

# TOOL BOX TALKS

## Office Fire Prevention

*Fire safety is the responsibility of everyone in the office. Educate all employees about how they can help prevent fires in the building. The time you spend now, can save lives and money in the future.*

### Toolbox Tips

#### Educate and plan

- Know the locations of each fire extinguisher in your work area.
- Know the locations of fire exits and keep them unlocked and unblocked at all times.
- Know the street address of your building.
- Know how to contact emergency services.
- Immediately report any suspicious burning or smoke odors.
- Know the evacuation plan and where employees should gather outside the building.
- During an evacuation, begin a head count immediately. Report any missing employees to the fire department.

#### Hazards

- Smoke only in approved areas. Do not discard cigarette waste in dumpsters or trash cans.
- Do not overload outlets, electrical cords or surge protectors. Combustibles like cardboard, paper and office furnishings can ignite when near overloaded, hot electric cords.
- Do not cover extension or electrical cords with rugs or furnishings.
- Keep storage areas tidy and organized. Empty waste cans often and do not allow paper trash to build up.
- Keep heaters clear of combustibles.
- Keep pull stations clear, fire exit pathways and sprinkler heads unobstructed.
- Turn off heat sources like coffee pots and desk lamps when employees leave the area.
- Avoid using space heaters. Ignition sources like smoking, candles and tea lights are prohibited in the building.

**Know the locations of each fire extinguisher in your work area.**

**Know how to contact emergency services.**

**Know the street address of your building.**

*These advisory materials have been developed from national standards and sources believed to be reliable, however, no guarantee is made as to the sufficiency of the information contained in the material and Missouri Employers Mutual Insurance Company assumes no liability for its use. Advice about specific situations should be obtained from a safety professional.*

### For more information:



[www.worksafecenter.com](http://www.worksafecenter.com)



1.888.499.SAFE (7233)

Missouri Employers Mutual

**Work SAFE**

A photograph showing a flooded area with a brick wall on the left. Several sandbags are placed against the wall to prevent water from entering. The water is murky and brown. The scene is dimly lit, suggesting an indoor or shaded outdoor area.

# HOW TO PREPARE FOR A FLOOD

AMERICA'S  
**PrepareAthon!**  
BE SMART. TAKE PART. PREPARE.

# FLOOD BASICS

**Flooding is the most common natural disaster in the United States and can happen anywhere. *How to Prepare for a Flood* explains how to protect yourself and your property, and details the steps to take now so that you can act quickly when you, your home, or your business is in danger.**

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## WHAT

Flooding is an overflowing of water onto land that is normally dry. Flooding may happen with only a few inches of water, or it may cover a house to the rooftop.

## WHEN

Flooding can occur during any season, but some areas of the country are at greater risk at certain times of the year. Coastal areas are at greater risk for flooding during hurricane season (i.e., June to November), while the Midwest is more at risk in the spring and during heavy summer rains. Ice jams occur in the spring in the Northeast and Northwest. Even the deserts of the Southwest are at risk during the late summer monsoon season.

## WHERE

Flooding can happen in any U.S. state or territory. It is particularly important to be prepared for flooding if you live in a low-lying area near a body of water, such as a river, stream, or culvert; along a coast; or downstream from a dam or levee.

## HOW

**Flooding can occur in several ways, including the following.**

- Rivers and lakes cannot contain excessive rain or snowmelt.
- Excessive rain or snowmelt cannot be fully absorbed into the ground.
- Waterways are blocked with debris or ice and overflow.
- Water containment systems break, such as levees, dams, or water or sewer systems.
- Strong winds from tropical storms or hurricanes cause a storm surge by pushing seawater onto land.

**The speed and duration of flooding can vary significantly.**

- Flooding can occur slowly as rain continues to fall for many days. This type of flooding, sometimes called a slow-onset flood, can take a week to develop and can last for months before floodwaters recede.
- Rapid-onset floods occur more quickly, typically developing within hours or days. These types of floods usually occur in smaller watersheds experiencing heavy rainfall, particularly in mountainous and urban areas, and the water usually recedes within a few days.
- Some rapid-onset floods known as flash floods occur very quickly with little or no warning, such as during periods of extremely heavy rain or when levees, dams, ice jams, or water systems break. Densely populated areas are at a high risk for flash floods. In urban areas, flash floods can fill underpasses, viaducts, parking structures, low roads, and basements.
- The strong winds of a tropical cyclone or hurricane can push large amounts of seawater up onto the land, causing a storm surge. A storm surge combines with the ocean's tide to produce a storm-tide surge. Storm-tide surges have been registered as high as almost 35 feet above normal sea level and can cause significant flooding across a large area. This generally occurs over a short period, typically 4 to 8 hours, but in some areas, it can take much longer for the water to recede to its pre-storm level.

## IMPACT

The physical destruction caused by flooding depends on the speed and level of the water, the duration of the flood, terrain and soil conditions, and the built environment (e.g., buildings, roads, and bridges).

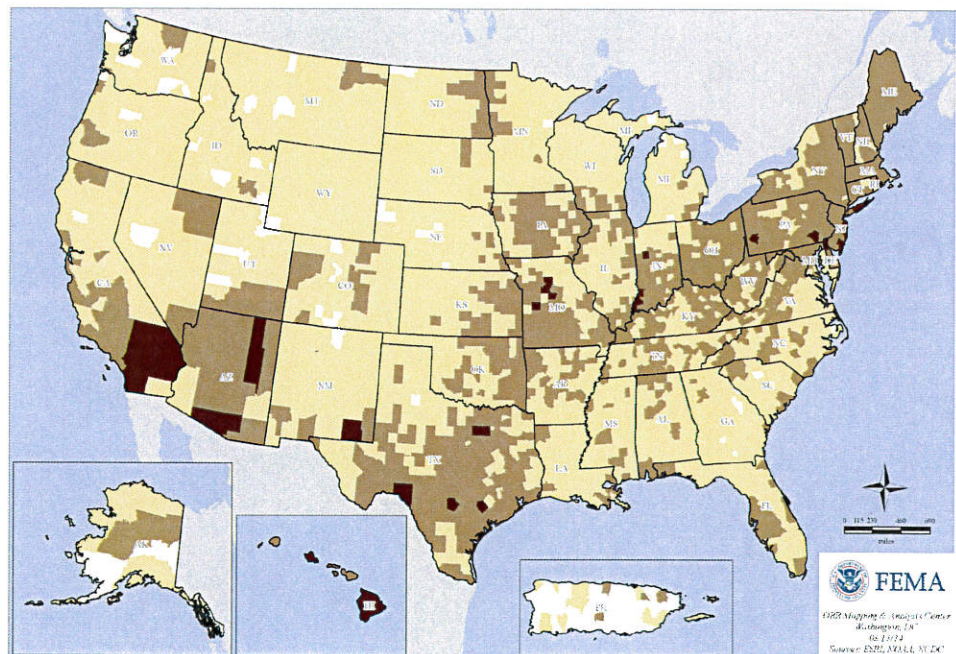
- Flooding can cause fatalities and serious injuries for people who are trapped or swept away by wading in, driving through, or boating across floodwaters.
- Transportation routes, power, water, gas, and other services may be disrupted.
- Commercial supplies and government support systems may be temporarily unavailable.
- Drinking water supplies and wells may become polluted.
- Floodwaters can cause erosion, which can damage roads, bridge structures, levees, and buildings with weak foundations, causing their collapse without warning. The floodwaters may carry the worn-away mud, rocks, and other sediment.
- Landslides and mudslides can occur.
- Even a few inches of floodwater in a home can cause tens of thousands of dollars in damage.

## KNOW THE RISK

### FREQUENCY OF FLOOD EVENTS BY COUNTY: 1996–2013

This map depicts all coastal, flash, lakeshore, storm surge, or other flooding identified by the National Oceanic and Atmospheric Administration (NOAA).

Flood Frequency  
By County



## YOUR GOAL FOR PROTECTION

**Flood-related injuries and deaths are often the result of individuals trapped in floodwaters. The best way to stay safe is to leave areas that flood and avoid floodwaters.**

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### PERSONAL PROTECTION

#### EVACUATE

To avoid being trapped when floodwaters threaten your area, the best action to protect yourself and your family is to evacuate before flooding starts. Know and follow the directions from local officials for community evacuation or seek high ground for localized flooding. If you do not evacuate before the flooding occurs or you are trapped by flash flooding, do not enter flooded areas or moving water either on foot or in a vehicle, including areas that appear to have only inches of water.

### PROPERTY PROTECTION

#### ELEVATE, WATERPROOF, AND CLEAR DEBRIS

Your goal now, before a flood occurs, is to reduce the risk of damage to structures from flooding. This means elevating critical utilities, such as electrical panels, switches, sockets, wiring, appliances, and heating systems, and waterproofing basements. In areas with repetitive flooding, consider elevating the entire structure. Make sure that basements are waterproofed and that your sump pump is working and then install a battery-operated backup in case of a power failure. Installing a water alarm will also let you know if water is accumulating in your basement. Clear debris from gutters and downspouts. Anchor any fuel tanks. Move furniture, valuables, and important documents to a safe place.

