



### What should employers do to protect workers from fire hazards?

Employers should train workers about fire hazards in the workplace and about what to do in a fire emergency. If you want your workers to evacuate, you should train them on how to escape. If you expect your workers to use firefighting equipment, you should give them appropriate equipment and train them to use the equipment safely. (See Title 29 of the *Code of Federal Regulations* Part 1910 Subparts E and L; and Part 1926 Subparts C and F.)

### What does OSHA require for emergency fire exits?

Every workplace must have enough exits suitably located to enable everyone to get out of the facility quickly. Considerations include the type of structure, the number of persons exposed, the fire protection available, the type of industry involved, and the height and type of construction of the building or structure. In addition, fire doors must not be blocked or locked when employees are inside. Delayed opening of fire doors, however, is permitted when an approved alarm system is integrated into the fire door design. Exit routes from buildings must be free of obstructions and properly marked with exit signs. See 29 *CFR* Part 1910.36 for details about all requirements.

### Do employers have to provide portable fire extinguishers?

No. But if you do, you must establish an educational program to familiarize your workers with the *general principles* of fire extinguisher use. If you expect your workers to use portable fire extinguishers, you must provide *hands-on training* in using this equipment. For details, see 29 *CFR* Part 1910 Subpart L.

### Must employers develop emergency action plans?

Not every employer is required to have an emergency action plan. OSHA standards that require such plans include the following:

- Process Safety Management of Highly Hazardous Chemicals, 1910.119

- Fixed Extinguishing Systems, General, 1910.160
- Fire Detection Systems, 1910.164
- Grain Handling, 1910.272
- Ethylene Oxide, 1910.1047
- Methylenedianiline, 1910.1050
- 1,3 Butadiene, 1910.1051

When required, employers must develop emergency action plans that:

- Describe the routes for workers to use and procedures to follow.
- Account for all evacuated employees.
- Remain available for employee review.
- Include procedures for evacuating disabled employees.
- Address evacuation of employees who stay behind to shut down critical plant equipment.
- Include preferred means of alerting employees to a fire emergency.
- Provide for an employee alarm system throughout the workplace.
- Require an alarm system that includes voice communication or sound signals such as bells, whistles, or horns.
- Make the evacuation signal known to employees.
- Ensure emergency training.
- Require employer review of the plan with new employees and with all employees whenever the plan is changed.

### Must employers have a fire prevention plan?

OSHA standards that require fire prevention plans include the following:

- Ethylene Oxide, 1910.1047
- Methylenedianiline, 1910.1050
- 1,3 Butadiene, 1910.1051

Employers covered by these standards must implement plans to minimize the frequency of evacuations. All fire prevention plans must:

- Be available for employee review.

- Include housekeeping procedures for storage and cleanup of flammable materials and flammable waste.
- Address handling and packaging of flammable waste. (Recycling of flammable waste such as paper is encouraged.)
- Cover procedures for controlling workplace ignition sources such as smoking, welding, and burning.
- Provide for proper cleaning and maintenance of heat producing equipment such as burners, heat exchangers, boilers, ovens, stoves, and fryers and require storage of flammables away from this equipment.
- Inform workers of the potential fire hazards of their jobs and plan procedures.
- Require plan review with all new employees and with all employees whenever the plan is changed.

## What are the rules for fixed extinguishing systems?

Fixed extinguishing systems throughout the workplace are among the most reliable fire fighting tools. These systems detect fires, sound an alarm, and send water to the fire and heat. To meet OSHA standards employers who have these systems must:

- Substitute (temporarily) a fire watch of trained employees to respond to fire emergencies when a fire suppression system is out of service.
- Ensure that the watch is included in the fire prevention plan and the emergency action plan.
- Post signs for systems that use agents (e.g., carbon dioxide, Halon 1211, etc.) posing a serious health hazard.

## How can you get more information on safety and health?

OSHA has various publications, standards, technical assistance, and compliance tools to help you, and offers extensive assistance through workplace consultation, voluntary protection programs, strategic partnerships, alliances, state plans, grants, training, and education. OSHA's *Safety and Health Program Management Guidelines* (*Federal Register* 54:3904–3916, January 26, 1989) detail elements critical to the development of a successful safety and health management system. This and other information are available on OSHA's website.

