

7. FIRE/LIFE SAFETY

Introduction

The following sections provide fire/life safety guidelines and procedures. This chapter covers the following topics:

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7.1 General Fire/Life Safety

Fire/life safety involves numerous safety issues including fire prevention, fire suppression, and emergency evacuation/response. Fire/life safety is everyone's responsibility.

IMPORTANT!:

Learn how to prevent fires and respond to fires — what you learn will be invaluable.

Texas State University - San Marcos is committed to providing a safe environment for building occupants and emergency response personnel. Texas State University - San Marcos uses nationally accepted codes as guidelines for inspections, testing, and procedures.

A. The Effects of a Fire

Most fires produce an immense amount of smoke that is highly toxic. In fact, smoke is responsible for more fire fatalities than flames. A smokey fire can have the following effect on humans:

- Within 30 seconds Disorientation
- Within 2 minutes Unconsciousness
- Within 3 minutes Death

Timing is critical during a fire. To ensure your safety, you must know how to prevent and respond to any fire emergency.

B. Fire Prevention

The greatest protection against property loss and injuries from fire is prevention. Follow these guidelines to promote fire/life safety:

- Minimize combustible storage.
- Store waste materials in suitable containers.
- Use flammable materials in well-ventilated areas. Use and store flammables away from ignition sources, such as cigarettes.
- Keep equipment in good working order. Have electrical wiring and appliances inspected regularly.
- Ensure that heating units are properly safeguarded.
- Do not hunt for gas leaks using an open flame. Use approved gas indicators.
- Report and repair all gas leaks immediately.
- Conduct hot work in well-ventilated areas.
- Test enclosed or confined spaces for flammable atmospheres.
- Use open flames carefully. Do not use open flames where flammable atmospheres may be present.

For more information on fire/life safety, refer to other chapters in this manual, including Emergency Preparedness, Electrical Safety, Laboratory Safety, Chemical Safety, Confined Space, etc.

7.2 Fire Response

If you see a fire or smoke, or if you smell smoke, complete the following steps:

1. Pull the fire pull station to begin evacuating the building.
2. If you are not in immediate danger, call 911 to report the fire. Provide the operator with the following information:
 - Building or area name
 - Approximate location of the fire
 - Size and type of fire
 - Your name
3. If you are formally trained in fire fighting techniques and are not in immediate danger, you may attempt to fight the fire. Do not place yourself or others in unnecessary danger.
4. Exit the building by following posted evacuation routes. Do not use elevators during an emergency.

During actual emergencies, building occupants must receive permission from the UPD, the Fire Department, or the RMSO before re-entering the building.

NOTE:

Evacuation plans and fire drills are essential for building occupants to respond correctly to a fire alarm. Refer to the Emergency Preparedness chapter for more information.

A. Arson

If you suspect arson, no matter how small the incident, contact the UPD or the RMSO. Do not alter the fire scene in any way, unless you are trying to extinguish a live fire. The UPD and Fire Department work together to investigate possible arson.

7.3 Combustible Storage

By storing excess combustible materials improperly, employees not only increase the potential for having a fire, they 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.
- Do not store combustible materials in hallways, stairwells, or mechanical rooms.
- When stacking combustible materials, leave at least 18 inches between the top of the stack and the ceiling.

A. Portable LPG

The Texas Railroad Commission regulates the sale and use of Liquefied Petroleum Gas (LPG), including butane and propane. These regulations govern several types of LPG-powered equipment including the following:

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

Exhaust fumes may contain carbon monoxide which can present a health hazard. Exhaust can also create smoke which may activate a smoke detector. Take special precautions to ensure adequate ventilation when using these machines indoors.

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. Refer to the Agriculture Safety chapter of this manual for more information on LPG.

7.4 Emergency Access and Egress

Emergency access and egress are critical during an emergency situation 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.

These definitions help clarify the concept of emergency access and egress:

■ **Emergency Access:**

Pertinent facilities and equipment remain available and unobstructed at all times to ensure effective fire detection, evacuation, suppression, and response.

■ **Emergency Egress:**

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.

IMPORTANT!

Each location within a building must have a clear means of egress to the outside.

The following sections offer safety guidelines and procedures for maintaining emergency access and egress.

A. 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 (i.e., 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.

IMPORTANT!