### RISK MANAGEMENT

#### FLOOD INSURANCE

Purchasing flood insurance provides financial protection for the cost of repairs due to flood damage. Standard insurance policies do not cover flooding, but flood insurance is available for homeowners, renters, and business owners through the National Flood Insurance Program.

## EMERGENCY NOTIFICATIONS

**The National Weather Service (NWS), part of the National Oceanic and Atmospheric Administration (NOAA), issues flood alerts when weather conditions make flooding more likely.**

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Watches, warnings, and evacuation notices are science-based predictions that are intended to provide adequate time for evacuation. Those who wait for actual confirmation of catastrophic levels may be trapped by flooding or traffic. Download the *Be Smart. Know Your Alerts and Warnings* document at [www.ready.gov/prepare](http://www.ready.gov/prepare) for a summary of available notifications.

### FLOOD WATCH

Flooding in your area is possible. You should leave or be prepared to move to higher ground immediately upon short notice. Tune in to NOAA Weather Radio All Hazards, local radio, and/or television stations for information and monitor alert notifications.

### FLOOD WARNING

Flooding is occurring or is about to occur soon. If advised to evacuate, do so immediately.

### FLASH FLOOD WATCH

Flash flooding is possible. You should leave or be prepared to move to higher ground upon short notice. Listen to a NOAA Weather Radio All Hazards, local radio, and/or television stations for information and monitor alert notifications.

## FLASH FLOOD WARNING

A flash flood is occurring or about to occur. Seek higher ground immediately.

## OTHER ALERTS

Flood watches and warnings may also be issued for specific types of flooding (e.g., coastal or river flooding).

NWS River Forecast Centers issue river-flood forecasts to the public. During periods of flooding, these forecasts inform the public about the height of the flood crest, the date and time the river is expected to overflow its banks, and the date and time the flow in the river is expected to recede back within its banks. The U.S. Geological Survey (USGS) and NWS work together during a flood to collect and use the most up-to-date data and to update forecasts as new information is acquired. For more information on the River Forecast Centers and current observed river conditions, go to [www.water.weather.gov/ahps/rfc/rfc.php](http://www.water.weather.gov/ahps/rfc/rfc.php).

## EVACUATION NOTICE

If the danger is significant, local authorities may issue an evacuation notice to alert residents that flooding will be or is occurring and it is important to leave the area. Evacuation orders vary by state and community, and may range from voluntary to mandatory. When authorities issue a mandatory evacuation notice, leave the area immediately.

**PROTECT  
YOURSELF  
BEFORE  
A FLOOD**

## TAKE ACTION NOW!

**Protecting yourself today means having sources for information, preparing your home or workplace, developing an emergency communications plan, and knowing what to do when a flood is approaching your home or business. Taking action today can save lives and property.**

### KNOW

**Know your flood risk.** Learn whether you live, work, or travel through areas that are prone to flooding. To help communities understand their risk of flooding, the Federal Emergency Management Agency (FEMA) creates flood maps (Flood Insurance Rate Maps, or FIRMs) to show the locations of high-risk, moderate-to-low risk, and undetermined risk areas. To check your flood risk, enter your address at [www.floodsmart.gov/floodsmart/pages/flooding\\_flood\\_risks/defining\\_flood\\_risks.jsp](http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/defining_flood_risks.jsp). According to the National Flood Insurance Program (NFIP), more than 25 percent of all flood claims each year come from homes outside areas at high risk for flooding. To participate in the NFIP, local communities must adopt floodplain management regulations that meet or exceed its minimum requirements.

**Know how to stay informed.** Receiving timely information about weather conditions or other emergency events can make all the difference in knowing when to take action to be safe.

- Monitor the weather reports provided by your local news media.
- Many communities have text or email alerting systems for emergency notifications. To find out what alerts are available in your area, do an Internet search with your town, city, or county name and the word "alerts."
- Consider buying a NOAA Weather Radio (NWR) All Hazards receiver, which receives broadcast alerts directly from NWS. You can purchase these at many retail

outlets, such as electronics and big box stores, or online. Some NWR receivers are designed to work with external notification devices with visual and vibrating alerts for people who are deaf or hard of hearing. For more information on NWR receivers, visit [www.nws.noaa.gov/nwr/nwrrcvr.htm#programming](http://www.nws.noaa.gov/nwr/nwrrcvr.htm#programming).

- Think about how you will stay informed if there is a power outage. Have extra batteries for a battery-operated radio and your cell phone. Consider having a hand crank radio or cell phone charger.
- You can use USGS's WaterAlert system (<http://maps.waterdata.usgs.gov/mapper/wateralert>) to receive texts or email messages when a stream in your area is rising to flood level.

### **Know your evacuation routes; plan your transportation and a place to stay.**

The safest way to survive a flood is to evacuate the area if advised to leave. To ensure that you will be able to act quickly should the need arise, you need to plan ahead.

- Know your community's local flood evacuation plan and identify several escape routes for your location if roads are blocked; include plans to evacuate people with disabilities and others with access and functional needs, pets, service animals, and livestock.
- If you will evacuate by car, keep your car fueled and in good condition. Keep emergency supplies and a change of clothes in your car.
- If you will need to share transportation, make arrangements now. If you will need to use public transportation, including paratransit, contact your local government emergency management agency to ask how an evacuation will work, how you will get current information during an evacuation, the location of staging areas, and other information.
- If you need to relocate for an extended period of time, identify a place away from home now where you could go if you had to leave. Consider family or friends who live outside of the local area.
- If you expect to go to a shelter after evacuating, download the American Red Cross Shelter Finder app. This app displays open American Red Cross shelters and provides the capacity and current population of each shelter. Visit [www.redcross.org/mobile-apps/shelter-finder-app](http://www.redcross.org/mobile-apps/shelter-finder-app). You can also text SHELTER + your ZIP code to 43362 (4FEMA) to find the nearest shelter in your area.
- If you have pets and plan to go to a shelter, call to inquire whether the shelter can accommodate your pets. Shelters will accept service animals.

## **PRACTICE**

**Practice how you will communicate with family members.** In a dangerous situation, your first thoughts will be the safety of your family and friends. In case you are not together when authorities issue a flood watch or flood warning, practice how you will communicate with each other. Remember that sending texts is often faster than making a phone call. Keep important numbers written down in your wallet not just in your phone. It is sometimes easier to reach people outside of your local area during an emergency, so choose an out-of-town contact for all family members to call or use social media. Decide where the members of your household will meet after the flood. Visit [www.ready.gov/make-a-plan](http://www.ready.gov/make-a-plan) for instructions on developing a Household Communication Plan.

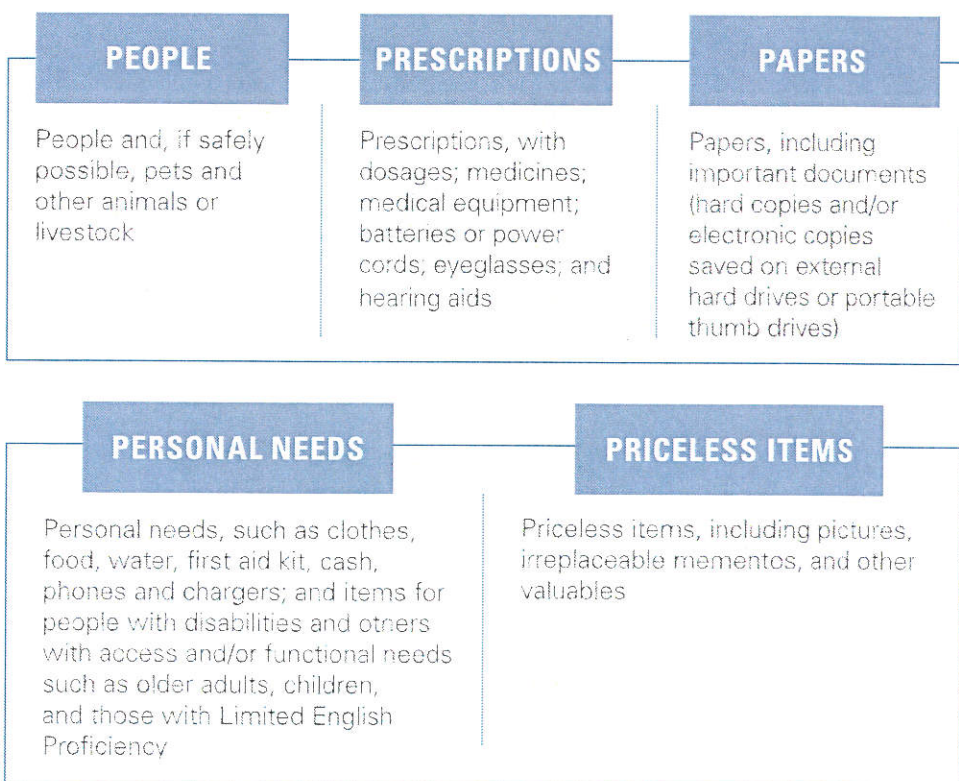
### Practice first aid skills and emergency response actions through training classes.

