedure manuals:

- Radiation Safety Program Manual
- Radiological Device Safety Manual
- Radionuclide Laboratory Procedures Manual
- Laser Safety Program Manual

2.0 MAGNETIC RESONANCE IMAGING

2.1 The information in this section pertains only to large magnets at TAMU-CC such as those used for magnetic resonance imaging.

2.2 Because the magnetic flux lines (or *pull*) from the main magnetic field can extend well beyond the actual magnet, the greatest hazard associated with large magnets is the *missile effect*. Ferromagnetic objects such as pens, scissors, screwdrivers, oxygen cylinders, and other metallic devices can be pulled into the magnet with enough force to cause a serious injury or accident. In addition, magnetic fields may also disrupt pacemakers or cause injury to individuals with surgically implanted metal pins or plates. ***IMPORTANT:*** *To protect bystanders and prevent the accidental introduction of ferromagnetic materials within the proximity of a magnet, establish a security zone around any large magnet.*

3.0 RADIOFREQUENCY (RF) RADIATION

3.1 Biological effects can result from exposure to energy.

3.2 Exposure to very high levels of RF radiation can be harmful due to the ability of RF energy to heat biological tissue rapidly.

XXII. SAFETY PROCEDURES FOR THE TRADES

1.0 GENERAL SAFETY RULES

1.1 General

- University employees or students shall not turn on, use, repair, or operate any machine, tool, vehicle, crane, electricity, gas, steam, air, acid, caustic or other dangerous material or equipment unless properly trained and authorized by a supervisor.
- Safety guards and devices furnished by the University or department shall be used.
- Approved PPE shall be worn when the exposure indicates the need for it, (e.g., head and ear protection, face and eye protection, respiratory equipment, fall harness, protective footwear, etc.). Refer to Section XX (Personal Protective Equipment) for more details.
- Only a tool, equipment, machinery, etc. that is properly maintained and
- adjusted may be used.
- University-provided tools may not be modified.
- Floors must be kept free of materials or substances that might constitute a tripping or slipping hazard. Employees responsible for any such material or substance spilled shall clean it up immediately.
- Horseplay, running, and practical jokes are prohibited because of the potential to cause injuries.

2.0 WASHING WITH SOLVENTS

2.1 Flammable liquids shall not be used to clean floors, workbenches, or other large surface areas.

3.0 PERSONAL PROTECTIVE EQUIPMENT – Refer to Section XX

3.1 Fall Protection – Refer to Section IX (Construction Safety) or refer to OSHA regulation 29 CFR 1926.501.

4.0 ELECTRICAL SAFETY – Refer to Section X

5.0 GROUNDS SAFETY

5.1 Pest Control

- With few exceptions, pesticides are potentially toxic to human beings and in some cases are flammable or explosive. All persons who mix, store, or apply pesticides should have full knowledge of the characteristics, effects, and precautions applicable to the material being used.
- University employees engaged in pesticide application work are to be licensed by the State of Texas or under the supervision of a licensed person. Products sold over the counter for immediate use from the

container may be used with care by any licensed personnel.

- Private contractors who apply pesticides on campus must also be licensed by the State of Texas.
- Pesticides and other chemicals used in pest control must be used in accordance with instructions on the container label.
- Do not spray liquid pesticides on electrical outlets or equipment, use dust or powder.
- Chemicals consisting of high vapor toxicity must not be applied in large quantities in unventilated areas.
- Surplus pesticides must be disposed of in a manner, which will not permit harm to people, animals, or the environment. Contact EHS for assistance with proper disposal procedures.
- Spray equipment tanks should be equipped with a leak-proof latch. The mixing system should be so designed that it eliminates spills during transfer and mixing.
- Do not apply pesticides in laboratories, office areas, or any occupied areas without authorization from the individual responsible for that area.
- Persons requesting pesticide application must contact/notify all personnel in the affected area.
- All necessary safety equipment must be available during application of pesticides, such as respirators, gloves, face shields or goggles, and aprons if the job warrants their use.
- FS has posted notification signs at the entrances of all buildings where pesticides will be applied each Friday. Every campus building is treated at least once a month, if not every Friday.
- Do not bring pesticide products from home.

5.2 Tree Trimming

- Wear chainsaw chaps, hard hat with attached face shield, gloves, and steel toed footwear.
- Employees engaged in pruning, trimming, removing, or clearing trees shall be required to consider all overhead and underground electrical power conductors with potentially fatal voltages.
- Ensure that a thorough inspection is made before working around any tree, to determine whether an electrical power conductor passes through the tree or passes within reaching distance of an employee working in the trees. If any of these conditions exist either directly or indirectly, an electrical hazard is considered to exist unless the hazard can be removed by de-energizing the lines or installing protective equipment.
- Only qualified line clearance tree trimmers familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.
- During all tree working operations aloft where an electrical hazard of more than 600 volts exists, there shall be a second employee qualified in line clearance tree trimming within normal voice communication.

- Do not climb in a tree to prune branches or perform other duties.

5.3 Excavation – Refer to Section IX (Construction Safety).

5.4 Power Mowers

- General Requirements
  - ANSI and the *Outdoor Power Equipment Institute (OPEI) – Walk-Behind Mowers and Ride-On Machines with Mowers – Safety Specifications*, covers reel and rotary walk-behind and reel and rotary ride-on power lawn mowers, ride-on power lawn tractors with mower attachments, ride-on power lawn and garden tractors with mower attachments, and lever steer ride-on mowers. These safety requirements help ensure uniform operator environments.
  - Refer to the ANSI/OPEI B175.3-2013 safety requirements for *Grass Trimmers and Brush cutters and Walk-Behind Powered Rotary Tillers and Hand Supported Cultivators*, respectively, to establish minimum manufacturer requirements to reduce the risk of injury associated with the use of these useful but often dangerous pieces of equipment.
  - Power mowers shall be maintained in safe operating condition in accordance with the owner's manual.
  - An indicator of blade rotation shall be provided on mowers that operate quietly.
  - The controls for stopping, starting, speed control, and attachment engagement shall be clearly identified by a durable label.
  - The mower blade shall be enclosed except on the bottom, and the enclosure shall extend a minimum of 1/8-inch below the lowest cutting point of the blade.
  - The discharge opening(s) shall be so placed or guarded that grass, or debris will not discharge directly into the operator zone. Do not chain up safety guards.
  - The word "CAUTION" OR "DANGER" shall be placed on the mower at or near the discharge opening.
  - The blade(s) shall stop rotating within seven seconds after either declutching or shutting off drive power.
  - Propane or gasoline mowers shall not be parked, stored, or repaired in any public use building, office, exit way, or location that would create a fire or life safety hazard.
  - The area to be cut should be examined for loose objects such as rocks, broken glass, nails, wire, string, etc. Serious injury can result from objects thrown by rotating blades.
  - The engine should be turned off when filling the gas tank. No smoking when filling. Avoid slopes that are too steep for machines, whether a push mower or riding mower.

5.5 Walk-Behind Mowers

- The mower handle shall be fastened to the mower to prevent

unintentional uncoupling during operation.

- A mower with a rope starter shall have a labeled, designated area for stabilizing the mower when starting the engine.
- A shutoff control device shall be provided to stop operation of the engine. This device shall require manual and intentional activation to restart the engine.

5.6 Riding Rotary Mowers

- A disconnect device shall be provided between the engine or power source and the blade(s).
- A means shall be provided to prevent starting of the engine when the wheel drive control is in the engaged position. Such means shall not be required on units equipped with dead-man controls.
- A slip-resistant surface or other means shall be provided to minimize the possibility of an operator's foot slipping off the foot support or platform.
- A brake pedal shall be provided. It shall be foot-actuated, and the direction of motion shall be forward or downward, or both, for stopping.
- Towed rotary mower attachments shall have no front opening in the blade enclosure.

5.7 Personal Safety – Trimmers and Edgers

- Wear safety glasses, goggles, or face shields which meet the ANSI Z87.1-2015 standard for high-impact resistance.
- Hearing protection should be worn. It should be properly fitted.
- Dress appropriately. Wear steel-toed shoes or boots or heavy leather footwear. Long sleeve shirts and long pants should be worn to help protect the skin from flying objects and the weather.
- Dress with reflective vest when working in locations exposed to vehicle traffic.
- Refuel trimmer before starting operation or after work breaks to reduce the possibility of fires from a hot motor. Fuel should only be stored in and dispensed from approved safety cans.
- Maintain a safe distance from all bystanders, especially children.
- Do not operate when tired, ill, or under the influence of alcohol, drugs, or medication.
- Do not swing the unit with such force that you are in danger of losing your balance.
- Never start or run the engine inside a closed room or building. Breathing exhaust fumes can kill.
- Keep handles free of oil and fuel.
- Do not use a weed trimmer to remove weeds/grass that have grown up in areas landscaped with rocky material.

5.8 Cutting Safety

- Inspect the area to be cut before each use. Wear gloves while removing

objects (rocks, broken glass, nails, wire, string, etc.) which can be thrown or become entangled in the semiautomatic head.

- Always keep the engine on the right-hand side of your body.
- Hold the unit firmly with both hands.
- Keep firm footing and balance. Do not over-reach.
- Keep the semi-automatic head below waist level.
- Do not raise the engine above your waist.
- Keep all parts of your body away from the semi-automatic head and muffler when engine is running.
- Use only for jobs explained in the manual.
- Cut at full throttle.
- Cut from your right to your left.
- Hold the weed trimmer as close to the ground as possible, to find a comfortable position before you even turn it on.
- Stop for a few minutes if you notice any kind of strain. The strain on your spine and arms will hurt for some days if you overdo it.

5.9 Passersby Safety

- Always try to walk away from the area where the trimmer or edger is being used.
- Where possible alert the operator of the trimmer so that he can stop or change position to prevent flying objects from striking you.
- Do not assume that the operator detects your presence…remember the equipment generates noise and therefore the operator will only know if you are there if he sees you.
- Do not face the trimmer even if you are wearing eye protection.