- For one free copy of OSHA publications, send a self-addressed mailing label to OSHA Publications Office, 200 Constitution Avenue, N.W., N-3101, Washington, DC 20210; or send a request to our fax at (202) 693–2498, or call us at (202) 693–1888.
- To order OSHA publications online at [www.osha.gov](http://www.osha.gov), go to **Publications** and follow the instructions for ordering.
- To file a complaint by phone, report an emergency, or get OSHA advice, assistance, or products, contact your nearest OSHA office under the U.S. Department of Labor listing in your phone book, or call toll-free at **(800) 321–OSHA (6742)**. The teletypewriter (TTY) number is (877) 889–5627.
- To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website.

This is one in a series of informational fact sheets highlighting OSHA programs, policies, or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to *Title 29 of the Code of Federal Regulations*. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693–1999. See also OSHA's website at [www.osha.gov](http://www.osha.gov).

# Fire Protection and Prevention

*The Occupational Safety and Health Administration (OSHA) requires employers to implement fire protection and prevention programs in the workplace. The regulations that apply to fire protection and prevention can be found mainly in Subpart F of the construction standards, though the requirement for a fire prevention program is first set out in Subpart C. The following sections of the construction standards contain requirements for fire protection that are of significance to roofing contractors:*

- 1926.24 Subpart C, Fire protection and prevention programs*
- 1926.150 Fire protection*
- 1926.151 Fire prevention*
- 1926.152 Flammable and combustible liquids*
- 1926.153 Liquefied petroleum gas (LP-Gas)*
- 1926.154 Temporary heating devices*
- 1926.155 Definitions*
- 1926.550 Subpart N, Cranes and derricks*

*Following this chapter, there is a list of fire safety work practices addressing many fire hazards found in the roofing workplace, including field operations and shop activities. Contractors should review the elements of the list most applicable to their companies' operations and consider including them in their companies' health and safety program.*

## **Fire Protection**

*Fire is a chemical reaction that requires three elements to be present for the reaction to take place and continue. The three elements are:*

- Heat, or an ignition source*
- Fuel*
- Oxygen*

*These three elements typically are referred to as the "fire triangle." Fire is the result of the reaction between the fuel and oxygen in the air. Scientists developed the concept of a fire triangle to aid in understanding of the cause of fires and how they can be prevented and extinguished. Heat, fuel and oxygen must combine in a precise way for a fire to start and continue to burn. If one element of the fire triangle is not present or removed, fire will not start or, if already burning, will extinguish.*

*Ignition sources can include any material, equipment or operation that emits a spark or flame—including obvious items, such as torches, as well as less obvious items, such as static electricity and grinding operations. Equipment*

*or components that radiate heat, such as kettles, catalytic converters and mufflers, also can be ignition sources.*

*Fuel sources include combustible materials, such as wood, paper, trash and clothing; flammable liquids, such as gasoline or solvents; and flammable gases, such as propane or natural gas.*

*Oxygen in the fire triangle comes from the air in the atmosphere. Air contains approximately 79 percent nitrogen and 21 percent oxygen. OSHA describes a hazardous atmosphere as one which is oxygen-deficient because it has less than 19.5 percent oxygen, or oxygen enriched because it has greater than 23.5 percent oxygen. Either instance is regarded by OSHA as an atmosphere immediately dangerous to life and health (IDLH) for reasons unrelated to the presence of fire. Depending on the type of fuel involved, fires can occur with much lower volume of oxygen present than needed to support human respiration.*

*Every roofing project has all three of the fire triangle elements present in abundance. The key to preventing fires is to keep heat and ignition sources away from materials, equipment and structures that could act as fuel to complete the fire triangle.*

#### *Fire Classifications*

*Fires are classified as A, B, C, D or K based on the type of substance that is the fuel for the fire, as follows:*

*Class A—fires involving ordinary combustibles, such as paper, trash, some plastics, wood and cloth. A rule of thumb is if it leaves an ash behind, it is a Class A fire.*