In most circumstances, when someone is hurt, a person on the scene provides the first assistance, before professional help arrives. Learn and practice response skills now so you will know what to do.

- Each year, more than 3 million people gain the skills they need to prepare for and respond to emergencies through American Red Cross training classes, including first aid, automated external defibrillator (AED), and cardio-pulmonary resuscitation (CPR) training. Visit [www.redcross.org/take-a-class](http://www.redcross.org/take-a-class) to find out about classes in your area. Download the American Red Cross First Aid App at [www.redcross.org/mobile-apps/first-aid-app](http://www.redcross.org/mobile-apps/first-aid-app).
- The Community Emergency Response Team (CERT) Program expands the emergency response network by providing training in basic response skills to community members. CERT Basic Training educates individuals about disaster preparedness for hazards that may affect their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Visit [www.fema.gov/community-emergency-response-teams](http://www.fema.gov/community-emergency-response-teams) to find your local program.

### STORE Store supplies so you can grab them quickly if you need to evacuate; know in advance what else you will need to take.

Take time now to make a list of the things you would need or want to take with you if you had to leave your home quickly. Store the basic emergency supplies in a “Go Bag” or other container. Be ready to grab other essential items quickly before leaving. Remember to include specialized items for people with disabilities and others with access and functional needs such as older adults, children, and those with Limited English Proficiency. For a full list of supplies for your emergency supply kit, visit [www.ready.gov/build-a-kit](http://www.ready.gov/build-a-kit). When making your list, consider the **Five Ps of Evacuation**.





### **Store the important documents you will need to start your recovery.**

Review your homeowners or renters insurance policy and also prepare or update a list of your home's contents by taking pictures or videotaping each room in the house. If your home or business sustains significant damage, you will need access to insurance and rental or mortgage agreements to file a claim or request assistance from the government. During recovery, you may also need access to personal information such as medical insurance, prescriptions, or warranties for durable medical equipment. The Emergency Financial First Aid Kit (EFFAK) can help you identify the records you will want to keep safe. This document is available at [www.fema.gov/media-library/assets/documents/29791](http://www.fema.gov/media-library/assets/documents/29791). Store your records safely. Keep papers in a fireproof, waterproof box. If records are stored electronically, keep a backup drive in your fireproof, waterproof box or store files using a secure cloud-based service.

### **PROTECT Protect your property and manage your risk.** Take steps to protect your property from flood damage.

- Talk to your insurance agent about buying flood insurance. Flood insurance is available for homeowners, renters, and business owners. Because homeowners insurance policies do not typically cover flood losses, you will need to purchase separate flood insurance if your property is at risk for flooding. Visit [www.floodsmart.gov/floodsmart/pages/flooding\\_flood\\_risks/defining\\_flood\\_risks.jsp](http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/defining_flood_risks.jsp) for an estimate of what flood insurance may cost for your property address. A policy purchased today will take effect in 30 days, so act now.
- Elevate the heating system (furnace), water heater, and electric panel if the location is susceptible to flooding.
- Install "check valves" in sewer lines to prevent floodwater from backing up into the drains of your home.
- Waterproof the basement.
- Install sump pumps with battery backup.
- If you live in a flood-prone area, stockpile emergency building materials (e.g., plywood, plastic sheeting, lumber nails, a hammer and saw, a pry bar, shovels, and sandbags).
- In areas with repetitive flooding, consider elevating the building.
- Keep gutters and drains free of debris.

### **DISCUSS Discuss what you have done to prepare with your family, friends, neighbors, and colleagues.** Talking about preparedness with others will help you think through your plans, share information about alerts and warnings, and share tips for protecting property. Talking about disasters and helping others prepare makes everyone safer.

**Discuss how your community can reduce risk.** Work with others in your community to improve community resilience planning. Work with others to support your community's participation in the Community Rating System of the National Flood Insurance Program and to examine what building codes or land use will improve your community's resilience. For more information on mitigation options for reducing your community's risk, see *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* at [www.fema.gov/media-library/assets/documents/30627?id=6938](http://www.fema.gov/media-library/assets/documents/30627?id=6938).

# PROTECT YOURSELF DURING A FLOOD

Flood-related injuries and deaths are often the result of individuals being trapped in floodwaters. Authorities may direct you to evacuate a low-lying area, or the likely path of the rising waters, to avoid being trapped by rapid changes in water levels.

## EVACUATE

- If authorities advise or order you to evacuate, do so immediately. Be sure to remember the **Five Ps of Evacuation**: People, Prescriptions, Paper, Personal Needs, and Priceless Items.
- If you are in the path of a slow-onset flood and there is time before you need to evacuate, consider the following strategies.
  - ✓ Move items you want to protect to a higher floor.
  - ✓ Turn off gas, water, and electricity if you know how and can do it safely. Do not touch electrical equipment if it is wet or you are standing in water.
  - ✓ Put sandbags around your property.

## IF FLOODWATER IS PRESENT

If you see floodwater on roads, walkways, bridges, and on the ground, do not attempt to cross. The depth of the water is not always obvious and the roadbed may be washed out under the water. Moving water has tremendous power. Six inches of moving water has the potential to knock you off your feet, and a foot of water can sweep a vehicle—even a large SUV—off of the road. Floodwaters can contain rocks, mud, other debris, oil, gasoline, and even sewage. Be especially cautious at night when it is harder to recognize flood dangers. For more information on floodwater hazards, visit the NWS Turn Around Don't Drown® program at <http://tadd.weather.gov>.

## IF TRAPPED

If you do not leave before the flooding reaches your immediate area and you are trapped, call 911 if possible. Give your location and explain your situation.

## IN A BUILDING

- Go to the highest level of the building. Avoid basements and lower floors, but do not climb into a closed attic as you may become trapped by rising floodwater.
- Go onto your roof only if necessary. Signal for help.

## IN A VEHICLE

- If floodwater is blocking your evacuation route but you can turn around safely, turn around and go to a building on high ground.
- If your vehicle is trapped in rapidly moving water, stay in the vehicle. If water is rising inside the vehicle, seek refuge on the roof.

## OUTDOORS

- Move to higher ground and, if necessary, climb as high as possible on a sturdy object.

# PROTECT YOURSELF AFTER A FLOOD

## IF YOU EVACUATED

- Return home only when authorities say it is safe.
- Be aware of areas where floodwaters have receded, and watch out for debris.
- Do not attempt to drive through areas that are still flooded.

## IF YOU STAYED IN THE AREA OR AS YOU RETURN

Listen to official public information to get expert, informed advice as soon as it becomes available. After the rising water has stopped, use the following considerations and precautions:

### INSIDE SAFETY

- If your home was severely flooded, you may only be able to enter when officials say it is safe to do so. Stay out of any building surrounded by floodwaters.
- Use extreme caution when entering flooded buildings. There may be hidden damage, particularly in foundations. Personal safety considerations include protecting yourself from electric shock, mold contamination, asbestos, and lead paint. Turn off electricity at main breaker or fuse box. Homeowners who are unfamiliar with electricity or their home's electrical systems should contact their local power company or a qualified electrician to assist them in making their property safe from electrical hazards after a flood. Check for loose boards and slippery floors.
- Do not touch electrical equipment if it is wet or you are standing in water.
- Shut off utilities to a flooded home or building.
- Use flashlights, not lanterns, torches, or matches, to examine buildings. Flammable gases may be inside the structure and open flames may cause a fire or explosion.
- If you turned off your gas, a licensed professional is required to turn it back on.
- Carbon monoxide exhaust kills. Use a generator or other gasoline-powered machine ONLY outdoors and away from windows so the fumes do not get inside. The same goes for camping stoves. Fumes from charcoal are also deadly—cook with charcoal ONLY outdoors. For more information, visit the U.S. Centers for Disease Control and Prevention's website on preventing carbon monoxide poisoning after an emergency at <http://emergency.cdc.gov/disasters/cofacts.asp>.

### OUTSIDE SAFETY

- Stay away from moving water, especially near rivers, streams, drainage systems, and coastal areas.
- Avoid wading in floodwater, which may be contaminated by oil, gasoline, or raw sewage.
- Watch for dangerous debris (e.g., broken glass, metal fragments), dead animals, or venomous snakes that may be in floodwaters. Before walking through debris, use a stick to check for hidden dangers. Underground or downed power lines may electrically charge the water.
- Do not drive in areas where floodwater covers the road.
- Stay away from downed power lines and report them to 911 or the power company's emergency number.
- Stay away from damaged areas unless police, fire, or relief organizations have requested your assistance.

