

TDI

Safety @ Work
Division of Workers' Compensation



Fire Safety



**Workplace
Program**



DISCLAIMER

Unless otherwise noted, this document was produced by the Texas Department of Insurance, Division of Workers' Compensation using information from staff subject specialists, government entities, or other authoritative sources. Information contained in this Workplace Program is considered accurate at the time of publication. For more free publications and other occupational safety and health resources, visit www.txsafetyatwork.com, call 800-252-7031, option 2, or email resourcecenter@tdi.texas.gov.

INTRODUCTION



Workplace
Program



A fire safety plan is an essential part of any workplace safety program. The [Occupational Safety and Health Administration \(OSHA\)](#) mandates one for General Industry in the 29 Code of Federal Regulations (CFR), Part 1910, Subparts E (Exit Routes, Emergency Action Plans), L (Fire Protection), and Q (Welding, Cutting, and Brazing). These standards require that employers create a fire safety plan.

This publication is intended to give employers and employees responsible for an organization's safety some basic information to research and prepare fire prevention and emergency action plans. Remember that OSHA standards are the MINIMUM requirements for protection. Standards published by the [National Fire Protection Association \(NFPA\)](#) are much more detailed. The best business practice is to exceed minimum requirements as much as possible to ensure maximum protection of life and property.

A good fire safety plan has three main elements:

- **Prevention.**
The old saying, "An ounce of prevention is worth a pound of cure," is true in the case of fire. A fire that does not happen means savings in both property and, most importantly,

possible human suffering. Evaluating the workplace for fire hazards and taking steps to reduce or eliminate those hazards benefits everyone and can help a company control its insurance premiums.

- **Evacuation.**
Fires can spread with incredible speed. The ability for all occupants of any structure to quickly leave the danger zone is the best means of ensuring their safety in the event of a fire.
- **Firefighting.**
This is the final element because, although individuals can fight very small fires, the limited capacity of portable fire extinguishers means that emphasis must always be placed on alerting and evacuating the workforce first in any fire emergency. Since it requires a substantial investment in equipment and training time for a private company to create an effective fire brigade, it is usually done only within large organizations. Most employers have to rely on the local fire department to tackle any serious fire.

TABLE OF CONTENTS

Fire Safety Workplace Program

INTRODUCTION 3

Main elements of a Fire Safety Plan 3

FIRE PREVENTION 5

EVACUATION 8

Emergency escape procedures and routes 8

Exits 8

Alarm systems 8

Assignment of duties 9

Gathering place or area of refuge 9

Fire drills 9

Emergency Action Plan training 9

FIREFIGHTING 10

CONCLUSION 14

Fire Prevention

The regulations for fire prevention plans are found under [OSHA 1910.38 \(b\)](#) and [NFPA 1](#). These two standards require that employers create a fire safety plan. Employers with 10 or fewer employees may communicate the plan orally. Employers with 11 or more employees must have a written plan. The plan must contain a list of:

- Major workplace fire hazards with proper handling and storage procedures for each.
- Potential ignition sources and control procedures for each.
- Fire protection equipment to control these hazards.
- Employees with their job titles who are responsible for maintaining fire detection and protection equipment.
- Employees with their job titles who are responsible for control of fuel source hazards.

In practical terms, the employer begins creating a fire prevention plan by completing the following:

Conduct an initial evaluation of the workplace to determine the hazards.

This is usually done in the planning stage of any new construction and is based on the building and fire codes of the state and locality. In the case of industries that handle flammable substances, there will frequently be additional Federal standards that must be met.

The expertise of architects, process design engineers, and fire protection engineers is utilized in this instance. If an existing structure is being leased or purchased, such an evaluation may not always be within the ability of many employers. It is a good idea to call upon the resources of the organization's insurance carrier for risk management services before starting business operations. If the business expands, or processes are modified, it will be necessary to re-evaluate the possible hazards and update the prevention plan as changes take place.

Communicate the plan to employees.

When a company adopts a fire protection plan, it is necessary to explain the plan to each employee upon initial assignment of job duties. The employee must receive all information needed for their safety. The employer must:

- Keep the written plan on the premises and available to employees for review.



- Notify employees of any plan changes before the change or before the beginning of the next shift after a change takes place.
- Schedule annual refresher training in the plan as well as periodic five-minute safety talks throughout the year. Design these talks for the specific needs of work areas. Businesses with fewer than ten employees may communicate the plan orally to their staff, but it must be maintained in writing to comply with the standard.

Store flammable or combustible liquids properly.