6.0 STORAGE AND HOUSEKEEPING

6.1 Housekeeping

- Safety starts with housekeeping; a clean, neat, and orderly work area is an important reflection of safe work habits and attitudes. Therefore, the following housekeeping rules will apply:
  - Places of employment and study shall be kept clean and orderly and in a sanitary condition. The floor of each area shall be maintained in a clean, and, so far as possible, a dry condition.
  - Material spilled on the floor which could cause an accident must be cleaned up immediately.
  - During work, debris shall be kept reasonably cleared from work areas, and waste shall be disposed of at intervals determined by the rate of the accumulation and the capacity of the container. Always use containers supplied for this purpose.

6.2 General Storage Rules

- Material, whenever stored, shall not create a hazard. It shall be limited

in height and shall be piled, stacked, or racked in a manner designed to prevent it from tipping, falling, collapsing, rolling, or spreading. Racks, bins, planks, blocks, sheets, shall be used where necessary to make the piles stable.

- Heavy or awkward items should always be stored near the bottom of shelves or cabinets. Heavy items that fall are a hazard to personnel.
- Do not allow equipment or storage to encroach within 36 inches of electrical panels. These panels contain the emergency switches for equipment and sometimes must be reached quickly.
- Have FS secure storage shelving, cabinets, and other items, which may accidentally tip over or are subject to movement.
- Storage of combustible equipment or materials shall not be allowed in boiler, mechanical, data, or electrical rooms.

6.3 Indoor Storage

- Storage shall not obstruct or adversely affect means of egress.
- State fire codes do not allow the storage of materials which may generate heat or emit smoke in corridors and halls. For this reason, it is University policy that there be no cabinets, refrigerators, storage materials, or extension of offices or laboratory facilities or functions into any corridor space of campus buildings or buildings leased by the University.
- Materials shall be stored, handled, and piled with due regard to their fire characteristics. Non-compatible materials, which may create a fire hazard, shall be segregated by a barrier having a fire resistance of at least one hour. Arrangement should permit convenient access for firefighting.
- Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.
- Stacked materials shall have minimum clearance of 18 inches between the top of the stack and the sprinkler system piping and deflectors.
- Material stack height shall not exceed 15 feet in non-sprinkled buildings.
- Stacks shall have a maximum of 36 inches clearance between the top of the stacks and joists, rafter, or roof trusses.
- The maximum weight of materials stored on building floors or load carrying platforms, except those built directly on the ground, shall not exceed their safe carrying capacity.
- In warehouse-type storage areas, the following rules apply:
  - Aisles and passageways for one-way forklift traffic shall be not less than the width of the widest vehicle or load plus three feet. For two-way forklift traffic the minimum width of aisles shall be not less than twice the width of the widest vehicles or loads plus three feet.
  - Lanes for aisles and passageways shall be painted on the floor, or a similar method employed to mark such areas.
  - Black, white, or a combination of these two shall be the basic colors of the designation of traffic and housekeeping markings.
- Combustible rubbish, oily rags, or waste material, when kept within the

building or adjacent to a building, shall be securely stored in metal or metal-lined receptacles equipped with tight fitting covers or in rooms or vaults constructed of non-combustible materials.
- Combustible storage shall not be allowed in attics or similar spaces.

6.4 Loose Material Storage
- Materials dumped against walls or partitions shall not be stored to a height that will endanger the stability of such walls and partitions.
- Employees shall not be permitted to work on or over loose material, until they have been instructed in the hazards involved and the precautions that must be taken to prevent employees being caught in caved-in material.

6.5 Outdoor Storage
- Combustible materials shall be piled with due regard to the stability of piles and in no cases higher than 20 feet.
- Driveways between and around combustible storage piles shall be at least 15 feet wide, and maintained free from accumulation of rubbish, equipment, or other materials.
- The entire storage site shall be kept free from accumulation of unnecessary combustible materials. Weeds and grass shall be kept down, and a regular procedure provided for the periodic cleanup of the entire area.
- Storage shall be in orderly and regular piles. Combustible material shall not be stored outdoors within 10 feet of a building or structure.
- Portable fire extinguishing equipment, suitable for the fire hazard involved, shall be provided at convenient, conspicuously accessible locations in the yard area.

7.0 SHOP SAFETY

The multitude of different types of machinery, equipment, and processes commonly found in shops, the hazards associated with shop work can result in extremely serious injuries including death. Because there can be so many hazards, shop work may require a variety of very special safety considerations. Whether you work in a metal shop, wood shop, automotive shop, glass shop, electrical shop, or any other type of shop the potential hazards for personal injury are numerous. This section highlights essential safety information for working in any TAMU-CC shop.

The following table highlights common shop hazards that may be encountered on campus but, by no means, is intended to be fully comprehensive. Refer to other sections in this manual, including General Safety, Electrical Safety, and Fire and Life Safety, for more detailed information on handling many shop situations or contact the EHS Department if you encounter other hazards that are not specifically identified in this manual.

Potential Hazards	Hazard Sources
Physical: - Compressed air/gases - Flying debris - Noise - Pinching, cutting, amputation - Slipping, tripping - UV radiation	- Oxygen, acetylene, air - Grinders, saws, welders - Any power tool - Vises, power tools, hand tools - Wood/metal chips, electrical cords, oil, etc. - Welding
Electrical: - Overload - Fire - Shock	- Too many cords per outlet - Frayed, damaged cords - Ungrounded tools, equipment
Fire: - Flammable chemicals - Sparks - Static sparks - Uncontrolled fire	- Gasoline, degreasers, paint thinners, etc. - Welders, grinders - Ungrounded tools or solvent containers - Lack of appropriate fire extinguishers or sprinkler system
Chemical: - Toxic liquids - Toxic fumes, gases, dusts	- Cleaning solvents, degreasers, etc. - Welding, motor exhaust, etc.

7.1 Shop Safety Rules

- Personnel shall not be permitted to operate any machinery until they have been instructed as to the hazards and the proper operation of such equipment and the use of protective devices.
- All containers must be labeled with the contents.
- Aisles shall be of sufficient width to permit the unobstructed and safe passing of personnel, trucks, or material. Where practicable, lines shall be painted on the floor, or some similar method shall be employed to mark aisles.
- Ensure that there is adequate ventilation to prevent exposure from vapors of glues, lacquers, paints, and from dust and fumes.
- During working periods each working area, operation, or process shall be adequately lighted and harmful glare minimized.
- Tools, machines, devices, or other equipment that are hazardous because of defects or other conditions shall not be used until suitably repaired.
- Areas around machines should be kept clear of obstructions and slippery conditions. Spilled oil or grease shall be cleaned up immediately. Remove sawdust, wood chips, and metal chips regularly.
- Do not clean chips from the surface of machines with compressed air or with hands; a brush or hook should be used. When general cleaning of machines and equipment by compressed air is considered necessary, the outlet pressure should be reduced to not more than 10 pounds per square inch (psi) by means of a regulator or pressure reducing control nozzle designed for this purpose.

- Cleaning of one's clothes with compressed air is prohibited.
- When using portable electrical equipment around machine tools, keep electrical cords clear of moving parts.
- Double-insulated tools or those with three-wire cords are essential for safety.
- It is recommended that electrical cords pull down from an overhead pulley rather than lying on the floor. Use extension cords that are large enough for the load and distance.
- Do not place hand tools on machines. Keep them in their assigned location.
- Loose flowing or torn clothing, gloves, neckties, long sleeves, rings, or bracelets shall not be worn around machinery such as band and circular saws, drill presses, grinders, jointers and planers, lathes, and sanders. Snug-fitting clothing shall be worn.
- Goggles or face shields shall be worn when grinding or when there is danger of flying particles.
- Gloves are not to be worn around rotating machinery unless sharp or rough materials are being handled. If gloves are worn great care should be exercised to prevent their being caught in the machinery.
- Gear and belt guards must be in place before a machine is operated. Guards on machines are to be properly adjusted and in working order before starting the machine. Machine guards must be kept in position at all times unless removal is authorized for repairs or cleaning.
- Be sure all is clear before starting any machine.
- Unless conditions make it impractical, no employee should be permitted to operate electric or mechanical equipment or machines in a building or room when alone.
- Dull, badly set, improperly filed, or improperly tensioned saws shall be removed from service immediately as soon as they begin to cause the material to stick, jam, or kick back when it is fed to the saw at normal speed. A saw to which gum has adhered shall be cleaned immediately.
- A push stick made of a narrow strip of wood or similar material, with a notch in one end and shaped on the other end to provide a good hand grip, shall be used to push material through saws where there is possibility of the operator's fingers contacting blades. A jig or fixture shall be used when cutting or forming irregular pieces or oblique angles.
- Projecting keys, set screws, and other projections in revolving parts shall be made flush or as guarded as practicable by a substantial metal cover as practicable.
- Power saws shall be guarded underneath and behind the table to prevent possible personal contact. A mechanical or electrical power control shall be provided on each machine which will make it possible for the operator to cut off the power from the machine without leaving his position at the point of operation.
- Do not repair, oil, or clean machinery while it is in motion. Lubrication

while machinery is in motion shall be done by remote control lubricating system.

- Do not use electrical equipment or machines with frayed or otherwise deteriorated insulation. Electrically driven portable machinery as well as fixed electrical equipment shall have the frame grounded.
- Machines designed for a fixed location shall be securely anchored to prevent walking or moving.
- Foot protection is required where there is reasonable possibility of dropping heavy objects. Footwear which is defective or inappropriate to the extent that ordinary use creates the possibility of foot injury (open toed sandals or tennis shoes) shall not be worn in shop areas.
- Do not attempt to remove foreign objects from the eye or body; obtain proper medical treatment.
- Know where fire extinguishers are located and how to use them.
- Leave all tool and equipment guards in place and utilize all shielding on tools and equipment.
- Always use flame arrestors on cutting/welding torches and wear infrared safety goggle when appropriate.
- Report ALL injuries to your supervisor.

7.2 Band Saw Safety

- Adjustable guards should be kept as close over the point of operation as the work permits.
- When a band breaks, shut off the machine and stand clear until the machine has stopped.
- Never stop a machine by pushing material against the band.
- Cracked saw blades should not be used.
- Set the blade evenly with the proper amount of tension.
- Keep your hands on either side of the cut line. Never reach across the cut line for any reason.
- Do not stand to the right of the band saw.
- Be sure the radius of your cutting area is not too small for the saw blade.
- If you hear a rhythmic click, check the saw blade for cracks.