## COMMUNICATIONS

- Use local alerts, radio stations, and other local information sources, such as American Red Cross apps, to get information and advice as soon as available.
- Use text messaging or social media to communicate with family and friends. Telephones and cellular phone systems are often overwhelmed following a disaster, so use phones only for emergency calls.

## HEALTH AND SANITATION

- Listen for news reports to learn whether the community's water supply is safe to drink.
- Service damaged septic tanks and leaching systems as soon as possible. A damaged sewage system is a serious health hazard.
- Have wells checked for contamination from bacteria and chemicals.
- Clean and disinfect everything that got wet. Mud left from floodwater can contain sewage, bacteria, and chemicals. Take precautions and wear appropriate protective equipment such as gloves, safety glasses, and face masks. Follow five basic steps for post-flood building restoration, including (1) air out, (2) move out, (3) tear out, (4) clean out, and (5) dry out. Seek out professional services and/or guidance before attempting to repair flood-damaged property.
- Throw out any food, including canned items, that was not maintained at a proper temperature or has been exposed to floodwaters. Do not eat food from a flooded garden. When in doubt, throw it out.
- Remove and replace any drywall or other paneling that has been underwater. Use a moisture meter to make sure that wooden studs and framing are dry before replacing the drywall. Mold growth in hidden places is a significant health hazard.

## CARE FOR LOVED ONES

- Look for signs of depression or anxiety related to this experience, such as feeling physically and mentally drained; having difficulty making decisions or staying focused; becoming easily frustrated on a more frequent basis; feeling tired, sad, numb, lonely, or worried; or experiencing changes in appetite or sleep patterns. Seek help from local mental health providers if you detect these signs in yourself or others.

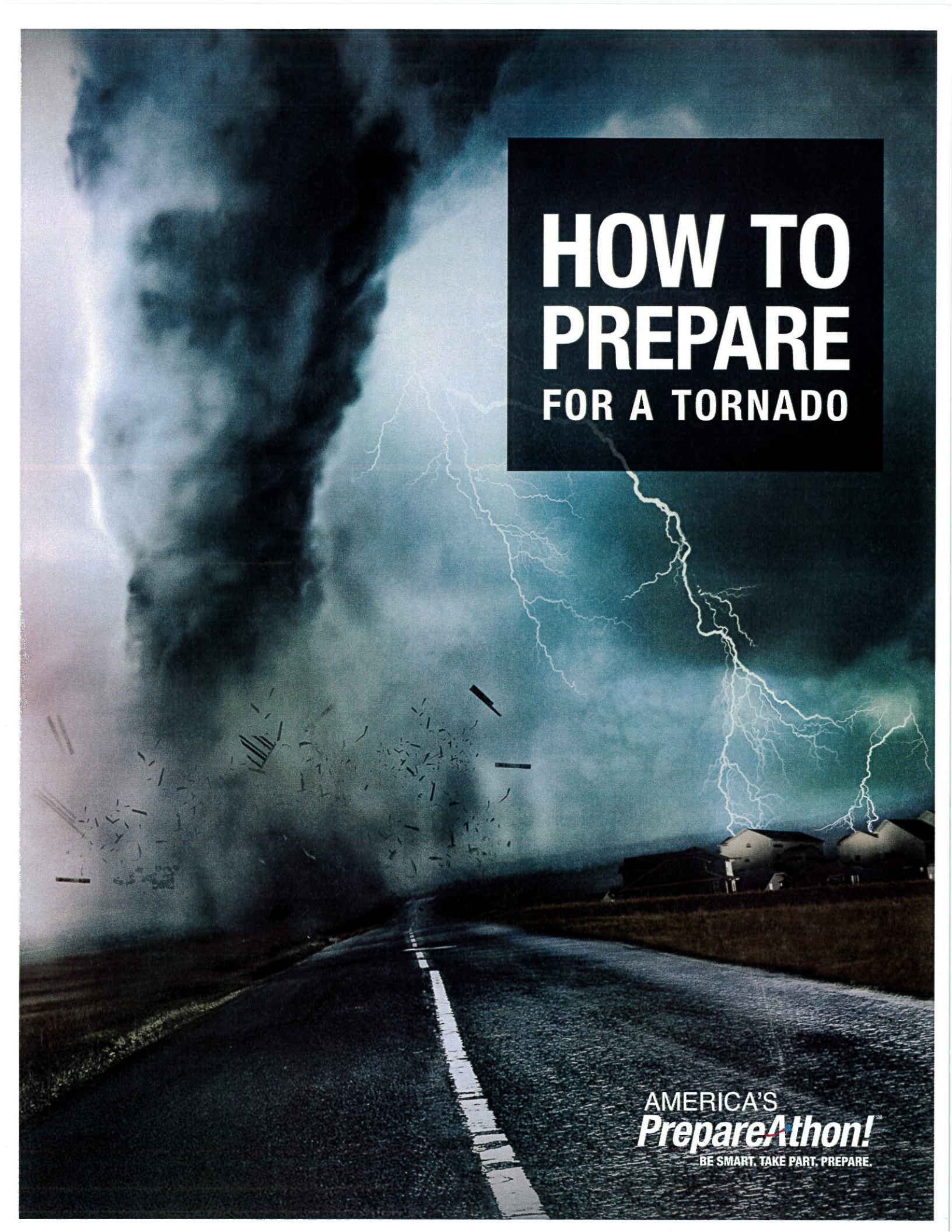
## INSURANCE

- Photograph damage to your property and contact your insurance agent. Do what you can to prevent further damage that insurance may not cover (e.g., putting a tarp on a damaged roof).

## RESOURCES

If you would like more information, the following resources may be helpful.

- American Red Cross, *Repairing Your Flooded Home*:  
[www.redcross.org/images/MEDIA\\_CustomProductCatalog/m4340135\\_file\\_cont333\\_lang0\\_150.pdf](http://www.redcross.org/images/MEDIA_CustomProductCatalog/m4340135_file_cont333_lang0_150.pdf)
- FEMA *Above the Flood: Elevating Your Floodprone House*:  
[www.fema.gov/media-library/assets/documents/725](http://www.fema.gov/media-library/assets/documents/725)
- FEMA *After a Flood: The First Steps*:  
[www.fema.gov/media-library/assets/documents/3396](http://www.fema.gov/media-library/assets/documents/3396)
- FEMA *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House From Flooding*: [www.fema.gov/media-library/assets/documents/480](http://www.fema.gov/media-library/assets/documents/480)
- FEMA *Hurricane Sandy Issue Paper: Guidance for Turning the Power Back On*:  
[www.fema.gov/media-library/assets/documents/29788](http://www.fema.gov/media-library/assets/documents/29788)
- FEMA *Hurricane Sandy Recovery Fact Sheet #1: Cleaning Flooded Buildings*:  
[www.fema.gov/media-library/assets/documents/31368?id=7128](http://www.fema.gov/media-library/assets/documents/31368?id=7128)
- FEMA *Protecting Building Utilities From Flood Damage*:  
[www.fema.gov/media-library/assets/documents/3729](http://www.fema.gov/media-library/assets/documents/3729)
- FloodSmart: [www.floodsmart.gov/floodsmart](http://www.floodsmart.gov/floodsmart)
- NWS Flood Safety Awareness: [www.floodsafety.noaa.gov](http://www.floodsafety.noaa.gov)
- NWS *Hurricane Flooding: A Deadly Inland Danger*:  
[www.nws.noaa.gov/om/brochures/InlandFlooding.pdf](http://www.nws.noaa.gov/om/brochures/InlandFlooding.pdf)
- NWS NOAA River Forecast:  
[www.water.weather.gov/ahps2/index.php?wfo=bmx](http://www.water.weather.gov/ahps2/index.php?wfo=bmx)
- NWS *The Hidden Danger: Low Water Crossing*:  
[www.nws.noaa.gov/om/brochures/TheHiddenDangerEnglish.pdf](http://www.nws.noaa.gov/om/brochures/TheHiddenDangerEnglish.pdf)
- NWS *Tropical Cyclone Inland Flooding*:  
[www.nws.noaa.gov/om/brochures/TropicalCycloneInlandFlooding.pdf](http://www.nws.noaa.gov/om/brochures/TropicalCycloneInlandFlooding.pdf)
- NWS Turn Around Don't Drown®:  
[www.nws.noaa.gov/os/water/tadd/tadd-resources.shtml#brochures](http://www.nws.noaa.gov/os/water/tadd/tadd-resources.shtml#brochures)
- Ready: [www.Ready.gov/floods](http://www.Ready.gov/floods)
- Substance Abuse and Mental Health Services Administration (SAMHSA), *Disaster-Specific Resources: Annotated Bibliography*:  
[www.samhsa.gov/dtac/dbhis/dbhis\\_specific\\_bib.asp#disaster](http://www.samhsa.gov/dtac/dbhis/dbhis_specific_bib.asp#disaster)
- USGS WaterAlert: <http://maps.waterdata.usgs.gov/mapper/wateralert>



# HOW TO PREPARE FOR A TORNADO

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BE SMART. TAKE PART. PREPARE.