Proper safe storage of flammable or combustible liquids is covered in [CFR 1910.106](#). This standard outlines the types of permitted containers and their capacities for all classes of these liquids. Storage cabinets for flammables are beneficial for businesses that use small to moderate amounts of solvents or flammable paints. Boldly label substance containers that are fire hazards. Choose the hazard label system that is best suited to your operation. *Employers can choose between three warning label systems:*



- The NFPA Hazard Diamond.
- The National Paint and Coatings Association Hazardous Materials Information System (HMIS).
- The American National Standards Institute (ANSI) system.

Use caution when storing combustible supplies.

Carefully examine the storage of combustible solids, like paper supplies. Never store them in electrical service rooms. The standard states that the employer must control the accumulation of hazardous wastes, so they do not contribute to a fire emergency. This is not necessarily limited to waste from manufacturing processes. It also includes office, shipping, or mailroom paper and pasteboard waste. Remove combustible waste from the workplace or store the waste in containers such as safety cans. Empty these containers daily. The housekeeping procedures must be included in the written plan.

Conduct periodic inspections of hazard areas.

Inspections of hazardous areas should be based on a written form that lists each hazard, provides a means of recording and fixing problems, and is required to be signed by the inspector. Make a sign-off form that verifies the completion of any repairs or corrections that are needed and maintain a file of completed forms.

Use safe practices when dealing with other sources of ignition.

Other sources of ignition include electric wiring, power cords, and equipment. These safety tips could prevent a fire:

- If a plug is found to be missing its grounding prong, or the cord is worn or cut, tag it immediately and remove it from service.
- Do not wrap cut or worn areas with tape because the internal insulation between the current and ground wires might cause a short to occur.
- Never overload electrical outlets by using multiplex plugs to connect more than two appliances or tools.
- Do not use extension cords in place of permanent wiring.
- Do not staple extension or appliance cords to walls or doorframes. Route them through approved openings in walls or use best practice methods around metal furnishings.
- Periodically inspect fixed electrical equipment and controls for wear or lack of lubrication that could lead to overheating.
- Clean accumulations of grease and dust on air filter elements or fans in electric-powered machinery on a regular schedule.
- When flammable or combustible liquids are transferred from one container to another, use bonding wires to connect both containers and a grounding lead.



Control fire hazards around cutting, welding, and grinding operations.

Fire protection standards for these operations are found in [CFR 1910.252 \(a\)](#). The basic precautions for welding and cutting are based on the premise that the object to be cut or welded cannot be moved. In these cases remove all fire hazards from the immediate area. If they cannot be moved, place fireproof guards to confine the heat, sparks, and slag. Trained firewatchers must be in place for operations in areas where other than a minor fire might develop. Develop a system of hot work permits to control all facets of these operations. Contractors performing hot work in the facility are subject to the same hot work rules as regular employees.

Designate smoking and non-smoking areas for each workplace.

Ensure that each designated smoking area has properly designed containers to hold cigarette butts. Mark any fire hazard areas with signage forbidding any kind of smoking or open flame, even if the entire structure is already a no-smoking zone.

Establish a system of rules as part of the plan.

Although it is not required, it is recommended to develop a system of rules that include recorded enforcement of infractions, such as blocking exits or smoking in non-designated areas. Rules should be in writing with a graduated, fair system of penalties assessed for repeated violations.

Create a written maintenance plan for fire suppression systems.

A written plan that outlines regular maintenance intervals and procedures is vital to ensure fire suppression systems and all heat-producing equipment work effectively to prevent accidental ignition of combustibles.

Evacuation

A written emergency action plan and procedures for reporting fires must be written into the fire safety plan. It must include:

Emergency escape procedures and routes.

Post floor plans of these routes in all rooms and work areas of the business. Show main and alternate routes on these plans whenever possible and define them by different colors. Some requirements in [CFR 1910.37](#) include minimum width of the exit routes, access to exits, occupant load egress capacity, exit door design, and walking surfaces.

Mark exits.

Clear marking of exits, as well as doors that are not exits, is mandated. The size of



exit signs and sources of illumination must conform to [CFR 1910.37](#). Nothing may obscure the view of any signage or exit doors. The [NFPA's Life Safety Code 101-2000](#) contains extensive exit route standards for every type of public structure. Compliance with the exit route provisions in NFPA's Life Safety Code meets OSHA's exit route requirements.

Install alarm systems.

OSHA requires an alarm system to alert employees to a fire emergency. Standards for these systems are found in [CFR 1910.165](#).

- **Audible alarms** must be distinctive and loud enough to be perceived above the ambient noise level in the workplace.
- **Alarms must be designed to alert any employees with visual or hearing impairments.** Otherwise, a variety of alarms are acceptable.
- **Test alarm systems** every two months.

Assign duties to specific employees.

In case of an emergency, some employees may be required to perform a shutdown of critical operations or systems before evacuating the premises. Include these duties in the written plan with the job titles of these people. In addition, some employees may be assigned to rescue or medical duties, which must be in writing. Also, fire wardens must be appointed and trained to aid in evacuations.