7.3 Drill Press Safety

- When drilling, tapping, or reaming material, see that it is securely fastened by discs or clamps so that it cannot spin. In no case should the operator rely on his hand to secure the material from turning.
- After tightening drill or chuck of drill press remove release key before starting the machine.
- Run the drill only at the correct speed. Forcing or feeding too fast may cause broken drills and result in serious injury.
- An operator should never attempt to loosen the chuck of a tapered shank drill unless the power is turned off.
- Use a center punch to score the material before drilling.

- Lower the spindle before removing a chuck.
- Never use a regular auger bit in a drill press.
- Frequently back the drill out of deep cuts to clean and cool the bit.
- When chucks are being removed from the spindle, the spindle should be lowered close to the table so the chuck will not fall.
- Never use the hands to remove work from the drill.

7.4 Circular Saw Safety

- Stand to one side. Do not stand directly in line with work being fed through saw.
- A ripsaw shall not be used for cross-cutting, nor shall a crosscut saw be used for ripping.
- See that saw blade is in good condition before using. This means sharp, unbroken, free from cracks, and the proper size.
- Never reach over the saw to obtain material.
- Never oil the saw or change the gauge while the machine is running.
- When shutting off power, never stop the saw quickly by thrusting a piece of wood against it. Be sure the saw has stopped before leaving the table.
- A push stick shall be used when the size or shape of the piece requires the hands to be near the blade of the saw.
- The appropriate guards must be kept in place at all times.
- The peripheral speed of circular saws shall not exceed 12,000 feet per minute unless the saw has been manufactured for a higher speed and is so marked.
- Do not raise the saw any higher than absolutely necessary.
- Fasten a clearance block to the fence when cutting off short pieces.
- Never attempt to clear away scraps with your fingers.
- Do not cut thin tubular materials with a circular saw.
- Ensure that the fence is not in the cut line of the saw.
- Take care when working with warped or twisted lumber.

7.5 Radial Arm Saw Safety

- Push the saw blade against the stop before turning on the power.
- Never place one piece of wood on top of another when using this saw. The top piece may kick over.
- This saw pulls itself into wooden materials. It may be necessary to hold the saw back to prevent it from choking.
- Never leave the saw hanging over the end of the arm.

7.6 Table Saw Safety

- Inspect the table saw for any damage or malfunction.
- Make sure the work area is clean and free from any obstructions.
- Wear safety glasses to protect your eyes from flying debris and consider ear protection to guard against noise exposure.

- Stand to the side of the saw while making cuts.
- Always use a push stick or similar device to guide material through the blade, especially when cutting narrow pieces.
- Ensure the blade is set to the correct height for the material being cut and avoid raising the blade too high.
- Keep hands at least six inches away from the blade while cutting.
- If you need to adjust your workpiece, turn off the saw first.
- If you hear unusual noises or the saw seems to be struggling, stop immediately and investigate the issue.

7.7 Jointer and Planer Safety

- Stand to one side. Do not stand directly in line with work being fed through the machine.
- When pieces shorter than 18 inches are machined, a push stick of suitable design shall be used.
- Do not take too heavy a cut as this will cause a kickback.
- Ensure that jointers are equipped with cylindrical cutting heads.
- Do not use single cutter knives in shaper heads.
- Ensure that knives are balanced and correctly mounted.
- Adjust cut depth before turning the machine on.
- Do not use the jointer for strips that are less than 1 inch wide.
- Examine wood for knots and other defects before placing it in the planer.
- Do not plane against the grain of the wood.
- Let go of the materials as the feeder rolls catch. Do not follow the work with your hands.
- Do not run boards that are more than 2 inches shorter than the distance between the in-feed and out-feed rolls.
- Use a push stick if a board stops with its end on the in-feed table.
- If a board sticks under the cutter head, turn off the machine to keep from burning the cutter knives.

7.8 Grinding Safety

- Abrasive-wheel machinery shall be equipped with protective guards, which shall be designed and constructed to effectively protect the user from flying fragments of a bursting wheel insofar as the operation will permit.
- Wear a face shield and safety glasses, or safety goggles when grinding.
- Grinding wheels shall be equipped with tool rests, which are set not more than 1/8-inch from the wheel.
- The side of an abrasive wheel shall not be used for grinding unless it is specifically designed for that purpose.
- Stand to one side when starting up a machine and do not exert great pressure on the wheel until it is at full speed. Faulty wheels usually break at the start of an operation
- Report to your supervisor immediately any broken, cracked, or other

wheel defects.

- Mounting a new wheel should be done only by an experienced person.
- Never use a wheel that has been dropped, has received a heavy blow, or has gotten wet even though there is no apparent damage. The wheel may be weakened to a point where it may fly apart when used.
- An abrasive wheel shall not be operated at a speed in excess of that recommended by the manufacturer of the wheel.
- Ensure that no combustible or flammable materials are nearby that could be ignited by sparks from the grinder wheel.
- Ensure that a guard covers at least 270 degrees of the grinding wheel on bench-mounted machines.
- Use a vise-grip plier or clamp to hold small pieces. Slowly move work pieces across the grinding surface of the wheel in a uniform manner. This will keep the wheel sound.
- Do not grind non-ferrous materials.
- Periodically check grinder wheels for soundness. Suspend the wheel on a string and tap it. If the wheel rings, it is probably sound.
- Replace a wheel that is badly worn or cracked.
- Before using a new wheel, let it a run a few seconds at full speed to make sure it is balanced.

7.9 Lathe Safety

- A chuck or faceplate should never be put on a lathe by power operation.
- Make sure that all gear and belt guards are in place.
- Keep hands off chuck rim when lathe is in motion.
- Do not attempt to adjust a tool while the lathe is running.
- Never apply a wrench to revolving work or parts.
- Always use a brush to remove chips – never the hands.
- After adjusting the chuck remove the chuck wrench immediately.
- Follow these safety guidelines when working with wood lathes:
  - Examine wood for knots and other defects before placing it in the lathe. Use caution when working with wood that has knots.
  - Ensure that glued materials are set before placing them in the lathe.
  - Before turning the lathe on, slowly turn rough materials a few times to ensure they will clear the tool rest.
  - Keep hands off the chuck rim when the lathe is moving.
  - Hold all wood cutting tools firmly with two hands.
  - Start all jobs at the lowest speed. Ensure that materials are in a cylindrical form before advancing to higher speeds. Never turn large diameter materials at a high speed.
  - Firmly screw faceplate work to the faceplate. Take care to avoid cutting too deep and hitting the screws.
  - Do not cut too deep or scrape too long.
  - Remove the "T" rest when sanding or polishing.
- Follow these safety guidelines when working with metal lathes:

- Make sure that all gear and belt guards are in place.
- Never leave a chuck wrench in a chuck.
- Keep your hands off chuck rims when a lathe is in operation.
- Do not attempt to screw the chuck onto the lathe spindle with the power on, as it may get cross-threaded and cause injury. Stop the machine, place a board under the chuck, and then screw on by hand.
- Steady rests should be properly adjusted to conform to the material being worked on.
- When filing work in a lathe, always face the head stock and chuck.
- See that tailstock, tool holder, and work are properly clamped before turning on power.
- Never attempt to adjust a tool while the lathe is running.
- Never apply a wrench to revolving work or parts.
- Always use a brush to remove chips, never your hands.
- When possible, use pipe sleeves to cover work protruding from the end of the lathe.
- Before removing your work from the lathe, remove the tool bit.

7.10 Sander Safety

- Belt sanders shall have both pulleys, and the unused run of the sanding belt enclosed. Rim guards will be acceptable for pulleys with smooth disc wheels provided that on-running nip points are guarded. Guards may be hinged to permit sanding on the pulley.
- Disc sanders shall have the periphery and back of revolving disc guarded, and the space between revolving disc and edge of table shall not be greater than ¼- inch.
- Do not push the work against the sander surface with excessive force as this may cause it to be thrown. Always wear eye protection.
- Ensure that sanding belts are not too tight or too loose. Never operate a sanding disk if the paper is too loose.
- Use the correct grade of abrasive material.
- Ensure that the distance between a circular sander and the edge of the table is not greater than ¼- inch.
- Do not push materials against sanders with excessive force.
- Sand only on the down stroke side of a disk sander.
- Do not hold small pieces by hand. Use a jig for pieces that are difficult to hold securely.

7.11 Kiln Safety Procedure

- Metal pouring is a particularly hazardous operation due to the possible presence of impurities in the molds, ladles, pouring troughs, or the metal

itself, which could cause "spluttering."

- Ceramic kiln brick and other ceramic objects hold heat for a long time without visual effect. Always wear gloves when handling them.
- Individuals operating metal melting furnaces or kilns must be provided with, and are required to wear, approved eye protection, face shields, protective gloves, and aprons. Bare flesh should not be exposed during the pouring or removal of heated items.
- The appropriate class fire extinguisher shall be immediately available in the kiln area in the event of fire.

7.12 Pneumatic Fastening Tool Safety

Pneumatic tools are powered by compressed air. The main danger associated with pneumatic fastening tools is injury from one of the tool's attachments or fasteners.

- Ensure that pneumatic tools which shoot nails, rivets, or staples are equipped with a device that keeps fasteners from ejecting unless the muzzle is pressed against a firm surface.
- Never point a tool at items you do not want to fasten.
- Keep your finger off the trigger until you are ready to begin work. Most pneumatic tools have a *hair-trigger* that requires little pressure to activate the gun.
- Treat air hoses with the same care as an electrical cord.
- Do not drive fasteners into hard, brittle surfaces or areas where the fastener may pass through the material and protrude on the other side.

7.13 Planer Safety

- Examine wood for knots and other defects before placing it in the planer.
- Do not plane against the grain of the wood.
- Let go of the materials as the feeder rolls catch. Do not follow the work with your hands.
- Do not run boards that are more than 2 inches shorter than the distance between the in-feed and out-feed rolls.
- Use a push stick if a board stops with its end on the in-feed table. If a board sticks under the cutter head, turn off the machine to keep from burning the cutter knives.