# TORNADO BASICS

Tornadoes are one of nature's most violent storms and can cause death, injury, and destruction within seconds. *How to Prepare for a Tornado* explains how to protect yourself and details the steps to take now so that you can act quickly at a time when every second counts.

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## WHAT

A tornado is a violently rotating column of air that extends from a thunderstorm to the ground and is often—although not always—visible as a funnel cloud. Once the tornado has passed, the National Weather Service (NWS) rates them using the Enhanced Fujita (EF) scale based on the severity of the damage and estimated wind speed. The scale goes from an EF0 tornado, which causes light damage, to an EF5 tornado, which causes total devastation. Lightning and hail are common in thunderstorms that produce tornadoes.

## WHEN

Tornadoes can strike in any season, but occur most often in the spring and summer months. They can occur at all hours of the day and night, but are most likely to occur between 3 p.m. and 9 p.m.

## WHERE

About 1,200 tornadoes hit the United States every year and every state is at risk. Most tornadoes in the United States occur east of the Rocky Mountains.

## IMPACT

The destruction and injury caused by a tornado depends on the intensity, size, path, time of day, and amount of time they are on the ground. Wind from tornadoes can reach more than 200 miles per hour, and damage paths can be more than 1 mile wide and 50 miles long.

- Damage can range from light to catastrophic. Injuries can be minor, serious, or life-threatening. Fatalities can result even in the lower-rated tornadoes (EF0/EF1). Wind from tornadoes can cause structural damage, transform debris into deadly projectiles, move and destroy houses, de-bark trees, and roll cars.
- A tornado may disrupt transportation, power, water, gas, communications, and other services in its direct path and in neighboring areas.
- Heavy rains, flash flooding, and hail can occur from related thunderstorms.

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## YOUR GOAL FOR PROTECTION

**Most injuries and fatalities from tornadoes are caused by being struck or cut by falling or wind-borne debris. When a tornado threatens, your goal is to go to the safest place for protection before the tornado hits and to take additional measures for personal cover.**

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## BEST PROTECTION

The best protection in all tornadoes is provided by a structure built to the Federal Emergency Management Agency (FEMA) safe room or the International Code Council (ICC) 500 storm shelter standards. These structures provide near-absolute protection.



## MODERATE PROTECTION

In a sturdy building, a small, interior, windowless room, such as a closet or bathroom, on the lowest level of the building provides moderate protection. A floor below ground is best. In these locations, use additional personal cover. Use what is available to cover yourself, such as a coat or blanket, and cover your head and neck with your arms. To make sure you know the safest location in a building, called the Best Available Refuge Area, get an evaluation by a qualified architect or structural engineer. This is the most commonly available protective action for tornadoes.

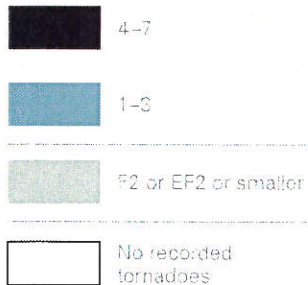


## MINIMAL/INADEQUATE PROTECTION

Some locations do not provide protection from tornadoes, including: manufactured (mobile) homes/offices, the open space of open-plan buildings (e.g., malls, big retail stores, and gymnasiums), vehicles, and the outdoors.

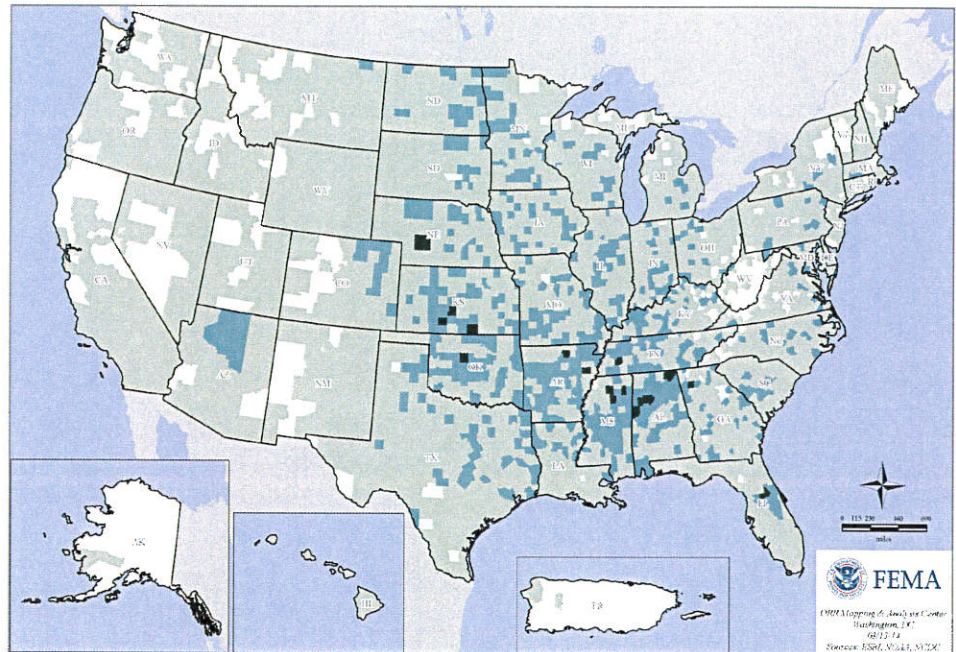
# KNOW THE RISK

Frequency of F3\* or EF3 or greater tornadoes



\*The F-Scale for Fujita Scale) was replaced with the EF-Scale for Enhanced Fujita Scale) in 2007.

### Tornado Activity by County: 1996–2013





# WARNING SIGNS

Having advance notice that a tornado is approaching your area can give you the critical time needed to move to a place with better protection. Pay attention to weather reports and sign up for text alerts and smart phone apps that provide weather warnings.

It is important to remember that you may not always receive an official tornado alert in your area. You may need to use your judgment to seek protection when you see or hear a dangerous storm advancing. Know the tornado warning signs.

## TORNADO WARNING SIGNS

1

A rotating, funnel-shaped cloud that extends from a thunderstorm toward the ground may be visible.

2

An approaching cloud of debris, especially at ground level, can mark the location of a tornado even if a funnel is not visible.

3

A loud roar that sounds similar to a freight train.

4

A strange quiet occurring within or shortly after a thunderstorm. The wind may die down and the air may become very still.

5

Debris dropping from the sky.

6

A change in the color of the sky.

## EMERGENCY NOTIFICATIONS

NWS, part of the National Oceanic and Atmospheric Administration (NOAA), issues tornado alerts when weather conditions occur that make tornadoes more likely. Watches and warnings are science-based predictions that are intended to provide adequate time for action. Download the *Be Smart. Know Your Alerts and Warnings* document at [www.ready.gov/prepare](http://www.ready.gov/prepare) for a summary of available notifications.

### TORNADO WATCH

NWS issues a **tornado watch** when weather conditions in an area indicate an increased risk for severe weather that may be capable of producing a tornado.

### TORNADO WARNING

NWS issues a **tornado warning** when a tornado has been sighted or indicated by weather radar. **On average, tornado warnings are issued 13 minutes prior to the event,<sup>1</sup> but warning times vary greatly and may be much less.** Occasionally, tornadoes develop without detection, and no official warnings can be made before touchdown. Forecasters do their best to predict the path of a storm, but not all areas under a tornado warning will experience a tornado. Even if you have been through a tornado warning without experiencing any damage, remember that tornadoes are unpredictable and you should ALWAYS take immediate action when authorities issue a tornado warning.

<sup>1</sup> National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Tornadoes 101, [www.noaa.gov/features/protecting/tornados101.html](http://www.noaa.gov/features/protecting/tornados101.html)

# PROTECT YOURSELF BEFORE A TORNADO

## TAKE ACTION NOW!

To ensure that you are able to act quickly and get the best available protection during a tornado, you need to plan ahead. There are steps you can take right now to lower the risk for you and your loved ones. *Planning and practicing specifically how and where you take cover for protection may save your life.*

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### KNOW

**Know the areas that are prone to frequent and severe tornadoes.** Learn whether you live, work, or travel through areas that are prone to frequent and severe tornadoes.

**Know how to stay informed.** Receiving timely information about weather conditions or other emergency events can make all the difference in knowing when to take action.

- Monitor weather reports provided by your local media.
- Many communities have text or email alerting systems for emergency notifications. To find out what alerts are available in your area, do an Internet search with your town, city, or county name and the word "alerts."
- Consider buying a NOAA Weather Radio (NWR) All Hazards receiver, which receives broadcast alerts directly from the NWS. You can purchase these at many retail outlets, such as electronics and big box stores, or online. Some NWR receivers are designed to work with external notification devices with visual and vibrating alerts for people who are deaf or hard of hearing. For more information on NWR receivers, visit [www.nws.noaa.gov/nwr/nwrrcvr.htm#programming](http://www.nws.noaa.gov/nwr/nwrrcvr.htm#programming).
- Think about how you will stay informed if there is a power outage. Have extra batteries for a battery-operated radio and your cell phone. Consider having a hand crank radio or cell phone charger.