The designated shutdown employees and wardens must be trained before implementing the action plan. The recommended ratio of employees to fire wardens is 20 to 1. In multi-story buildings, assign a minimum of one warden to each floor. For businesses that schedule shift work, wardens have to be present on all shifts. Fire wardens and employees should be aware of and ready to assist any fellow employees who are mobility impaired and might require assistance in an evacuation.

Set up a safe area or refuge where all employees can gather after the evacuation.

Ensure that a safe area is far enough from the structure to be secure from possible further hazards after the evacuation. It should also allow emergency response personnel and vehicles free access.

Develop a procedure to account for all persons who were in the structure before the evacuation. This should include any visitors, customers, contractors, or delivery personnel who might be on the premises. This accounting is normally an assignment for supervisors or fire wardens.



Schedule fire escape drills at the startup of business operations and at least twice a year.

Drills are important for checking and improving the effectiveness of the escape plan. Even more importantly, if duties and necessary actions are effectively conveyed, the employees will revert to their training in times of stress, which will combat panic. Panic is a major cause of injury and death in fire emergencies.

Teach each employee the emergency action plan.

Teach each employee the emergency action plan so they know what to do in each type of emergency. Ensure the training includes:

- The job titles of persons who can be contacted by the employee for further explanation of duties under the plan.
- Simulating, in a safe manner, conditions of limited visibility on their route of egress. Some examples are to have employees memorize the

number of footsteps and direction changes needed to reach safety or (for those who are able) practice moving to the exits in a position near the floor. For buildings where multiple businesses are located, all of the tenant companies should coordinate their evacuation plans and conduct joint drills.

- Awareness of the correct sequence of actions when a fire is first discovered:
 - **Sound the alarm.** If the fire alarm is not available, notify site personnel about the fire emergency through voice communication, radio, phone, paging, or other means.
 - **Call the fire department** or company fire brigade.
 - **Try to fight a small fire** if there is time after completing steps 1 and 2, and only if the employee has been:

- Trained in the use of the extinguisher.
- Has his or her back to the exit route.
- Another person is present to help.
- The room is not full of smoke.
- **Evacuate the building.** If the fire cannot be safely extinguished, evacuate the building immediately using the designated escape routes.
- **Move away from fire and smoke,** closing doors and windows behind you if possible.
- **Assemble at the designated area** and account for all personnel.
- **Do not re-enter the building until authorized** by emergency responders.

Firefighting

Federal, state, and local codes may require portable fire extinguishers to be available in an enclosed workplace. These standards are found in [OSHA CFR 1910.157](#) and [NFPA 10](#), along with some exemptions.

Employers are required to provide, mount, and identify fire extinguishers so they are readily available to employees. These extinguishers must be approved types and selected based on the types of fires that are expected to occur in the workplace. It is best to purchase multi-rated extinguishers for general protection. The most

widely produced type of extinguisher is the dry chemical type, rated for Class A, B, and C fires.

- **Class A fires** are those caused by the burning of ordinary combustibles such as wood, paper, cloth, or plastics.
- **Class B fires** are those involving flammable or combustible liquids.
- **Class C fires** are fires in energized electrical equipment.

- **Class D fires** are those of combustible metals such as magnesium.

The initial evaluation of fire hazards will reveal the need for any specialized extinguishers. However, these guidelines should be followed:

- The employer is required to maintain the extinguishers in a state of readiness in their designated places at all times.
- Extinguishers for class B fires must be located so that they are no more than 50 feet from the hazard area.
- Extinguishers for class A and C fires can be no more than 75 feet of travel distance from any employee.
- Do not mount extinguishers in any location that requires a portable device such as a ladder to access them.
- All extinguishers must be visually inspected every month.
- All extinguishers must undergo a maintenance inspection annually and records of the inspection dates must be retained for one year.
- Rechargeable dry chemical extinguishers must be emptied and examined internally every six years and hydrostatically tested every twelve years.
- Carbon dioxide and nitrogen extinguishers and pressure bottles must be hydrostatically tested every five years.
- When extinguishers are removed for maintenance, they must be replaced while maintenance is in progress.

- If the employer does hydrostatic testing, all items under standard [1910.158 \(f\)](#) apply.
- When an employer provides portable extinguishers for use by employees, training must be given in the use of the extinguishers and information provided on the hazards of firefighting. Training must be upon initial assignment of job duties and on an annual basis thereafter.

If a workplace contains only Class A hazards, the employer may choose to install a standpipe and hose system instead of portable fire extinguishers. That system must conform to standard [1910.158](#), accordingly:

- Standpipes and hoses must be protected from damage so they will be available in an emergency.
- Cabinets or hose covers must be used to protect the hoses from weather, dirt, and possible damage.
- Access to the hoses must be unobstructed.
- Inspect all hoses on an annual basis and discard them when they deteriorate. A hose is considered “deteriorated” when it can no longer carry water at the required flow rate and pressure.