7.14 Forging Machine Safety

- Once punchers, shears, and benders are activated, it is impossible to stop them until the end of a cycle. Use extreme care when working with these tools.
- Inspection and maintenance: All forge shop equipment must be maintained in a condition which will ensure continued safe operation.
- Hammers and presses: All hammers must be positioned or installed in such a manner that they remain on or are anchored to foundations

sufficient to support them according to applicable engineering standards.

- Hammers: Die keys and shims must be made from a grade of material that will not unduly crack or splinter.
- Presses: All manually operated valves and switches must be clearly identified and readily accessible.
- Power-driven hammers: Every steam or air hammer must have a safety cylinder head to act as a cushion if the rod should break or pull out of the ram.
- Gravity Hammers: Air-lift hammers must have a safety cylinder head.
- Forging and trimming presses: When dies are being changed or maintenance is being performed on the press, ensure the following:
  - The power to the press is locked out.
  - The flywheel is at rest.
  - The ram is blocked with a material of the appropriate strength.
- Upsetters: All upsetters must be installed so that they remain on their supporting foundations.

7.15 Welding, Cutting, Grinding, and any Process that Generates Heat

Welding and cutting are two forms of hot work that require special safety considerations. Unless they are done in a designated hot work area, welding and cutting are strictly prohibited without proper authorization. Refer to Hot Work Permitting Procedure through EHS.

- Before conducting welding or cutting operations, inspect your equipment for the following:
  - Welding leads must be completely insulated and in good condition.
  - Check all other cords for frays and damages.
  - Cutting tools must be leak-free and equipped with proper fittings, gauges, regulators, and flame arrest devices.
  - Oxygen and acetylene tanks must be secured in a safe place.
- In addition, follow these guidelines for most welding and cutting procedures:
  - Conduct welding and cutting operations in a designated hot work area free from flammable materials. When welding or cutting is necessary in an undesignated or hazardous area, request a hot work permit from EHS.
  - Periodically check welding and cutting areas for combustible atmospheres.
  - Take care to prevent sparks from starting a fire.
  - Remove unused gas cylinders from the welding and cutting area.
  - Keep hoses out of doorways and away from other people. A flattened hose can cause a flashback.
- Proper selection of PPE is very important when welding; make sure your welding helmet visor is dark enough to provide adequate protection. Wear fireproof apron and gloves. In addition, take care to protect other people from the hazards of welding. For example, use a welding curtain to protect other employees from ultraviolet (UV) radiation.

- There are three types of welders:
  - *AC welders*: These welders are used for standard welding procedures, AC welders are powered by an electrical cord
  - *DC welders*: These are portable welders that are commonly used in manholes. DC welders have their own power supply.
  - *Wire-feed welders*: These welders use inert gas for light metal work (e.g., stainless steel, aluminum, etc.).
- Common hazards associated with welding include the following:
  - Electrocution
  - Burns
  - UV radiation exposure
  - Oxygen depletion
  - Sparking
- In addition to the general guidelines for welding and cutting, follow these specific guidelines for safe welding operations:
  - Make sure the welding area has a non-reflective, noncombustible surface.
  - Ensure that adequate ventilation and exhaust are available.
  - Be aware of electrocution hazards, particularly in damp conditions.
  - Be sure that electrical cords are properly grounded. It is advisable for cords to pull down from an overhead pulley.

7.16 Cutting Guidelines

Gas welding and cutting tools are often powered by oxygen and acetylene (or other fuel) gas cylinders. These tanks require special safety precautions to prevent explosions and serious injuries. Follow the safety guidelines below and refer to Section XII.9 (Compressed Gas Cylinders).

- Ensure that oxygen/acetylene systems are equipped with flame arrestors attached to the regulators.
- Store compressed gas cylinders upright and secured.
- Keep cylinder fittings and hoses free from oil and grease.
- Repair or replace defective hoses by splicing. Do not use tape.
- Do not tamper or attempt to repair cylinders, valves, or regulators.
- Do not interchange regulators or pressure gauges with other gas cylinders.
- Carefully purge hoses and torches before connecting a cylinder.
- Set acetylene pressure at or below 15 psi. Always use the minimum acceptable flow rate.
- Never use a match to light a torch. Use an approved lighter.
- Welding and cutting are done on an ever-increasing variety of metals and metal coatings. Four primary hazards are associated with welding operations: ultraviolet and infrared light, oxides of nitrogen, ozone, and metal fumes.
- Before cutting or welding is permitted the area shall be inspected by the PAI responsible for authorizing cutting and welding operations. Cutting

or welding shall be permitted only in areas that are, or have been made, fire safe. Where objects to be welded or cut are not readily movable, all movable fire hazards in the vicinity shall be taken to a safe distance.

- Where objects to be welded or cut are not movable and where fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards and nearby personnel.
- Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use. It may be necessary to assign additional personnel to guard against fire while the actual welding is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists.
- No welding, cutting or other hot work shall be performed on used drums, barrels, tanks, or other containers until they have been cleaned so thoroughly as to make certain that there are no flammable materials present which, when subjected to heat, might produce flammable or toxic vapors.
- Goggles or other suitable eye protection shall be used during all gas welding or cutting operations. Eye protection shall be provided where needed for brazing operations.
- Welders should wear flame resistant clothing and gauntlet gloves.
- Flame resistant aprons may be desirable as protection against radiated heat and sparks. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All clothing should be free from oil or grease.
- Local exhaust systems providing a minimum air velocity of 100 linear feet per minute in the welding zone shall be used, except where not feasible. Mechanical dilution ventilation sufficient to prevent exposure to concentrations of airborne contaminates from exceeding mandatory limits of Title 29 CFR 1910.1000, Table 2; Permissible Exposure Limits (PEL) air contaminates.
- Respiratory protective equipment shall be used when ventilation is not feasible. If workplace monitoring records clearly demonstrate that exposure levels are not exceeded, neither mechanical ventilation nor respiratory protective equipment is required.
- Local exhaust ventilation shall be used when potentially hazardous materials are employed as base metals, flux, coating, plating, or filler metals. These include, but are not limited to, the following materials and are often associated with inert-gas metal-arc welding and laser or plasma cutting of stainless steel:
  - Beryllium Lead
  - Cadmium Mercury
  - Chromium Zinc
- Where the work permits, the welder shall be enclosed with non-combustible screens having a low reflective finish. Booths and screens shall permit circulation of air at floor level. Workers or other persons

adjacent to the welding areas shall be protected from the rays by non-combustible or flameproof screens or shields or shall be required to wear appropriate eye protection.

- When operations are suspended for any substantial period of time, such as during lunch or overnight, welding equipment shall be shut off.
- The frames of arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current.
- Arc welding and cutting cables shall be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress.
- Mixtures of combustible gases and air are very explosive and shall be carefully guarded against. No device or attachment facilitating or permitting mixture of air or oxygen with combustible gases prior to consumption, except at the burner or in a standard torch or blow pipe, shall be allowed unless approved for that purpose.
- The primary hazard associated with silver soldering is the inhalation of cadmium fumes. Silver solder generally contains 18% to 20% cadmium which is emitted as a fume when silver solder is heated. Silver soldering operations should always be conducted where local exhaust ventilation is available to remove the cadmium fumes, and possibly fluoride fumes, which may be emitted from the flux. Sometimes, if it is impractical or nearly impossible to provide exhaust ventilation, the worker should wear an approved respirator with a high efficiency particulate filter.

7.17 Hand Tool Safety

- Hand tools are non-powered tools. They include axes, wrenches, hammers, chisels, screw drivers, and other hand-operated mechanisms. Even though hand tool injuries tend to be less severe than power tool injuries, hand tool injuries are more common. Because people take everyday hand tools for granted, they forget to follow simple precautions for safety. The most common hand tool accidents are caused by the following:
  - Failure to use the right tool
  - Failure to use a tool correctly
  - Failure to keep edged tools sharp
  - Failure to replace or repair a defective tool
  - Failure to store tools safely

  IMPORTANT: *Use the right tool to complete a job safely, quickly, and efficiently.*
- Follow these guidelines for general hand tool safety:
  - Wear safety glasses whenever you hammer or cut, especially when working with surfaces that chip or splinter.
  - Do not use a screwdriver as a chisel.
  - Do not use a chisel as a screwdriver.
  - Do not use a knife as a screwdriver.

  - Never carry a screwdriver or chisel in your pocket. If you fall, the tool could cause a serious injury. Instead, use a tool belt holder or toolbox.
  - Replace loose, splintered, or cracked handles. Loose hammer, axe, or maul heads can fly off defective handles.
  - Use the proper wrench to tighten or loosen nuts.
  - When using a chisel, always chip or cut away from yourself. Use a soft-headed hammer or mallet to strike a wooden chisel handle. A metal hammer or mallet may cause the handle to split.
  - Do not use a wrench if the jaws are sprung.
  - Do not use impact tools, such as chisels, wedges, or drift pins, if their heads are mushroom shaped. The heads may shatter upon impact.
  - Direct saw blades, knives, and other tools away from aisle areas and other employees.
  - Keep knives and scissors sharp. Dull tools are more dangerous than sharp tools.
  - Iron or steel hand tools may cause sparks and be hazardous around flammable substances. Use spark-resistant tools made from brass, plastic, aluminum, or wood when working around flammable hazards.
- Improper tool storage is responsible for many shop accidents. Follow these guidelines to ensure proper tool storage:
  - Have a specific place for each tool.
  - Do not place unguarded cutting tools in a drawer. Many hand injuries are caused by rummaging through drawers that contain a jumbled assortment of sharp-edged tools.
  - Store knives or chisels in their scabbards.
  - Hang saws with the blades away from someone's reach.
  - Provide sturdy hooks to hang most tools on.
  - Rack heavy tools, such as axes and sledges, with the heavy end down.
- Hand tools shall be maintained in a safe condition free of worn or defective parts.
- Tools shall be restricted to the use for which they are intended and should be used only by employees.
- Tools having mushroomed heads, split or defective handles, worn parts, or other defects that impair their strength or render them unsafe for use shall be removed from service and shall not be reissued until the necessary repairs have been made.
- Goggles shall be worn by persons using hand tools when there is a possibility of flying chips or other materials.
- Listed below are some condition requirements for specific hand tools:
  - The head of a hammer shall be wedged securely and squarely on the handle and neither the head nor the handle shall be chipped or broken.
  - Files or rasps shall be equipped with a secure fitted, substantial handle.
  - Care shall be taken to select a screwdriver of the proper size to fit the screw. Screwdrivers with a split or splintered handle shall not be

used. The point shall be kept in proper shape with a file or grinding wheel, and the screwdriver shall not be used as a substitute punch, chisel, nail puller, etc.