There must be at least 44 inches clear width of unobstructed, clutter-free space in all corridors, stairways, and exits.

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

B. Fire Lanes

A fire lane is an area designated for emergency personnel only. It allows them to gain access to building and/or fire protection systems. Although most fire lanes on campus are clearly marked, not all fire lanes are easy to distinguish. Texas State University - San Marcos has a program in place to clearly mark all fire lanes.

IMPORTANT!

Do not park in fire lanes or within 15 feet of fire hydrants and other fire equipment.

C. Fire Doors

A fire door serves as a barrier to limit the spread of fire and restrict the movement of smoke. Unless they are held open by the automatic systems, fire doors should remain closed at all times. Do not tamper with fire doors or block them with equipment, potted plants, furniture, etc.

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.

Always keep fire doors closed. If it is necessary to keep a fire door open, have a special closure installed. This closure will connect the fire door to the building's fire alarm system, and will automatically close the door if the alarm system activates.

IMPORTANT!

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, block 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 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 possible.

REMEMBER:

A closed door is the best way to protect your path to safety from the spread of smoke and fire.

7.5 Fire Detection and Notification

Texas State University - San Marcos uses several types of fire detection and notification systems including heat detectors, smoke detectors, pull stations, and horns and lights. The following sections discuss these components.

A. Heat and Smoke Detectors

Fire detectors at Texas State University - San Marcos are linked to the University Police Department. Once a building alarm system is activated, the Reporting System alerts the UPD Dispatcher who initiates emergency response.

There are two types of fire detection devices used on the Texas State University - San Marcos campus: heat detectors and smoke detectors. Please note the location of the detectors in your area and prevent damage and accidental activation.

■ Heat Detectors:

Heat detectors respond to the convected energy in hot smoke and fire gases (i.e., heat). Heat detectors are normally located in laboratories, mechanical rooms, storage areas, and areas that could produce high levels of dust, steam, or other airborne particles.

■ Smoke Detectors:

Smoke detectors respond to the solid and liquid aerosols produced by a fire (i.e., 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 residence halls.

If your work produces steam, dust, or an environment that could damage or activate a detector, contact Facilities – Tech / Services to review the installation and/or allow temporary disarming.

B. Alarm Systems: Pull Stations

Fire alarm manual pull stations are installed to manually activate a building's alarms in addition to the automatic fire sensing devices. When pulled manually, a pull station

activates the fire alarm system and notifies University personnel that an emergency exists. Pull stations are located near exit stairways and/or building exits.

If you smell smoke or if you see smoke or a fire, complete these steps:

- Pull a manual pull station to evacuate the area.
- If you are not in immediate danger, call 911.
- If you are trained in fire fighting and it is reasonably safe to do so, attempt to extinguish the fire.

C. Alarm Systems: Horns and Lights

Emergency horns/bells and lights are located throughout University buildings with fire alarm systems. They are typically found near emergency pull stations. Do not block emergency horns or lights. Report damaged or defective horns and lights to the Facilities.

7.6 Fire Suppression

Texas State University - San Marcos uses various types of fire suppression equipment including portable fire extinguishers, sprinklers, halon systems, carbon dioxide systems, and fire hose/standpipe systems. The following sections discuss each type of fire suppression equipment.

A. Fire Extinguishers

Fires are classified according to three basic categories. Each type of fire requires special treatment to control and extinguish it. Therefore, all fire extinguishers are clearly marked to indicate the fire classes for which they are designed.

Fires are classified as indicated below. Refer to the table on the following page for additional information.

■ Class A:

Fires involving ordinary combustibles such as wood, textiles, paper, rubber, cloth, and trash. The extinguishing agent for a Class A fire must be cool. Water and multi-purpose dry chemical fire extinguishers are ideal for use on these types of fires.





■ **Class B:**

Fires involving flammable or combustible liquids or gases such as solvents, gasoline, paint, lacquer, and oil. The extinguishing agent for a Class B fire must remove oxygen or stop the chemical reaction. Carbon dioxide, multi-purpose dry chemical and halon fire extinguishers are ideal for use on these types of fires.

■ **Class C:**

Fires involving energized electrical equipment or appliances. The extinguishing agent for a Class C fire must be a nonconducting agent. Carbon dioxide, multi-purpose dry chemical, and halon fire extinguishers are ideal for use on these types of fires. Never use a water fire extinguisher on a Class C fire.