**Know where you would go to have the highest available level of protection from a tornado for every place where you spend a lot of time, such as home, work, school, or house of worship.** Your level of protection from tornadoes depends on where you are when the tornado strikes as well as the intensity, size, and duration of the tornado. Because you cannot judge the intensity of a tornado in advance, you should always seek the highest level of protection available.

Your plan should include where you will go and how you will get there. If you or others you know have young children, elderly family members, family members with access or functional needs, service animals, or pets, you should plan now to ensure that everyone can get to a protective location. Community shelters are required to accommodate people with accessibility needs and service animals, but you will need to call the shelter in advance to ask about policies on bringing pets to the shelter.

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### BEST PROTECTION

Most buildings will be destroyed if hit directly by an EF3, EF4, or EF5 tornado, and can sustain significant damage from a lower-level tornado. FEMA safe rooms and ICC 500 storm shelters are designed to provide "near-absolute" protection against even the most extreme tornadoes, and only these safe rooms and storm shelters should be labeled "shelters" for tornado protection. These shelters can be constructed or installed in a home or small business, or they can be built on a larger scale as a community shelter.

If your home or small business is in an area prone to frequent and severe tornadoes, consider building or installing a FEMA safe room or ICC 500 storm shelter. In areas subject to extreme wind events, those responsible for public safety—including building owners, schools, hospitals, and neighborhood associations—should consider building accessible community safe rooms. People who live or work in structures with inadequate protection, such as mobile homes or buildings with long-span roofs, also should discuss the option of building a community safe room or shelter. Grants or loans for communities and homeowners may be available to support the construction of safe rooms. Communities may consider local legislation to require safe rooms in new construction and structural reinforcements for certain public buildings.

More information is available in two free FEMA publications:

- *Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business* (FEMA P-320, Third Edition, August 2008). [www.fema.gov/media-library/assets/documents/2009?id=1536](http://www.fema.gov/media-library/assets/documents/2009?id=1536)
- *Design and Construction Guidance for Community Safe Rooms* (FEMA P-361, Second Edition, August 2008). [www.fema.gov/media-library/assets/documents/3140?id=1657](http://www.fema.gov/media-library/assets/documents/3140?id=1657)

A copy of the *ICC/National Storm Shelter Association (NSSA) Standard for the Design and Construction of Storm Shelters* can be purchased and downloaded from this website: <http://shop.iccsafe.org/icc-500-2008-icc-nssa-standard-for-the-design-and-construction-of-storm-shelters-2.html>.



## MODERATE PROTECTION

Although not specifically designed to protect against tornadoes, there are some areas in a sturdy building that may provide moderate protection, depending on the intensity of the tornado and how close it comes to your location. In a sturdy building, you should plan to go to a small, interior, windowless room, such as a closet or bathroom. This room should be on the lowest level of the building, underground is best. In a location with moderate protection, you should also plan to take additional steps to protect yourself from potential falling or wind-borne debris. You should cover yourself with any materials that may provide protection from debris, such as cushions, a sleeping bag, or a blanket. Kneel down and bend over into a ball, and cover your head and neck with your arms. Never leave a sturdy building to try to escape a tornado. These may also be the best available actions for buildings with long-spanned roofs.

Commercial property owners and building managers should ask qualified architects or structural engineers to identify the Best Available Refuge Area(s) in the building for moderate protection, especially for buildings with long-span roofs and large, open spaces, and buildings with many occupants. This may apply to business owners, landlords, and building managers of schools and government buildings. Contact the local building department, or the local chapter of a structural engineers association to ask for assistance. The FEMA publication *Tornado Protection: Selecting Refuge Area in Buildings* (FEMA P-431) presents case studies of three schools and guidance for selecting the safest area in existing buildings. This publication is available at [www.fema.gov/media-library/assets/documents/2246?id=1563](http://www.fema.gov/media-library/assets/documents/2246?id=1563).

## RESEARCH NOTE: PERSONAL COVER AND POSITIONING

- Research shows that additional personal cover, such as being under a table, covering your head and neck with your arms, or covering your body with a blanket or coat, is beneficial in locations that are not a FEMA safe room or ICC storm shelter. While personal cover is helpful, additional research is needed to validate the best type of personal cover in different circumstances.
- In addition, specific research is needed to examine whether wearing some types of helmets may provide additional protection for the head from wind-driven and falling debris. If you plan to wear a helmet, make sure to keep your helmet near your protective location. You should not take time to find a helmet after authorities have issued a tornado warning. Do not remove a helmet from an injured person because this could cause further injury. Only trained medical professionals should remove helmets.
- More research also is needed on the best way to position your body in different locations.



## MINIMAL/INADEQUATE PROTECTION

If you spend time in locations that do not offer protection from tornadoes, such as manufactured (mobile) homes/offices, the open space of open-plan buildings (e.g., malls, big retail stores, and gymnasiums), vehicles, or the outdoors, plan ahead and be ready to change your plans during a tornado watch so you will be able to reach a different location for protection if needed.

## PRACTICE

**Practice moving quickly to the protective location in the places where you spend a lot of time.** Plan with others to conduct a tornado drill. Take note of how much time it takes to get to your protective location. Warning periods can vary significantly, but you should know how long you will need to reach the protective area. You will have greater success in getting to a shelter or other protective location quickly if you have identified this area beforehand and if you practice getting there. Like any drill, if you take the time to practice, you will have a greater chance of reacting quickly and appropriately in a real situation. Be sure to consider people with disabilities and others with access or functional needs.

**Practice how you will communicate with family members.** In a dangerous situation, your first thoughts will be the safety of your family and friends. In case you are not together when authorities issue a tornado watch or tornado warning, practice how you will communicate with each other. Remember that sending texts is often faster than making a phone call. Keep important numbers written down in your wallet, not just stored in your phone. It is sometimes easier to reach people outside your local area during an emergency, so choose an out-of-town contact for all family members to call or use social media. Decide where your household members will meet after the tornado. Visit [www.ready.gov/make-a-plan](http://www.ready.gov/make-a-plan) for Household Communication Plan templates.

**Practice first aid skills and emergency response actions through training classes.** In most circumstances, when someone is hurt, a person on the scene provides the first assistance, before professional help arrives. Learn and practice response skills now so you will know what to do.

- Each year, more than 3 million people gain the skills they need to prepare for and respond to emergencies through American Red Cross training classes, including first aid, automated external defibrillator (AED), and cardio-pulmonary resuscitation (CPR) training. Visit [www.redcross.org/take-a-class](http://www.redcross.org/take-a-class) to find

classes in your area. Download the American Red Cross First Aid App at [www.redcross.org/mobile-apps/first-aid-app](http://www.redcross.org/mobile-apps/first-aid-app).

- The Community Emergency Response Team (CERT) Program expands the emergency response network by providing training in basic response skills to community members. CERT Basic Training educates people about disaster preparedness for hazards that may affect their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Visit [www.fema.gov/community-emergency-response-teams](http://www.fema.gov/community-emergency-response-teams) to find your local program.

## STORE

**Store the supplies you may need after the tornado passes.** Identify the things you would need most when you emerge from your protective location to find severe damage, no power, and no water. If possible, keep some of these items in your pre-identified protective locations at home, work, school, or your place of worship. You may need to keep other items in a “Go Bag” or other container to bring with you. For a full list of supplies for your emergency supply kit, visit [www.ready.gov/build-a-kit](http://www.ready.gov/build-a-kit). Here are some suggestions to consider:

- Battery-powered or crank-operated flashlight to inspect your home or office after the tornado has passed. If using a battery-powered flashlight, turn it on outside the building first because the battery could produce a spark and cause a fire if gas is present. Include spare batteries.
- Battery-powered or crank-operated radio to listen for emergency updates and news reports.
- First aid kit to address minor injuries.
- Complete change of clothing, including a long-sleeved shirt, long pants, work gloves, and sturdy, thick-soled shoes. These will protect you from further injury by broken glass, exposed nails, or other objects.
- Whistle or air horn to notify rescuers in case you are trapped by debris resulting from the tornado.
- Dust mask to protect you from inhaling particles and fine debris.
- Food and water for a day or two; consider specific dietary considerations.
- Your medications and medical supplies.
- If you have children, a special item (e.g., stuffed animal, book, game) to provide comfort.