*Class B—fires involving flammable gases or liquids, such as propane, oil and gasoline*

*Class C—fires involving energized electrical components*

*Class D—fires involving metal. A rule of thumb is if the name of the metal ends with the letters “um,” it is a Class D fire. Examples of this are aluminum, magnesium, beryllium and sodium. Class D fires rarely occur in the roofing industry.*

*Class K—fires involving vegetable or animal cooking oils or fats; common in commercial cooking operations using deep fat fryers*

#### *Fire Extinguishers*

*There are different types of fire extinguishers designed to put out the different classes of fire. Selecting the appropriate fire extinguisher is an*

important consideration for a roofing contractor. The wrong extinguisher actually may make a fire emergency worse. For example, failing to use a C-rated extinguisher on energized electrical components may endanger workers by causing the extinguishing material to be electrified by the energized components that are on fire. C-rated fire extinguishers put out the fire by using a chemical that does not conduct electricity.

The following table illustrates the types of extinguishers, fire classes for which each is used and the limitations of each extinguisher.

<i>Fire Extinguisher Type</i>	<i>Class of Fire it Extinguishes</i>	<i>Extinguisher Limitations/ Comments</i>
<i>Dry Chemical (multipurpose)</i>	<i>A, B, C</i>	<i>Generally good for use in roofing industry</i>
<i>Foam—alcohol-resistant B and aqueous film-forming foam (AFFF) types</i>		<i>Expensive; effective on Class B only; limited shelf life; generally not needed in roofing industry</i>
<i>Water</i>	<i>A</i>	<i>Good only for Class A fires</i>
<i>Metal X</i>	<i>D</i>	<i>Expensive; must be kept dry; ineffective on A, B, C;</i>
<i>Carbon Dioxide</i>	<i>B, C</i>	<i>If used in confined areas, will create oxygen deficiency; not effective in windy conditions; can cause frostbite during discharge; typically not used in roofing industry</i>
<i>Halon</i>	<i>B, C</i>	<i>Expensive; not effective in windy conditions; toxic gases may be released in extremely hot fires because of decomposition; generally not used in roofing industry</i>
<i>Potassium Acetate</i>	<i>K</i>	<i>Expensive, wet chemical extinguisher for commercial cooking operations using oils and fats</i>

Roofing contractors typically purchase dry-chemical fire extinguishers because they can extinguish three fire classes (A, B and C).

OSHA requires a minimum-rated 10B fire extinguisher be provided within 50 feet of the point of job site use of more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas. Examples of flammable and combustible liquids include gasoline, kerosene, acetone, MEK, single-ply adhesives, splice cleaners and asphalt cutback products. Fire extinguishers must be rated by a nationally recognized testing laboratory.

Extinguishers also must be inspected on a regular basis and maintained fully charged.

## *Using Fire Extinguishers*

*When using fire extinguishers, employees should employ the “PASS” system of early-stage firefighting.*

*P—Pull the pin on the extinguisher*

*A—Aim at the base of the fire*

*S—Squeeze the handle*

*S—Sweep at the fire, moving from side to side*

*Employees should be instructed that if a fire cannot be extinguished using one full extinguisher, they should evacuate the site and let the fire department handle the situation.*

## **Fire Prevention**

*Fire prevention requires segregating the three elements of the fire triangle. In practice, a method to achieve that goal is to post—and enforce—no-smoking signs around flammable liquids and gases and have fire watches on all work involving torch-applied materials of a minimum of two hours after the last torch is turned off.*

### *Flammable and Combustible Liquids*

*Proper storage and handling of flammable and combustible liquids will help prevent fires from occurring; only approved, closed containers for storage of flammable or combustible liquids may be used under OSHA rules. Such containers include safety cans or containers approved by the U.S. Department of Transportation. A safety can is a container that has a self-closing lid, internal-pressure relief and flame arrestor with a capacity of not more than 5 gallons. Inexpensive, plastic cans without those features previously mentioned, such as those typically bought at hardware stores or gas stations, are not approved for use in roofing operations. However, manufacturers do sell plastic containers that meet the OSHA requirements for safety cans.*