- Only wrenches in good condition shall be used: a bent wrench, if straightened, has been weakened and shall not be used. Also watch for sprung jaws on adjustable wrenches. Always pull toward you, never push, since it is easier to brace against a sudden lunge forward should the tool snap or break.
- Pliers shall be kept free from grease and oil and the teeth or cutting edges shall be kept clean and sharp. The fulcrum pin, rivet, or bolt shall be snug but not tight.
- Only saws that are sharp and properly set shall be used. A crosscut saw shall be used for cutting across the grain; a ripsaw for cutting with the grain.
- Hacksaws should be adjusted in the frame, snug, and tight enough to prevent buckling. The number of teeth per inch should be selected for the work. Pressure should be on the down stroke only.
- Wrecking bars and crowbars shall be kept sharpened and free from burrs.
- Shovels shall be inspected by the worker before use to ensure that they have a strong, smooth handle and grip free from splinters, and that the blades are smooth and sharp.

7.18 Powered Tools

- Portable power tools shall be kept cleaned, oiled, and repaired. They shall be carefully inspected before use. The switches must operate properly, and the cords should be clean and free from defects. The plug shall be clean and sound.
- Portable powered tools capable of receiving guards and/or designed to accommodate guards shall be equipped with guards to prevent the operator from having any part of his body in the danger zone during the operating cycle.
- Electric powered portable tools with exposed conducting parts shall be grounded by an approved system of double insulation, or its equivalent. Where such an approved system is employed, the equipment shall be distinctly marked.
- Hand-held powered tools of a hazardous nature, such as circular saws having a blade diameter greater than two inches, chain saws, percussion tools, drills, topers, fasteners, drivers, grinders with wheels greater than two inches in diameter, disc sanders, belt sanders, reciprocating saws, saber scrolls, and jig saws with blade shanks greater than ¼-inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. Other than circular saws, chain saws, and percussion tools, these tools may have a lock-on control provided so that turnoff can be accomplished by a single motion of the same finger or

fingers that turn it on. All other less hazardous hand-held powered tools, such as routers, may be equipped with a positive "on-off" control.

- Portable circular saws having a blade diameter over two inches, shall be equipped with guards or hoods which will automatically adjust themselves to the work when the saw is in use, so that none of the teeth are exposed to contact above the work; and when withdrawn from the work, the guard shall completely cover the saw to at least the depth of the teeth. The saw should not be used without a shoe or guide.
- Pneumatic powered portable tools shall be equipped with an automatic air shut-off valve that stops the tool when the operator's hand is removed. Safety clips or retainers shall be installed on pneumatic tools to prevent tools from being accidentally expelled from the barrel; or other effective means to prevent accidents from this source shall be used.
- Abrasive wheels with a diameter over 2 inches shall be used only on machines provided with safety guards. The guard shall cover the spindle end, nut and flange projections. Guards on operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut, and other flange are exposed.
- Powder-actuated fastening tool muzzle ends shall have a protective shield or guard designed to confine any flying fragments or particles. The tool shall be so designed that it cannot be fired unless it is equipped with a protective shield or guard. A department shall not permit an employee to use a powder-actuated tool until he has received training as prescribed by the manufacturer.
- Power tools can be extremely dangerous if they are used improperly. Each year, thousands of people are injured or killed by power tool accidents. Common accidents associated with power tools include abrasions, cuts, lacerations, amputations, burns, electrocution, and broken bones. These accidents are often caused by the following:
  - Touching the cutting, drilling, or grinding components
  - Getting caught in moving parts
  - Suffering electrical shock due to improper grounding, equipment defects, or operator misuse
  - Being struck by particles that normally eject during operation
  - Touching hot tools or work pieces
  - Falling in the work area
  - Being struck by falling tools
- When working around power tools, you must wear PPE and avoid wearing loose clothing or jewelry that could catch in moving machinery. In additional to general shop guidelines, follow these guidelines for working with power tools:
  - Use the correct tool for the job. Do not use a tool or attachment for something it was not designed to do.
  - Select the correct bit, blade, cutter, or grinder wheel for the material at hand. This precaution will reduce the chance for an accident and improve the quality of your work.

- Keep all guards in place. Cover exposed belts, pulleys, gears, and shafts that could cause injury.
- Always operate tools at the correct speed for the job at hand. Working too slowly can cause an accident just as easily as working too fast.
- Watch your work when operating power tools. Stop working if something distracts you.
- Do not rely on strength to perform an operation. The correct tool, blade, and method should not require excessive strength. If undue force is necessary, you may be using the wrong tool or have a dull blade.
- Before clearing jams or blockages on power tools, disconnect from power source. Do not use your hand to clear jams or blockages, use an appropriate tool.
- Never reach over equipment while it is running.
- Never disable or tamper with safety releases or other automatic switches. When the chance for operator injury is great, use a push stick to move material through a machine.
- Disconnect power tools before performing maintenance or changing components.
- Keep a firm grip on portable power tools. These tools tend to "get away" from operators and can be difficult to control.
- Remove chuck keys or adjusting tools prior to operation.
- Keep bystanders away from moving machinery.
- Do not operate power tools when you are sick, fatigued, or taking strong medication.
- When possible, secure work pieces with a clamp or vise to free the hands and minimize the chance of injury. Use a jig for pieces that are unstable or do not lie flat.
- Inspect wiring and mechanisms before operating.
- All machinery repairs must be completed by a certified repair person.

7.19 Guards

- Moving machine parts must be safeguarded to protect operators from serious injury. Belts, gears, shafts, pulleys, fly wheels, chains, and other moving parts must be guarded if there is a chance they could injure an employee.
- Hazardous areas that must be guarded include the following:
  - Point of operation: Area where the machine either cuts, bends, molds, or forms the material.
  - Pinch/nip point: Area where moving machine parts can trap, pinch, or crush body parts (e.g., roller feeds, intermeshing gears, etc.).
  - Sharp edges
  - Stored potential energy
- There are three types of barrier guards that protect people from moving machinery. They consist of the following:
  - Fixed guards: A permanent machine part that completely encases

potential hazards. Fixed guards provide maximum operator protection.

- Interlocked guards: Are connected to a machine's power source. If the guard is opened or removed, the machine automatically disengages. Interlocking guards are often preferable because they provide adequate protection to the operator, but they also allow easy machine maintenance. This is ideal for problems such as jams.
- Adjustable guards: Are either manually adjusted or self-adjusting guards that change their position to allow materials to pass through the moving components of a power tool. These guards accommodate various types of materials, but they provide less protection to the operator.

IMPORTANT: *Guards must be in place. If a guard is removed to perform maintenance or repairs, follow LOTO procedures. Replace the guard after repairs are completed. Do not disable or move machine guards for any reason. If you notice that a guard is missing or damaged, contact your supervisor and have the guard replaced or repaired before beginning work.*
NOTE: *Hand-held power tools typically have less guarding in place than stationary power tools. Use extreme caution when working with hand-held power tools and always wear a face shield.*

8.0 MISCELLANEOUS OPERATIONS

8.1 Operating Procedures for Changing Ballasts

- Identify the power source, isolate it, lock it out, and verify the power is isolated at the ballast before performing work. Only qualified electrical workers are permitted to replace ballasts.
- Modern electronic ballasts can be handled directly, but older oil-filled ballasts (regardless of age or oil type) should only be handled while wearing gloves.
- Read the ballast label. Units manufactured after 1979 should state "No Polychlorinated Biphenyls (PCBs)" on their label. Those manufactured prior to 1979 may or may not contain PCBs.
- Collect non-PCB ballasts separately from all others, place directly into a sealable plastic bag, and return them to your shop to add to the non-PCB ballast waste drum.
- Collect PCB containing ballasts and all non-labeled ballasts into another sealable plastic bag and return them to your shop to add to the PCB ballast waste drum.
- If a leaking ballast is known or suspected to contain PCBs, safely depower the fixture as above. Wear gloves while touching any potentially contaminated components or surfaces. If any other surfaces or components have been contaminated by oil or soot, contact EHS or your supervisor to assess any clean-up requirements prior to completing the repair or replacement.
- Regardless of ballast type, always wash your hands with soap and water

when finished, and before eating, drinking, or smoking.

- When a container is full, contact EHS for assistance with disposal.

XXIII. VEHICLE OPERATIONS

Operators of University equipment and vehicles are considered representatives of the University and should extend every courtesy to both traffic and pedestrians. Employees specifically authorized and who possess a valid Texas driver's license with proper endorsement may operate University owned vehicles to conduct official business.

1.0 GENERAL INFORMATION

1.1 The following rules apply to the operation and storage of university vehicles:

- Drivers shall be familiar with and obey state motor vehicle laws that apply to them.
- A driver shall not permit unauthorized persons to drive, operate, or ride in or on a University vehicle.
- The driver and all passengers shall use a seat belt at all times.
- Employees shall not permit anyone to ride on the running boards, fenders, or any part of motorized equipment except on the seats or inside the body walls.
- Employees shall not ride on loose materials or equipment carried on trucks, nor shall they ride on trailers.
- Employees shall not jump on or off vehicles in motion.
- Drivers shall keep a sharp lookout for persons and users of non-motorized devices on campus and be prepared for an immediate stop.
- Parking, storing, or repairing gasoline-fueled vehicles, motorcycles, boat motors, mopeds, or other similar devices shall not be allowed in any dwelling unit, office, exit way, or location that would create a fire or life safety hazard.

1.2 The following rules apply to the condition of university vehicles:

- Windshields and windows shall be kept clear of anything that may obstruct the vision of the driver.
- Brakes shall be tested by the driver at the start of each day. The driver shall report all defects, and they shall be adjusted or repaired before the vehicle is put in operation.
- Lights and other signaling devices shall be inspected daily. If they are found defective, they shall be repaired before the vehicle is placed in operation. No vehicle shall be operated at night unless equipped with working headlights, taillights, turn signals, and other necessary safety devices as required by law.