Automatic fire control systems.

Automatic fire control systems include sprinkler systems, dry chemical systems, systems that dispense gaseous agents, and those that dispense foam or large amounts of water. Each has a standard assigned to it:

- Automatic sprinkler systems, [CFR 1910.159](#).
- General fixed extinguishing systems, [CFR 1910.160](#).
- Dry chemical fixed extinguishing systems, [CFR 1910.161](#).
- Gaseous agent extinguishing systems, [CFR 1910.162](#).
- Water spray and foam extinguishing systems, [CFR 1910.163](#).

Automatic sprinkler systems.

Under this standard, the following items apply:

- The system must provide complete coverage for the areas in which it is installed.
- The employer must maintain the system properly and perform a main drain flow test every year.
- Every two years the inspector's valve must be opened to ensure the system operates correctly.
- Acceptance tests must be performed and documented upon the completion of a new system.
- The water supply for the system must provide the designed flow for a minimum of 30 minutes.



- The employer may provide auxiliary hose connections to supply more water for firefighting use provided that the water source satisfies the designed demand for the system.
- Protect the system against freezing and exterior corrosion.
- Protect sprinklers against mechanical damage and ensure they can be drained.
- Include a water flow alarm on any sprinkler system with more than 20 sprinkler heads.
- A minimum clearance of 18 inches must be left between the sprinklers and the material below them when materials are stored in sprinkler-protected areas.
- Storage shall be maintained 2 feet or more from the ceiling in non-sprinklered areas of the building.

Fixed extinguishing systems.

Fixed extinguishing systems other than sprinkler systems can, because of their operation, expose employees to injury, death, or adverse health effects from the extinguishing agent. Under these standards, the following applies:



included in the system, which is in addition to the automatic release mechanism.

- Recharge systems after use with an identical agent to that previously used in the system.

- Gaseous agent extinguishing systems have a set of required times for extinguishing concentrations of the gases. All gases other than Halon must reach the

extinguishing level within 30 seconds after the discharge start.

- Install a distinctive alarm to alert employees before the system discharges so that they may safely leave the area.
- Post hazard warnings at entrances to and inside areas where concentrations of the extinguishing agent may be hazardous to life and health.
- Provide safeguards to warn employees against entry into areas where the atmosphere remains hazardous after a discharge.
- Inspect the system annually.
- Check the pressure and contents of refillable containers every six months.
- Non-refillable containers must be weighed every six months.
- All inspection and maintenance dates must be recorded on the containers.
- Maintenance and inspection personnel must be trained and annually reviewed in their training.
- One manual release must be

Fire brigades.

Fire brigades are not required under OSHA standards. Employers must decide whether organizing and properly equipping a fire brigade is needed and is within the ability of the organization. If it is decided to create a fire brigade, [CFR 1910.156](#) will regulate it.

- Create a written policy that outlines the organizational structure and size of the brigade, the type and frequency of training it receives, and its duties in the workplace.
- Make sure that the members of the brigade are physically capable of performing the duties assigned to them.
- Conduct training at least annually. The content of the training must be equivalent to that conducted by recognized fire training schools in the various states.
- Use the approved protective clothing and equipment for brigade members as outlined in the standard.

Conclusion

Budget enough time and resources in your business plan to create and maintain a fire safety program that exceeds government standards. Establish a good working relationship with your local fire marshal's office and request their help when needed. Invite employee input via safety committees, suggestion boxes, or other means. Consider programs to reward good safety program participation by employees at all levels. Rotate necessary training and inspections throughout the year rather than waiting until the end of the required period to conduct a large amount in a short time. This will prevent unexpected business demands from forcing postponements beyond the annual deadline dates. Training aids are available from a variety of public sources including workplace safety and health [publications](#) and [streaming videos](#) from the Texas Department of Insurance, Division of Workers' Compensation (DWC). There are also safety training materials for sale on many websites, including OSHA and NFPA. By using these resources, an effective fire prevention plan can be created and implemented at your organization.



www.txsafetyatwork.com

1-800-252-7031, Option 2

*The Texas Department of Insurance,
Division of Workers' Compensation (DWC)-Workplace Safety
P.O. Box 12050
Austin, TX 78711-2050*

Disclaimer: Unless otherwise noted, this document was produced by the Texas Department of Insurance, Division of Workers' Compensation using information from staff subject specialists, government entities, or other authoritative sources. Information contained in this fact sheet is considered accurate at the time of publication. For more free publications and other occupational safety and health resources, visit www.txsafetyatwork.com, call 800-252-7031, option 2, or email resourcecenter@tdi.texas.gov.