*Flammable liquids that are extremely viscous, or difficult to pour, like single-ply adhesive, can be left in their original shipping containers. Similarly, OSHA allows the use of original containers of flammable liquids that are in quantities of one gallon or less.*

*Static electricity may be generated when transferring liquids, gases or solids through pipes or hoses. It is important to dissipate this electric charge when handling flammable and combustible materials. When transferring flammable or combustible liquids from one container to another, the two containers must be “bonded” together. The bonding process involves attaching a wire with alligator clips on each end to both containers. The clips must penetrate*

*the container coating and touch metal. You may need to score the paint with the alligator clips. To dissipate static, the container receiving the liquid must be in contact with the ground and not insulated from contact with the ground. For example, plastic or composite pickup truck bed liners prevent the flow of static electricity to ground because the liner does not conduct electricity. The receptacle container must have a clear path to ground, by direct contact or use of a grounding strap or wire, to effectively eliminate static.*

*Service or fueling areas at job sites must have a 20BC-rated fire extinguisher within 75 feet of each pump.*

*Safety cabinets allow for greater quantities of flammable and combustible liquids to be stored safely inside buildings. Up to 60 gallons of a flammable liquid or as much as 120 gallons of a combustible liquid may be stored indoors in a safety cabinet. Each cabinet must be labeled “Flammable—Keep Fire Away.” Up to three cabinets may be stored in one room. Without a safety cabinet, only 25 gallons of either flammable or combustible liquids are allowed to be stored inside a building.*

#### *Liquefied Petroleum Gas*

*Liquefied petroleum gas (LP gas) is used widely in the roofing industry to heat kettles and torches. Because LP gas is a compressed gas, fairly large quantities can be stored in relatively small containers. As a point of reference, LP gas expands at a ratio of 270-to-1. This means that one liquid drop of LP gas would expand to a gas state 270 times greater in volume.*

*LP gas collects in low-lying areas because its vapor density is heavier than air. Employees should be warned that if they suspect a leak in a cylinder, they must not use fire to attempt to find the hole. Instead, they are to use soapy water and look for bubbles.*

*Employees should not attempt to extinguish fires involving LP gas. If an LP gas fire breaks out, employees should evacuate the area immediately and call the fire department. Fighting an LP gas fire requires specialized training that only the fire department can provide. Employee attempts to extinguish the fire could create larger hazards.*

#### *Torch-applied Roofing Materials*

*Torch-applied roofing materials pose a serious fire hazard to roofing contractors and building owners. Sometimes the hazards are obvious—such as torching to a combustible deck or near flammable liquids, while other concerns are less obvious—such as torching around drains or penetrations where flames can be drawn into a building.*

*Roofing contractors must instruct employees that they must:*

- *Never torch directly to combustible decks or materials*
- *Never torch to areas that cannot be seen fully*
- *Not use torches near vents or air intakes*
- *Never use a torch to heat a propane tank that begins to frost on the outside*
- *Have appropriate fire extinguishers within easy reach at all times*

*Whenever working with torch-applied roofing materials, fire-watch inspections must be conducted for at least two hours after the work has been completed and the last torch has been turned off.*

*More information on torch safety can be found in NRCA/MRCA Certified Roofing Torch Applicator Program at NRCA's Web site, [www.nrca.net](http://www.nrca.net).*

### *Fire Alarm Devices*

*OSHA requires an alarm system be established by an employer to alert workers on the job site and local fire departments of fire emergencies. Job-site telephones and employee entrances must have alarm codes and reporting instructions at employee entrances.*

*A roofing contractor's emergency action plan for the job site must include:*

- *Emergency escape procedures*
- *Equipment operation procedures prior to evacuation*
- *Procedures to account for all employees*
- *Rescue and medical duties for those employees responsible for such duties*
- *Preferred means of reporting emergencies*
- *Names and titles of employees with duties under the plan*

### *Employee Training*

*OSHA requires that all employees be trained to use fire extinguishers. Training is required upon employment and at least annually thereafter. It is recommended the training session cover how to determine when a fire is too big to handle; what type of extinguisher to use; and the PASS system of early-stage firefighting. It also is recommended that live fire training be conducted periodically (this level of training is not needed each year). Live training exposes employees to the pressure released from a fire extinguisher when the handle is squeezed and provides hands-on practice extinguishing a fire. Some local fire departments and most fire extinguisher suppliers offer this type of training.*