1.3 The following rules apply to university vehicles when hauling items:

- Materials and equipment shall be loaded so they will not cause a hazard by shifting.
- Heavy equipment and materials shall be securely fastened.
- Red flags during the day and red lights at night shall be attached to equipment or material that extends more than four feet beyond the back of the vehicle. Red flags or approved clearance lights shall be attached to loads extending more than two feet beyond the front of the vehicle.

- Tools, materials, or equipment shall not be permitted to extend beyond the permanent fixtures provided in the sides of the truck.
- Trailers or equipment, while being towed, shall be securely coupled to the truck, and the towing ball and towing hitch shall be compatible. For example, a vehicle with a 1 – 7/8-inch ball shall not tow a trailer with a 2-inch connector. At a minimum safety chains shall be 3/8-inch galvanized and shackled or securely hooked to the towing vehicles bumper or to a towing coupler.
- Trucks shall not be operated with tailgate hanging or dangling.
- Vehicles will not be operated unless back-up signals are operating.

2.0 RECREATIONAL TRANSPORTATION AND SELF-BALANCING DEVICES

Recreational transportation and self-balancing devices encompass the following items: roller skates, rollerblades, bicycles, skateboards, longboards, and all other non-motorized transportation devices excluding disability-related (e.g., wheelchairs) or emergency response devices (refer to University Procedure 34.99.99.C0.01).

2.1 Users of non-motorized devices must yield to pedestrians when on or crossing a sidewalk or walking paths as pedestrians have the right of way.

2.2 The use of non-motorized devices is prohibited inside all university buildings, the Bay Side parking garage, along the north-south oriented walkway from the University Center through Lee Plaza to the end of the walkway at Corpus Christi Hall ("the spine"), and the covered sidewalks at the Center for the Arts and the University Services Center buildings. Students must dismount and carry their devices when in these areas.

2.3 Bicycles, skateboards, longboards, scooters, and any other non-motorized transportation devices may not be used or carried inside any building. Non-motorized transportation devices must be parked only in designated parking racks or within student residences.

2.4 The use of non-motorized transportation devices in an unsafe manner and/or trick riding is prohibited. This includes, but is not limited to, riding on stairs, walls, rails, benches, and other structures, as well as operating the device at an unsafe speed.

2.5 Operators of all non-motorized transportation devices do so at their own risk and liability. Helmets and other personal safety equipment are strongly recommended for those using non-motorized transportation devices on campus.

2.6 It is recommended that all non-motorized transportation devices be registered with UPD.

2.7 Failure to follow these requirements is cause for disciplinary actions.

2.8 Bicycle Safety

- Follow these safety precautions when riding a bicycle:
  - Always obey traffic laws.
  - Stop at stop signs.
  - Ride in the correct direction on one-way streets.
  - Stop at railroad tracks when the warning signals are operating.
  - When riding with other cyclists, ride single file in traffic.
  - When bike lanes are available, use them. If bike lanes are not available, stay as far right as possible on the street pavement. Watch for opening car doors, sewer gratings, debris, etc. Ride on sidewalks only when necessary.
  - Use hand signals when turning or changing lanes.
  - Wear a helmet that is approved by ANSI or the Snell Memorial Foundation (Head injuries account for 75% of all cycling fatalities).
  - If riding at night, make sure your bicycle has head and taillights, reflectors on the rear, front, spokes, and pedals. Wear bright, reflective clothing.
  - Do not take bicycles into TAMU-CC buildings; park safely in the designated bicycle parking areas located throughout the campus.

3.0 VEHICLE AND PEDESTRIAN SIDEWALK TRAFFIC

TAMU-CC has developed the following guidelines to protect the safety of pedestrians, prevent damage to campus walkways and other facilities, and promote the safe operation of motorized transportation devices on campus.

3.1 GENERAL

- TAMU-CC safety guidelines in this section apply to all university employees, state/federal agency tenants, contractors, vendors, visitors, volunteers, student employees, and/or students.
- Unauthorized vehicles will not be allowed on campus sidewalks. Authorization to use a vehicle on campus sidewalks must be obtained from UPD or the Director of FS. Offices that need to transport items to or from vehicles on a regular basis should purchase dollies or request FS to move the items.

3.2 SERVICE VEHICLES

These guidelines apply to university service vehicles (e.g., automobiles, vans, pick-up trucks, and heavy equipment) and university approved contractor vehicles that use the specified modes of transportation for official business. Any use other than official business is expressly prohibited.

- Measures will be taken to minimize traffic by service vehicles operating on campus sidewalks. The sidewalk is a pedestrian right of way. Service vehicles must yield to pedestrians when on or crossing a sidewalk. Service vehicles will not exceed the speed of normal pedestrian traffic while traveling on a sidewalk. Drivers of service vehicles should access buildings from designated exterior routes. Measures to minimize traffic by service vehicles may include other actions deemed necessary to promote sidewalk safety.
- Access by vendor vehicles (e.g., express pickup/delivery vehicles, food or

drink delivery vehicles, etc.) is restricted to streets, parking areas, and loading docks.

4.0 MOTOR POOL SAFETY

4.1 The following rules apply to the use and repair of vehicle batteries.

- Battery charging installations shall be located in areas designated for this purpose.
- When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray.
- Facilities for quick drenching of the eyes and body must be accessible within 10 seconds of the battery charging area in accordance with ANSI Z358.1-2004 standard.

4.2 When using jumper cables to start a second vehicle, follow these procedures to avoid either equipment damage or an explosion:

- It must be initially determined whether, both vehicles are negatively grounded, (the negative terminal is connected to the engine block or frame), or positively grounded (the positive terminal is connected to the engine block or frame).
- It must also be determined that both batteries have the same nominal voltage (6 or 12 volts).
- Do not mix these systems in any way as damage will occur.
- When both vehicles are negatively grounded (which most often is the case), connect the ends of one cable (usually red for positive) to the positive terminal of each battery. Then connect one end of the other cable (usually black for negative) to the negative terminal of the good battery and the other end of the cable to a piece of unpainted metal (look for a grounding prong) on the car being started. Do not make this final connection to the negative terminal of the weak battery. Disconnecting the batteries should be done by reversing this procedure.

4.3 The following rules apply to the fueling of vehicles and equipment:

- No internal combustion engine fuel tank shall be refilled with a flammable liquid while the motor is running.
- Filling shall be done in such a manner that likelihood of spillage is minimal. If a spill occurs:
  - Notify EHS of the spill and the approximate quantity. Every effort should be made to keep the spilled fuel from entering the storm water system.
  - The EHS Spill Response Team will arrive with a spill containment kit to contain and clean up a small spill (less than 5 gallons) or contain and request outside assistance for a large spill (over 5 gallons).
  - Fuel tank caps shall be replaced before starting the engine.
  - A gasoline pump shall be provided to service the fuel tanks of gasoline engine driven equipment. A good metal-to-metal contact (bonding) should be kept between the fuel supply tank or nozzle of supply hose and the fuel tank being filled.
  - Open lights, open flames, or sparking or arching equipment except

that which is an integral part of automotive equipment, shall not be used near fuel storage tanks or internal combustion engine equipment while being fueled with flammable liquids.

- Smoking shall not be permitted at or near the equipment being fueled. Post a conspicuous sign in each fueling area stating: "NO SMOKING "
- A dry chemical fire extinguisher with an ABC rating shall be in a location accessible to the fueling area.

4.4 The following apply to jacks and their use:

- The rated load shall be legibly and permanently marked on a prominent location on the jack by casting, stamping, or other suitable means.
- Jacks shall be designed so that their maximum safe extension cannot be exceeded.
- In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed between the cap and the load.
- Employees shall not enter the zone beneath a jack-supported load unless it has been effectively blocked or cribbed.
- Jacks requiring cleaning and lubrication, such as screw jacks, shall be properly cleaned and lubricated at regular intervals. The lubricating instructions of the manufacturer should be followed, and only recommended lubricants should be used.

4.5 The following rules apply to tire inflation:

- Tire inflation shall be accomplished by means of a clip-on chuck with a minimum 24-inch length hose to an in-line foot or hand valve, and gauge. A clip-on chuck and in-line regulator (factory preset at 40 pounds per square inch maximum) or a restraining device may be used as an equivalent.
- Tire inflation control valves shall automatically shut off the air flow when the valve is released by the operator or be of the preset regulator type.
- A tire restraining device, such as a cage, rack or other effective method shall be used while inflating tires mounted on split rims or having retaining rings.
  ***EXCEPTION**: While the wheel assembly is mounted on a vehicle, the tire may be inflated without a restraining device, provided the remote-control inflation equipment is used, and all persons stay out of the danger area.*

5.0 TRANSPORTING EMPLOYEES AND STUDENTS

5.1 Trucks, buses, and other vehicles used regularly for the transportation of employees and students shall be constructed or accommodated for that purpose and shall be equipped with adequate seats properly secured in place and shall be protected on sides and ends to a height of 46 inches to prevent falls from the vehicle.

5.2 Motor vehicles used to transport employees and students shall be kept in good repair; this includes lights, brakes, horn, mirrors, windshields, turn signals, and any other equipment affecting passenger safety.

5.3 The number of employees or students transported in vehicles covered by this section shall be limited to the manufacture's recommendation and shall never exceed a number which may endanger the safe handling of the vehicle or the safety of the passengers.

5.4 Every bus, conventional type or truck type, used to transport personnel that has an enclosed compartment capacity of seven or more shall have an emergency exit other than the normal means of entrance.

5.5 Fifteen (15) passenger vans may be used however, only nine occupants, including the driver, may ride in the van. Nothing may be loaded on top of the van, and all cargo should be loaded evenly. Cargo limit must meet safety requirements. It is preferred that a university employee drive the van.

6.0 UTILITY VEHICLE OPERATING PROCEDURES

6.1 Utility vehicles (utility carts and utility cart-type modes of transportation) powered by electric or internal combustion engines include but are not limited to:

- Standard Golf Cart – capable of carrying people only; two (2) passenger maximum.
- High Occupancy Golf Cart – capable of carrying people only; more than two (2) passengers.
- Personnel/Cargo Cart – capable of carrying people and cargo; cargo capacity up to 1,000 pounds.
- Light Utility Cart – capable of carrying people and cargo; cargo capacity 1,000 to 1,500 pounds.
- Heavy Utility Cart – capable of carrying people and cargo; cargo capacity 1,500 to 2,800 pounds.