Your Extinguisher Must Fit The Fire

Type of Fire		Type of Extinguisher
<p>Type A: Ordinary combustibles, such as wood, cloth, paper, rubber, and many plastics.</p>		
<p>Type B: Flammable liquids, such as gasoline, oil, grease, oil-based paints, tar, lacquer and flammable gas.</p>		
<p>Type C: Energized electrical equipment, including wiring, fuse boxes, circuit breakers, machinery and appliances.</p>		

A - Water
BC - Dry Chemical or Carbon Dioxide
ABC - Dry Chemical

INSPECTION, TESTING, & RECHARGING

Facilities – Tech Services inspects and tests fire extinguishers regularly, removing extinguishers that must be recharged. To move a fire extinguisher to a new location or report a missing or damaged fire extinguisher, call the Facilities – 5-2148.

USING FIRE EXTINGUISHERS

Most fire extinguishers provide operating instructions on their label; however, the time to learn about fire extinguishers is not during a fire. The sooner you know how to use a fire extinguisher, the better prepared you are.

NOTE:

Portable fire extinguishers are located throughout all University facilities. They are mounted in readily accessible locations such as hallways, near exit doors, and areas containing fire hazards. Make sure that fire extinguishers are accessible and securely mounted.

The Facilities – Tech Services provides fire extinguisher classes. When using a fire extinguisher to fight or control a fire, aim the spray at the base of the fire. Because most extinguishers only work for a short time, employ a sweeping motion and work quickly to control the fire.

IMPORTANT!

Do not attempt to fight a fire unless it is small and controllable. Use good judgment to determine your capability to fight a fire. When fighting a fire, always maintain an escape route. Never allow a fire to block your egress.

PORTABLE EXTINGUISHERS AND AUTOMOBILES

All state-owned vehicles in excess of 20 horsepower must contain a 2 ½ or 5 pound A-B-C class fire extinguisher

B. Sprinkler Systems

The purpose of water sprinkler systems is to help extinguish and minimize the spread of fires. Sprinklers are normally activated only by heat. To ensure that sprinklers are effective in the event of a fire, maintain at least 18 inches of clearance between any equipment or storage items and the ceiling. (Anything close to the ceiling can defeat the sprinkler system.) Never hang anything from a sprinkler head. Arrange work areas to facilitate sprinklers and allow even water distribution.

C. Halon and Carbon Dioxide Systems

Special work areas, such as computer rooms and chemical storage rooms, may contain specialized fire suppression systems. For example, many computer rooms contain halon systems and many chemical storage rooms contain carbon dioxide systems. Areas with special fire suppression systems will be clearly identified on the room door. People who work in these areas must do the following:

- Keep all room doors and windows closed.
- Know how the fire suppression system works (i.e., operation, abort switch, etc.).
- Do not tamper with ceiling tiles.

If you have any questions about supplemental fire suppression systems, please contact the Facilities – Tech Services.

D. Fire Hoses and Standpipe Systems

Fire hose cabinets are located in several buildings near the exit stairwells and in corridors. Employees who use a fire hose to extinguish a fire should have received training to ensure proper usage and safety.

7.7 Open Burning

Texas State University - San Marcos must comply with TNRCC, San Marcos and Hays County Fire Department regulations for open burning. Follow these steps before burning anything outside:

1. Only natural ground cover may be burned. It is not acceptable to store items for burning at a later date. Open burning must only be used as a way to remove brush and other acceptable items if no alternate removal can be used.
2. Smoke and flying debris may not cross or contact public thoroughfares.
3. Responsible persons must be present during the entire burn, be equipped with adequate fire fighting agents, and be able to quickly communicate with emergency response personnel.

Please contact the RMSO for additional information on open burning and alternative methods of disposal and for obtaining permits.

7.8 Holiday Decorations

Holiday decorations are often fire hazards. Follow these guidelines to improve fire safety during the holidays:

- Do not use live Christmas trees in University buildings unless they are treated with fire retardants. 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 flame 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.

- Use FM or UL labeled electrical decorations.
- Do not light candles or use other decorations with open flames.
- Turn off lights when the room is unoccupied.

7.9 Open Flame

Open flames are not permitted on campus without prior permission from the RMSO. Departments planning an activity involving open flames, e.g. candles, special effects, must coordinate the event with the RMSO.