*All company fire-prevention training sessions should be documented. If an outside organization conducts the training, it would be a good idea to obtain training certificates for the attendees.*

## **List of Safe Work Practices**

### **Fire Protection and Prevention Safe Work Practices**

*[Company name] will take all necessary steps to prevent fires. Inspections during various operations will be made to ensure fire-prevention objectives are being met. The steps are listed below.*

#### ***Reporting and Extinguishing a Fire***

- The fire department and area supervisor will be notified when a fire is spotted.*
- All workers will be alerted and evacuated as needed.*
- The PASS method will be used to extinguish the fire by those employees who have been properly trained.*
- The area will be evacuated immediately if the fire is large.*

#### ***Fire Protection***

- Before each project begins, the project manager or designee will contact the local fire department and determine whether any variations from the company's standard fire-prevention procedures are required.*
- No-smoking signs will be posted in all regulated areas.*
- Only approved containers will be used to store flammable or combustible materials.*
- All containers will be bonded together and grounded when transferring flammable or combustible liquids.*
- All work areas will be kept free of debris and other combustible materials.*

- *Inside company-owned or leased buildings, fire extinguishers will be spaced no more than 100 feet apart and will have no less than a 2A rating for every 3,000 feet of protected building.*
- *All employees will be trained on the use of fire extinguishers initially upon hire and annually thereafter.*
- *No employee will be permitted to use an extinguisher without having been fully trained.*
- *Fire extinguishers will be stored at a distance no greater than 10 feet from torch users.*
- *A fire extinguisher, rated not less than 10B, will be provided within 50 feet of the location where more than 5 gallons of flammable or combustible liquids or 5 pounds of a flammable gas are used on a job site.*
- *Mops will be “spun out” and placed on a noncombustible surface at the end of each day on projects involving hot bitumen.*
- *A fire watch will be posted for two hours after work has concluded for torch-applied roof systems.*

### ***Flammable and Combustible Liquid Storage***

- *No more than 25 gallons of flammable and combustible liquids will be stored outside approved safety cabinets in indoor locations.*
- *No more than 60 gallons of flammable liquids will be stored inside an approved safety cabinet in indoor locations.*
- *Combustible liquids will not exceed 120-gallon capacity inside approved safety cabinets.*
- *The number of approved safety cabinets in one room will not exceed three.*
- *Gasoline will not be used as a solvent for cleaning.*
- *All containers will be labeled in accordance with OSHA’s Hazard Communication Standard.*
- *Buildings or structures containing flammable liquids or gases must be constructed of fire-resistant material.*

- *Flammable liquids or gases will be kept away from heat and ignition sources including welding work or any other operation involving flames or sparks.*

### **Handling Flammable Gases**

- *LPG cylinders will be placed on a firm foundation and secured in an upright position.*
- *All LPG cylinders will be equipped with valve-protection devices.*
- *LPG cylinders will not be stored closer than 10 feet to the kettle.*
- *LPG cylinders will be placed away from vehicular traffic.*
- *LPG cylinders will not be stored inside buildings.*
- *Acetylene bottles will be stored in the upright position and secured.*
- *When in transport or not in use, acetylene bottles will have caps in place.*
- *Oxygen cylinders must be stored at least 20 feet from acetylene cylinders.*

### **Handling Flammable and Combustible Liquids**

- *During refueling operations, all engines and motors will be turned off and allowed to cool.*
- *Open flames or other ignition sources must be kept at least 50 feet away from flammable or combustible liquids.*
- *No smoking will be permitted during the fueling process.*
- *Containers being filled will be placed directly on the ground or a grounding strap attached to form a connection to ground.*
- *No flammable liquid or gas will be used unless it has been positively identified beforehand.*
- *Health and physical hazards will be communicated to employees in accordance with OSHA's Hazard Communication Standard before the product is used.*
- *When flammable liquids and gases are being transported, all Department of Transportation rules will be followed.*