6.2 University Procedure 34.01.01.C0.01 (Utility Cart Safety) provides guidelines for the use of utility vehicles and/or similar slow-moving vehicles (SMV) on the campus of TAMU-CC. The intent is to enable operators to avoid situations that may compromise their safety and avoid damaging the vehicle or other property, as well as to promote a safer environment for students, faculty, staff, and visitors.

6.3 STATEMENT OF PROCEDURE

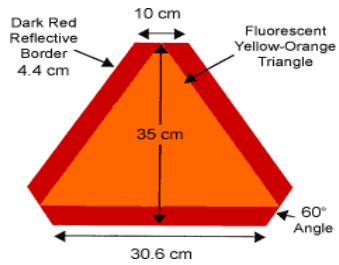
- All members of the University community are covered by the procedure (students, staff, faculty, and contractors/vendors). All operators of utility vehicles must meet the following criteria before operating a utility vehicle on property under the jurisdiction of TAMU-CC:
  - Possess a valid Texas driver's license.
  - Know and adhere to the State of Texas motor vehicle laws.
- All original equipment safety features must be kept in good working order. The following outlines procedures for the safe operation of utility vehicles:
  - Supervisors must monitor and document that all persons operating

utility vehicles have been instructed in the safe operation of utility vehicles and have read the utility vehicles operating procedures in the Cart Safety Manual.

- Operators may not use cell phones or other electronic devices while the vehicle is in motion.
- Utility vehicles are not to be overloaded (e.g., carrying more passengers than seating provided or overloading the utility vehicles recommended carrying or load capacity).
- SEAT BELTS MUST BE USED WHEN PROVIDED.
- No one is permitted to ride on the running boards, fenders, or any part of the utility vehicle except the seats.
- All body parts (feet, legs, and arms) shall be kept inside the utility vehicle while it is in motion, unless the operator is signaling for a turn.
- The MAXIMUM speed limit for utility vehicles off standard roadways is 10 miles per hour (mph) or 5 mph when pedestrians are present.
- Utility vehicles may only be operated in areas approved on the utility cart route map (copies must be posted inside each utility vehicle) but must adhere to authorized speed limits. All utility vehicles should travel in the right-hand lane when on roadways, unless turning left.
- Pedestrians have the right-of-way on campus. Utility vehicles must yield to pedestrians on sidewalks. SPEED IS TO BE REDUCED TO A MINIMUM (no greater than 5 mph) WHEN DRIVING ALONG OR CROSSING SIDEWALKS WHEN PEDESTRIANS ARE PRESENT SO AS TO AVOID ACCIDENTS.
- Utility vehicle operators are to be diligent and pay particular attention to the needs of disabled persons, as limitations in vision, hearing, or mobility may impair their ability to see, hear, or move out of the way of utility vehicles.
- Operators must park utility vehicles away from heavily traveled pedestrian areas.
- Operators are not to block the path, limit pedestrian access on walkways, nor park at entrances to buildings.
- Utility vehicle operators are responsible for ignition keys for the period of time in which they are using the vehicle. Keys shall not be left in utility vehicles.

- Exiting the utility vehicle
  - Turn the key to the "off" position
  - Engage brake
  - Remove the key
- Utility vehicles are to be used for university business only.
- No utility vehicle shall be operated between dusk and dawn without properly working headlights, taillights and turn signals.
- The operator must report any accidents to UPD and to the operator's supervisor. Supervisor's must submit incident reports in Origami.
- All utility vehicles and trailers towed by utility vehicles must have clearly displayed on the exterior of the tow vehicle and any trailer being towed the SMV reflective triangle.

- This is an example of the required SMV reflective triangle:



- University owned utility vehicles are to be maintained in accordance with manufacturer's specifications.
- Departments are responsible for keeping all original equipment and safety features in good working order.
- Modification or tampering with a utility vehicle governor is prohibited and is a violation of Federal law.
- Privately owned utility vehicles are prohibited from operating on university property.

6.4 The safe operation of utility vehicles is paramount. Failure to follow this procedure, render common practices or courtesies, or follow rules of the road for the State of Texas could result in citation, appropriate disciplinary action, and/or suspension of operator's utility vehicle driving privileges.

6.5 The Utility Cart Safety Procedure and Cart Safety Manual can be found at: https://www.tamucc.edu/finance-and-administration/facility-administration/ehs/safety1.php.

7.0 GENERAL VEHICLE SAFETY

7.1 Motor vehicle accidents are the leading cause of death and crippling injury in the United States. Traffic safety laws are important components of vehicle safety, but the most important aspect of vehicle safety is the driver. ***IMPORTANT:*** *All TAMU-CC employees who operate a motor vehicle for university business (whether a company vehicle, rental vehicle, or personal vehicle) must possess a valid driver's license for their vehicle's class.*

7.2 The UPD is responsible for regulating moving vehicles on university property. To ensure driving safety, follow these driving practices:

- Never drink and drive. Driving while under the influence of alcohol or drugs is strictly prohibited.
- Obey all traffic laws, signs, and signals.
- Respond to dangerous driving conditions as appropriate.
- Maintain a safe distance between your car and any car in front of you. Allow at least one car length for each 10 mph (e.g., three car lengths if you are driving 30 mph).
- Keep your eyes moving to avoid fatigue, especially if you plan on driving for a long period.
- Always use your turn signal to indicate your intended action.

- Leave yourself a “way out" by driving in the lane with a shoulder, driving in the middle lane of a multi-lane road, or following other vehicles at a safe distance.
- Safety belts must always be worn while in the vehicle.
- Do not text or use a cell phone while driving.

8.0 DEFENSIVE DRIVING

8.1 By taking defensive driving courses, employees can promote driving safety and lower their insurance rates. The principles of defensive driving include the following:

- **Knowledge:** Know your vehicle and know the law.
- **Control:** Always maintain control of your vehicle. To improve your control, perform routine vehicle maintenance and respond to road conditions as appropriate.
- **Attitude:** Be willing to obey all laws and be willing to yield to all other vehicles and pedestrians.
- **Reaction:** Respond to driving conditions appropriately. Do not impede your reaction time by driving when tired or under the influence of alcohol or drugs.
- **Observation:** Be aware of potential accidents and take preventive measures. Always try to anticipate the actions of other drivers.
- **Common Sense:** Do not risk your safety to save time. Do not respond to rude or obnoxious drivers by violating traffic laws.

9.0 BACKING VEHICLES

9.1 Backing a large vehicle can be very difficult. Try to avoid backing whenever possible. If you must back a vehicle, follow these guidelines:

- Get out of the vehicle and inspect the area you want to back into.
- If possible, have someone outside help guide your vehicle into position.
- If your vehicle does not automatically sound a horn when in reverse, sound the horn once before moving backwards and back slowly and check your mirrors often.

10.0 RAILROAD CROSSINGS

10.1 Compared with other types of collisions, train/motor vehicle crashes are 11 times more likely to result in a fatal injury. On the average, there are more train/motor vehicle fatalities each year than airplane crashes. Unfortunately, driver error is the principal cause of most train/motor vehicle accidents. Many drivers ignore the familiar tracks they cross each day, and some drivers disregard train warning signals and gates.

10.2 All public highway-rail grade crossings are marked with one or more of the following warning devices:

- **Advance Warning Signs:** Advance warning signs indicate that a railroad

crossing is ahead. These signs are positioned to allow enough room to stop before the train tracks.

- **Pavement Markings:** Pavement markings may be painted on the pavement in front of a crossing. Always stay behind the stop line when waiting for a passing train.
- **Crossbuck Signs:** Railroad crossbuck signs are found at most public crossings. Treat these signs as a yield sign. If there is more than one track, a sign below the crossbuck will indicate the number of tracks at the crossings.
- **Flashing Lights and Gates:** Flashing lights are commonly used with crossbucks and gates. Stop when the lights begin to flash, and the gate starts to lower across your lane. Do not attempt to cross the tracks until the gate is raised and the lights stop flashing.
  IMPORTANT: *You must stop at least 15 feet from a train track when (1) warning lights flash; (2) a crossing gate or flag person signals an approaching train; (3) a train is within 1500 feet of the crossing; or (4) an approaching train is plainly visible and in hazardous proximity.*

10.3 Follow these guidelines when you encounter a railroad crossing:

- Always expect a train.
- Always be aware of your surroundings.
- When approaching a crossing, LOOK, LISTEN, and LIVE.
- Be sure all tracks are clear before you proceed. Remember, due to their large size, it is easy to misjudge the speed and distance of an oncoming train. If you have any doubts, stop and wait for the train to pass.
- Watch for vehicles, such as school buses and hazardous material transport vehicles that must stop before train tracks.
- Never race a train to a crossing.
- Always stop for flashing lights, bells, and gates. Never drive around a gate (state law requires pedestrians to stop when a railroad crossing gate is down).
- Do not allow yourself to be boxed in on a track with cars in front and behind you.
- Never stop on train tracks. If your car stalls on train tracks, call 911 immediately. If a train approaches, abandon the car and run away from the tracks.
- When driving at night, look low to the ground for moving trains. One third of all train/motor vehicle collisions occur at night when cars run into moving trains.
- Watch out for a second oncoming train after the first train has passed.

Appendix A: Boating Safety

Appendix A-1: Semi-Annual Inspection Report

Fire Extinguishers		Safety Equipment	
>	Do you have all required quantities and types of fire extinguishers?	>	Lifelines or rails in good condition.
>	Have they been checked within the past year?	>	Stanchions or pulpit securely mounted.
>	Are serviceable units tagged by a licensed facility?	>	Hardware tight and sealed at deck.
>	Are units accessible?	>	Grab rails secure and free of corrosion or snags that may catch your hands.
>	Is at least one accessible from the helm or cockpit?	>	Non-skid surfaces free from accumulated dirt or excess wear.
>	Are you and your cred familiar with their operation?		
Fuel System		Ground Tackle	
>	Is the system properly grounded at the filter, tank, deck, pump, etc.?	>	At least two anchors on board.
>	Is the fuel tank free from rust or contamination?	>	Anchor and rode adequate for your boat and bottom conditions.
>	No leaks from tank, hose, or fittings.	>	Tackle properly secured.
>	Hoses USCG approved and free of cracking or stiffness with adequate slack to account for vibration.	>	Length of chain at anchor.
>	Is tank secured?	>	Thimble on rode and safety wired shackles.
>	Fuel shut-off valve on tank and at engine.	>	Chafing gear at chocks for extended stays or storm conditions.
>	Engine compartment and engine clean and free of oily rags or flammable materials.	>	Anchor stowed for quick accessibility.
>	Blower switch at remote location.		
>	Is your fuel system protected from siphoning?		
Stoves		Electrical System	
>	Labeled and designated for marine use.	>	Wiring approved for marine applications.
>	Properly ventilated to remove carbon-monoxide from cabin.	>	Is system neatly bundled and secured?
>	Retainers or rails for pots and pans while underway.	>	Protected against chafing and strain.
>	If built-in, properly insulated, and free from combustible materials, CNG and LPG (propane).	>	Adequate flex between bulkhead and engine connections.
>	Stored in separate compartment from vessel's interior and engine room.	>	Clear of exhaust system and bilge.

>	Tightly secured shut-off valve at tank.	>	System is protected by circuit breakers or fuses.
>	Proper labeling and cautions in place at tank location.	>	Grounds to Zincs if required.
>	Hoses, lines, and fittings of approved and inspected type.	>	Wire terminals and connections sealed to prevent corrosion.
>	Compartment is ventilated overboard and below level of tank base.		
Personal Flotation Devices (PFDs)		Bilge Pumps	
>	In addition to your pre-departure inspection of PFDs, check for wear or abrasion, weak or torn seams, secure straps, and buckles. Some types of PFDs are equipped with inflation devices; check to be sure cartridges are secure and charged.	>	Will pump(s) adequately remove water in emergency? Do you have a manual backup? Are bilges clean and free to circulate (clear limber holes)? Do you check bilges frequently and not rely on automatic pumps?
Corrosion Prevention		Through-hulls	
>	Through-hulls, props, shafts, bearings, rudder fittings, and exposed fastenings free of non-destructive corrosion.	>	Strainers, intakes, and exhaust or discharge fittings are free from restrictions such as barnacles, marine growth, or debris.
>	Zincs are adequate to provide protection.	>	Inspect sea valves for smooth operations.
>	Through-hulls are properly bonded.	>	Handles are attached to valves for quick closure.
>	Inspect the steering cables, engine control linkage and cables, engine mounts, and gear case for corrosion.	>	Hoses are in good condition and free from cracking.
>	These items are properly lubricated or painted to prevent undue corrosion.	>	Double hose-clamps below the waterline.
		>	Anti-siphon valve fitted to marine toilet.
		>	Through-hull plugs are near fittings or attached to hose in case of emergency.
Batteries			
>	Stored in non-corrosive, liquid tight, ventilated containers.		
>	Non-conductive covers are fitted over posts.		
>	Batteries are well secured.		

Appendix A-2: Predeparture Inspection Checklist

A Predeparture inspection must be carried out before each individual boat is launched.

- PFDs
  - Have at least one USCG-approved device per passenger and a minimum of two on board.
  - An additional throwable device is required if the vessel is more than 16 feet long.
  - Explain the location and use of all PFDs to passengers and crew that may be new to the vessel.
- Sound Producing Devices
  - Have a horn capable of producing a four-second blast audible for at least 1/2 mile on board.
  - If you use portable air horn, have a spare can of air or an alternate device.
  - Attach a whistle to each PFD.
- Lights and Shapes
  - Have all navigation lights as required for your boat.
  - Make sure all instrument lights are working.
  - If you intend to engage in a recreational boating activity that requires a day-shape, have the required shapes.
  - Have aboard a flashlight and spare batteries.
- Distress Signals
  - Make flares, day signals, etc., accessible and ensure they are stored in a dry location.
  - Always carry signals even if not required by the USCG.
  - Inform the crew and passengers of their location and safety rules for proper usage.
- Tools and Spares
  - Carry a basic toolbox with tools appropriate for your boat.
  - Carry a box of spares including fuel filter, light bulbs, head parts, through-hull plugs, etc.
- Fuel and Oil
  - Top off your fuel tanks.
  - If you cannot, have enough fuel to provide a reasonable margin of safety for your return.
  - Check the engine oil and coolant levels.
- Fire Extinguishers
  - Carry at least one fire extinguisher and make sure it is accessible. Make sure you have at least the number required by USCG rules.
  - Check to be sure mounts are secure and functional before departure.
  - Take the time to point out locations to passengers and crew.
- Ventilation
  - On any powered vessel or auxiliary powered sailboat, or vessels using LPG for cooking or heating, check that all interior spaces are well ventilated before departure.
  - If fuel smells are detected before ventilating, check after running the blowers for several minutes before starting.
  - If odor persists, shut down the engine and look for the source of the leak.
- Bilges
  - Check to be sure bilges are reasonably dry and that pumps are not running excessively.
  - Clean up any spilled oil or waste in bilges to prevent overboard discharge.

- Weather Forecast
  - Always check the weather forecast before boating.
  - Have a radio on board to receive weather updates.
- Battery Care
  - If you have a dual charging system, make sure the selector switch is in the proper position.
  - Make sure the power is on to the entire vessel.
  - Have aboard spare batteries for accessories such as your handheld radio, flashlight, portable navigational aid, etc.
  - If the batteries are rechargeable, make sure they are charged.
- Docking and Anchoring Tips
  - Have at least one anchor set up and secured onto your anchor line.
  - Carry two or three extra dock lines in case you encounter unusual conditions dockside.
  - Visually inspect the lines you use for chafe or wear.
  - Carry at least two fenders on-board for docking or towing if required.
- Rules and Documentation
  - Have the ship's papers, radio license, fishing permit, etc. on board.
  - Have the chart or charts for the area you intend to cruise in, regardless of your level of local knowledge.

Content courtesy of BoatSafe.com

Appendix A-3: Boating Plan

File this plan with your departmental supervisor. Do not file this plan with the USCG.

Contact Information

Name: _____

Telephone Number: _____

Description of Boat

Type: _____ Color: _____ Trim: _____

Registration Number: _____ Length: _____

Name: _____ Make: _____

Other Information: _____

Engine Type: _____ Horsepower (HP): _____

Number of Engines: _____ Fuel Capacity: _____

Survival Equipment (Circle as appropriate)

PFDs	Flares	Mirror	Smoke Signals	Flashlight
Food	Paddles	Water	Anchor	Raft/Dinghy
Emergency Position Indicating Radio Beacon			Others	

Radio: Circle – Yes / No Type: _____ Frequency: _____

Automobile License: _____ Type: _____

Trailer License: _____ Color: _____

Make of Auto: _____ Where Parked: _____

Passenger Information

No. of Persons Aboard: _____

Name	Age	Address/Phone Number
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Medical Information

Do you or any of the persons aboard have a medical problem? Circle – Yes / No

If yes, what? _____

Trip Information

Trip Expectations: Leave at: _____ am/pm

From: _____

Destination: _____

Expect to Return by: _____ am/pm and not later than _____ am/pm

Any other pertinent information: _____

_____

If not returned by _____ am/pm call the USCG, or the following authority:

_____

Telephone Numbers

USCG Command Duty Officer – (361) 937-1898

USCG Search and Rescue – (361) 289-8291

Other Authority: _____

Appendix B: Acronyms List

adloc	Administrative Location
ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ADA	Americans with Disabilities Act
AHJ	Authority Having Jurisdiction
AM	Amplitude Modulation
BMP	Best Management Practice
BSC	Biosafety Cabinet
BBP	Bloodborne Pathogen
CO2	Carbon Dioxide
CPR	Cardiopulmonary Resuscitation
CDC	Centers for Disease Control
CFR	Code of Federal Regulations
dB	Decibels
DNA	Deoxyribonucleic Acid
DSHS	Department of State Health Services
DOT	Department of Transportation
EH	Electrical Hazard
EHS	Environmental, Health, and Safety
EPA	Environmental Protection Agency
ECP	Exposure Control Plan
ext.	Extension
FS	Facilities Services
FM	Factory Mutual
FMCSA	Federal Motor Carrier Safety Administration
FDA	Food and Drug Administration
GFCI	Ground-Fault Circuit Interrupter
HAZCOM	Hazard Communication
HAZMAT	Hazardous Materials
HMR	Hazardous Materials Regulation
HVAC	Heating, Venting, and Air Conditioning
HP	Horsepower
ID	Identification
IBC	Institutional Biosafety Committee
IATA	International Air Transport Association
LPG	Liquified Petroleum Gas
LiPo	Lithium-Ion Polymer
LOTO	Lockout/Tagout
LEL	Lower Explosive Limit
mph	Miles Per Hour
MS4	Municipal Separate Storm Sewer System

NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic Atmospheric Administration
NOC	Network Operations Center
OHP	Occupational Health Program
OSHA	Occupational Safety and Health Administration
OPIM	Other Potentially Infectious Material
OPEI	Outdoor Power Equipment Institute
PAI	Permit Authorizing Individual
PEL	Permissible Exposure Limit
PRCS	Permit-Required Confined Space
PFD	Personal Flotation Device
PPE	Personal Protective Equipment
POC	Point of Contact
PCB	Polychlorinated Biphenyl
psi	Pounds per Square Inch
RF	Radiofrequency
SDS	Safety Data Sheet
SSP	Site Safety Plan
SMV	Slow Moving Vehicle
SWP3	Storm Water Pollution Prevention Plan
TAMU-CC	Texas A&M University - Corpus Christi
TAMUS	Texas A&M University System
TCEQ	Texas Commission on Environmental Quality
THCA	Texas Hazard Communication Act
TPWD	Texas Parks and Wildlife Department
UV	Ultraviolet
UL	Underwriter's Laboratories
US	United States
USC	United States Code
USCG	United States Coast Guard
UPD	University Police Department
VHF-FM	Very High Frequency - Frequency Modulation