## ***Fire Extinguishers***

- *In buildings, all fire extinguishers will be mounted on a wall and properly marked.*
- *All vehicles will carry at least one ABC-rated extinguisher.*
- *When at a job site, all employees will know the location of each fire extinguisher.*
- *Before using an extinguisher, all employees will be trained and familiar with the PASS method of firefighting.*
- *Each fire extinguisher will be inspected monthly to make sure it is in its designated location and has not been tampered with or actuated.*
- *Each fire extinguisher will be clearly visible with nothing obstructing or obscuring it from view.*

*All fire extinguishers will be examined at least yearly and/or recharged or repaired to ensure operability and safety. A tag must be attached to show the maintenance or recharge date and the signature or initials of the person performing the service.*

# Preventing Violence at the Workplace

## What Is Workplace Violence?

Workplace violence includes:

- physical assault
- threatening behavior
- verbal abuse
- harassment

## Cal/OSHA's Three Types of Workplace Violence

- Type 1: A robbery or other criminal act committed by a stranger.
- Type 2: An assault by a client, customer, member, passenger, inmate, student, or other person who receives services from the victim.
- Type 3: A threat or violent act on the job by an employee, supervisor, former employee, or manager.

## Five Warning Signs of Escalating Behavior

Warning Signs	Possible Responses
<b>Confusion</b>	
Behavior characterized by bewilderment or distraction. Unsure or uncertain of the next course of action.	<ul style="list-style-type: none"> <li>• Listen to their concerns.</li> <li>• Ask clarifying questions.</li> <li>• Give them factual information.</li> </ul>
<b>Frustration</b>	
Behavior characterized by reaction or resistance to information. Impatience. Feeling a sense of defeat in the attempt of accomplishment. May try to bait you.	<ul style="list-style-type: none"> <li>• See steps above.</li> <li>• Relocate to quiet location or setting.</li> <li>• Reassure them.</li> <li>• Make a sincere attempt to clarify concerns.</li> </ul>
<b>Blame</b>	
Placing responsibility for problems on everyone else. Accusing or holding you responsible. Finding fault or error with the action of others. They may place blame directly on you. Crossing over to potentially hazardous behavior.	<ul style="list-style-type: none"> <li>• See steps above.</li> <li>• Disengage and bring second party into the discussion.</li> <li>• Use teamwork approach.</li> <li>• Draw client back to facts.</li> <li>• Use probing questions.</li> <li>• Create "Yes" momentum.</li> </ul>
<b>Anger - Judgment call required</b>	
Characterized by a visible change in body posture and disposition. Actions include pounding fists, pointing fingers, shouting or screaming. This signals very risky behavior.	<ul style="list-style-type: none"> <li>• Utilize venting techniques.</li> <li>• Don't offer solutions.</li> <li>• Don't argue with comments made.</li> <li>• Prepare to evacuate or isolate.</li> <li>• Contact supervisor and/or security office.</li> </ul>
<b>Hostility - Judgment call required</b>	
Physical actions or threats which appear imminent. Acts of physical harm or property damage. Out-of-control behavior signals they have crossed over the line.	<ul style="list-style-type: none"> <li>• Disengage and evacuate.</li> <li>• Attempt to isolate person if it can be done safely.</li> <li>• Alert supervisor and contact security office immediately.</li> </ul>

## Emergency Preparedness and Response for Earthquakes

### What is an earthquake?

An earthquake is a sudden, rapid shaking of the ground caused by the breaking and shifting of rock beneath the Earth's surface. This shaking can cause buildings and bridges to collapse; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill, old waterways, or other unstable soil are most at risk. Buildings or trailers and manufactured homes not tied to a reinforced foundation anchored to the ground are also at risk since they can be shaken off their mountings during an earthquake. Earthquakes can occur at any time of the year.

### What hazards are associated with earthquakes?

When an earthquake occurs in a populated area, it may cause deaths and injuries and extensive property damage. Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related injuries result from collapsing walls, flying glass, and falling objects as a result of the ground shaking, or people trying to move more than a few feet during the shaking. Much of the damage in earthquakes is predictable and preventable.

### What are aftershocks?

Aftershocks are smaller earthquakes that follow the main shock and can cause further damage to weakened buildings. Aftershocks can occur in the first hours, days, weeks, or even months after the quake. Be aware that some earthquakes are actually foreshocks, and a larger earthquake might occur.

### What can I do to prepare before an earthquake occurs?

Pick "safe places". A safe place could be under a sturdy table or desk or against an interior wall away from windows and bookcases, or tall furniture that could fall on you. The shorter the distance to move to safety, the less likely you will be injured. Injury statistics show that people moving as little as 10 feet during an earthquake's shaking are most likely to be injured.

Practice drop, cover, and hold-on in each safe place. Drop under a sturdy desk or table and hold on to one leg of the table or desk. Protect your eyes by keeping your head down. Practice these actions so that they become an automatic response.

Practice drop, cover, and hold-on at least twice a year. Frequent practice will help reinforce safe behavior. When an earthquake or other disaster occurs, many people hesitate, trying to remember what they are supposed to do. Responding quickly and automatically may help protect you from injury.

Wait in your safe place until the shaking stops, then check to see if you are hurt. You will be better able to help others if you take care of yourself first, then check the people around you. Move carefully and watch out for things that have fallen or broken, creating hazards. Be ready for aftershocks.

Be on the lookout for fires. Fire is the most common earthquake-related hazard, due to broken gas lines, damaged electrical lines or appliances, and previously contained fires or sparks being released.

If you must leave a building after the shaking stops, use the stairs, not the elevator. Earthquakes can cause fire alarms and fire sprinklers to go off. You will not be certain whether there is a real threat of fire. As a precaution, use the stairs.

If you're outside in an earthquake, stay outside. Move away from buildings, trees, streetlights, and power lines. Crouch down and cover your head. Many injuries occur within 10 feet of the entrance to buildings. Bricks, roofing, and other materials can fall from buildings, injuring persons nearby. Trees, streetlights, and power lines may also fall, causing damage or injury.

Inform workers of the plan. Everyone in your workplace should know what to do if an earthquake occurs.

Get training. Take a first aid class from your local Red Cross chapter. Get training on how to use a fire extinguisher. Keep your training current. Training will help you to keep calm and know what to do when an earthquake occurs.

Discuss earthquakes with workers. Everyone should know what to do. Discussing earthquakes ahead of time helps reduce fear and anxiety and lets everyone know how to respond.

In *most* situations, you will reduce your chance of injury from falling objects (and even building collapse) if you immediately:



- **DROP down onto your hands and knees** before the earthquake would knock you down. This position protects you from falling but still allows you to move if necessary.
- **COVER** your head and neck (and your entire body if possible) under the shelter of a sturdy table or desk. If there is no shelter nearby, get down near an interior wall or next to low-lying furniture that won't fall on you, and cover your head and neck with your arms and hands. Try to stay clear of windows or glass that could shatter or objects that could fall on you.
- **HOLD ON to your shelter** (or to your head and neck) until the shaking stops. Be prepared to move with your shelter if the shaking shifts it around.

**Check for Injuries:**

- Check your first aid kit or the front pages of your telephone book for detailed instructions on first aid measures.
- If a person is bleeding, put direct pressure on the wound. Use clean gauze or cloth, if available.
- If a person is not breathing, administer rescue breathing.
- If a person's heart has stopped, begin CPR (cardiopulmonary resuscitation).
- If a person's clothes catch fire, have them stop, drop, and roll.
- do not move seriously injured persons unless they are in immediate danger of further injury.
- Cover injured persons with blankets or additional clothing to keep them warm.
- Get medical help for serious injuries.
- carefully check children or others needing special assistance.

Office First Aid Kit is located: \_\_\_\_\_

Flashlights are located (highly recommended): \_\_\_\_\_

Examine the area for fire hazards and call 911 if there is a fire hazard.

Outside meeting place is: \_\_\_\_\_

Approved by: \_\_\_\_\_ MD

Dated: \_\_\_\_\_

Source:  
[www.espfocus.org](http://www.espfocus.org) (Emergency Survival Program) 07/06  
Centers for Disease Control and Prevention [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)  
Downloaded 11/12