**Store the important documents you will need to start your recovery.** Review your homeowners or renters insurance policy and prepare or update a list of your home's contents by taking pictures or videotaping each room in the house. If your home or business sustains significant damage, you will need access to insurance and rental or mortgage agreements to file a claim or request assistance from government programs. During recovery, you may need access to personal information such as medical insurance and prescriptions. The Emergency Financial First Aid Kit (EFFAK) can help you identify the records you will want to keep safe, available at [www.ready.gov/financialpreparedness](http://www.ready.gov/financialpreparedness). Store your records safely. Keep papers in a fireproof, waterproof box. If records are stored electronically, keep a backup drive in your fireproof, waterproof box or store files using a secure cloud-based service.

## DISCUSS

**Discuss what you have done to prepare with your family, friends, neighbors, and colleagues.** Talking about preparedness with others will help you think through your plans. Share information about alerts and warnings and encourage others to sign up for notifications. Talking about disasters and helping others prepare makes everyone safer.

**Discuss with community leaders how your community can reduce risk.** Work with others in your community to request an evaluation of Best Available Refuge Areas in public locations and pursue community investments for FEMA safe rooms and ICC 500 storm shelters, especially in areas where frequent and severe tornadoes have occurred. For more information on mitigation options to reduce your community's risk, see *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* at [www.fema.gov/media-library/assets/documents/30627?id=6938](http://www.fema.gov/media-library/assets/documents/30627?id=6938).

# PROTECT YOURSELF DURING A TORNADO

**During a storm, listen to local news and monitor your alerts to stay informed about tornado watches and warnings.**

## TORNADO WATCH

If NWS issues a tornado watch:

**Tune in** to NOAA Weather Radio All Hazards, local radio, and television weather reports and check alert notifications.

**Review** where you will go for protection and discuss with those around you. Change your plans, if necessary, to make sure you will be able to get to a protective location quickly.

**Call** anyone you know who may not be tuned-in or who may need assistance to reach a protective location.

**Charge** your cell phone in case the power goes out.

## TORNADO WARNING

If NWS issues a tornado warning or if you see a tornado:

**TAKE ACTION IMMEDIATELY!**

If available, go to a FEMA safe room or ICC 500 storm shelter

**OR**

Go to a small, interior, windowless room in a sturdy building on the lowest level (underground is best) or to a Best Available Refuge Area. Take additional personal cover. Cover your head and neck with your arms and cover your body as best you can, e.g., with a coat or a blanket.

## RESEARCH NOTE: VEHICLE OR DITCH

When a warning is issued, and it is not possible to get to a tornado shelter, to a sturdy building, or to an identified Best Available Refuge Area, there is no single recommendation for what last-resort action to take because many factors can affect your decision.

With new developments in automotive design, increases in the size and stability of newer vehicles, and safety glass, researchers are evaluating the relative minimal protection of being in a vehicle versus taking cover outdoors in an area lower than the surrounding ground or road level (e.g., a ditch), provided there is no flooding. Whether in a vehicle or outdoors, cover your head and neck with your arms and cover your body as best you can, with a coat or a blanket if possible. If taking cover in a vehicle, put the seatbelt on and try not to be under a freeway, road overpass, or trees. Do not attempt to outrun a tornado in a vehicle.

# PROTECT YOURSELF AFTER A TORNADO

**Tornadoes can cause death and injury and can destroy or make buildings and roads unsafe. Once the tornado has passed and the tornado warning is cancelled, use extreme caution.**

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## INSIDE SAFETY

- Use extreme care when leaving a building. Do not use matches or lighters inside and leave immediately if you smell gas or see spills that could be flammable. Avoid debris and sharp objects.
- If you are trapped, stay where you are and cover your mouth with a cloth or mask to avoid breathing dust. Try not to move the debris around you or stir up dust. Send a text, if possible, or bang on a pipe or wall or use a whistle instead of shouting so that you do not breathe in dust.

## OUTSIDE SAFETY

- Do not enter damaged buildings until local authorities tell you that it is safe.
- Stay away from downed power lines and report them to 911 or the power company's emergency number.
- Use caution during post-tornado clean-up, including debris removal, chainsaw use, and repairs. Wear boots or heavy shoes to protect your feet; injuries from exposed nails and debris are common after tornadoes.

## COMMUNICATIONS

- Use local alerts, radios, and other information sources, such as FEMA or American Red Cross apps, to get information and advice as soon as it is available.
- Use text messaging or social media to communicate with family and friends. Telephones and cellular phone systems are often overwhelmed following a disaster, so use phones only for emergency calls.

## MEDICAL

- Provide first aid, but do not move anyone who is seriously injured unless they are in immediate danger of death or further injury. If moving someone is necessary, hold the person's head and neck in the position in which you found them. If an injured person is wearing a helmet, do not remove it; this could cause further injury.

## CARE FOR LOVED ONES

- Look for signs of depression or anxiety related to this experience, such as feeling physically and mentally drained; having difficulty making decisions or staying focused; becoming easily frustrated on a more frequent basis; feeling tired, sad, numb, lonely, or worried; or experiencing changes in appetite or sleep patterns. Seek help from local mental health providers if you detect signs in yourself or others.

## INSURANCE

- Photograph damage to your property and contact your insurance agent. Do what you can to prevent further damage (e.g., putting a tarp on a damaged roof) that insurance may not cover.

## RESOURCES

If you would like more information, the following resources may be helpful.

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*Design and Construction Guidance for Community Safe Rooms* (FEMA P-361). [www.fema.gov/media-library/assets/documents/3140?id=1657](http://www.fema.gov/media-library/assets/documents/3140?id=1657)

*ICC/NSSA Standard for the Design and Construction of Storm Shelters for Purchase*. <http://shop.iccsafe.org/icc-500-2008-icc-nssa-standard-for-the-design-and-construction-of-storm-shelters-2.html>

*Protect Your Property from High Winds*. [www.fema.gov/media-library/assets/documents/13270?id=3263](http://www.fema.gov/media-library/assets/documents/13270?id=3263)

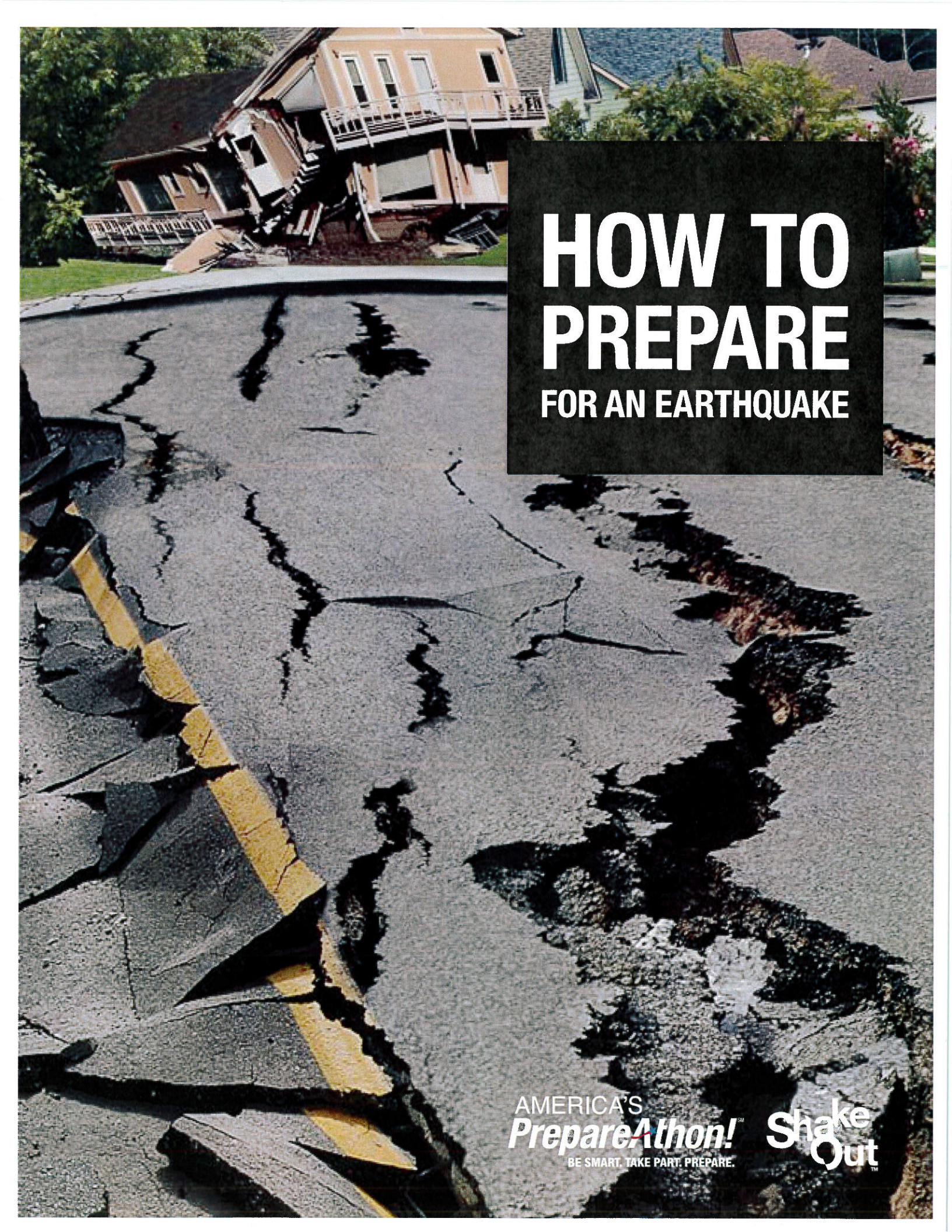
Substance Abuse and Mental Health Services Administration (SAMHSA) Disaster-Specific Resources: Annotated Bibliography. [www.samhsa.gov/dtac/dbhis/dbhis\\_specific\\_bib.asp#disaster](http://www.samhsa.gov/dtac/dbhis/dbhis_specific_bib.asp#disaster)  
[www.samhsa.gov/dtac/dbhis/dbhis\\_specific\\_bib.asp#tornado](http://www.samhsa.gov/dtac/dbhis/dbhis_specific_bib.asp#tornado)

*Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business* (FEMA P-320, Third Edition, August 2008). [www.fema.gov/media-library/assets/documents/2009?id=1536](http://www.fema.gov/media-library/assets/documents/2009?id=1536)

*Thunderstorms, Tornadoes, Lightning... Nature's Most Violent Storms: A Preparedness Guide Including Tornado Safety Information for Schools*. [www.nws.noaa.gov/om/severeweather/resources/ttl6-10.pdf](http://www.nws.noaa.gov/om/severeweather/resources/ttl6-10.pdf)

*Tornado Protection: Selecting Refuge Area in Buildings* (FEMA P-431, Second Edition, October 2009). [www.fema.gov/media-library/assets/documents/2246](http://www.fema.gov/media-library/assets/documents/2246)





# HOW TO PREPARE FOR AN EARTHQUAKE

AMERICA'S  
*PrepareAthon!*  
BE SMART. TAKE PART. PREPARE.

Shake  
Out™

# How to Prepare for an Earthquake

Earthquakes can bring mild to violent shaking and can occur anytime, anywhere. This guide can help you protect yourself, your family, and your property before, during, and after an earthquake.

## KNOW YOUR RISK

**WHAT:** An earthquake is the sudden, rapid shaking of the earth, caused by the breaking and shifting of subterranean rock as it releases strain that has accumulated over a long time. Initial mild shaking may strengthen and become extremely violent within seconds. Additional earthquakes, called aftershocks, may occur for hours, days, or even months. Most are smaller

than the initial earthquake but larger magnitude aftershocks also occur.

**WHEN:** Earthquakes can happen at any time of the year and occur without warning.

**WHERE:** All U.S. states and territories are at some risk for earthquakes. The risk is higher in identified seismic zones.

**IMPACT:** Larger earthquakes may cause deaths, injuries, and extensive property damage. Most casualties and injuries during an earthquake occur when: people fall while trying to walk or run during the shaking; when they are hit by falling, flying, or sliding household items or non-structural debris; and/or when they are struck or trapped by

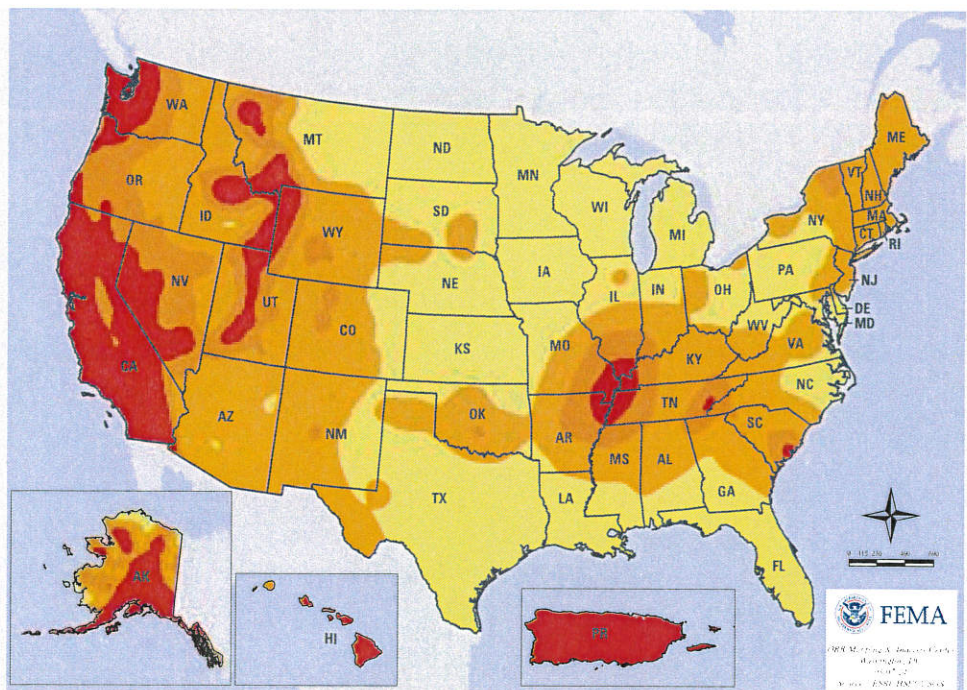
collapsing walls or other parts of the building. Transportation, power, water, gas, and other services may be disrupted. In some areas, shaking can cause liquefaction—when the ground acts more like a liquid. When this happens the ground can no longer support the weight of a building. In coastal areas, earthquakes under the sea floor can cause tsunamis.

### Forecasted Frequency of Earthquake Shaking

This map shows the frequency of the minimal level of shaking where injuries become common as a result of damage.

- Very High
- High
- Medium
- Low

This level of shaking is capable of: cracking windows; knocking dishes, glassware, knickknacks, and books off shelves and pictures off walls; moving or overturning furniture; and cracking weak plaster, adobe buildings, and some poorly built masonry buildings.



# How to Prepare for an Earthquake

This page provides an overview of protective actions to take before, during, and after an earthquake. Additional information is provided in the following pages for each phase.

## 1 | BEFORE: PREPARE

Take action now, before an earthquake hits.

- Secure items that might fall and cause injuries (e.g., bookshelves, mirrors, light fixtures).
- Practice how to Drop, Cover, and Hold On by participating in a ShakeOut earthquake drill ([www.ShakeOut.org](http://www.ShakeOut.org)).
- Store critical supplies and documents.
- Plan how you will communicate with family members.



## 2 | DURING: SURVIVE

As soon as you feel the shaking,

- **DROP** down onto your hands and knees so the earthquake doesn't knock you down.
- **COVER** your head and neck with your arms to protect yourself from falling debris. If you are in danger from falling objects, and you can move safely, crawl to a safer place or seek cover (e.g., under a desk or table).
- **HOLD ON** to any sturdy covering so you can move with it until the shaking stops.

## 3 | AFTER: RECOVER

When the shaking stops, before you move, look around for things that might fall or for dangerous debris on the ground.

- If you are in a damaged building and there is a safe way out through the debris, leave and go to an open space outside, away from damaged areas.
- If you are trapped, do not move about or kick up dust.
- If you have a cell phone with you, use it to call or text for help.
- Tap on a pipe or wall or use a whistle, if you have one, so that rescuers can locate you.
- Once safe, monitor local news reports (e.g., radio, TV, social media, and cell phone text alerts), for emergency information and instructions.

# Protect Yourself Before, During, and After an Earthquake

## HOW TO RECOGNIZE THAT AN EARTHQUAKE IS HAPPENING



You may experience a shaking or a rolling motion in the walls, floor, or ground. This movement may grow more extreme within seconds.

If you do not **DROP** down immediately, you may be knocked off your feet. You may not be able to walk or run.

Objects may fall off shelves, light fixtures may swing or fall from ceilings, or tall furniture may fall over.

There may be dust or glass particles in the air or on the ground.

You may hear noises similar to a heavy truck or train passing nearby.

## EMERGENCY NOTIFICATIONS

Although there is no advance notice of an earthquake, emergency information will be provided immediately after through radio and TV broadcasts and via Wireless Emergency Alerts texted to cell phones. In addition to commercial radios, a National Oceanic and Atmospheric Administration (NOAA) Weather Radio broadcasts alerts and warnings directly from the National Weather Service for all hazards. You may also sign up in advance to receive emergency notifications from your local emergency services.

Download *Be Smart. Know Your Alerts and Warnings* for a summary of available notifications at: [www.ready.gov/prepare](http://www.ready.gov/prepare).

Free smart phone apps, such as those available from FEMA and the American Red Cross, provide information about shelters, how to provide first aid, and how to seek assistance for recovery. (Search for the FEMA App or Red Cross Apps on your iPhone, android, or other mobile device). The U.S. Geological Survey manages the Earthquake Notification Service, which provides free notification emails when earthquakes happen in your area or anywhere in the world. Visit: <https://sslearthquake.usgs.gov/ens> for more information.



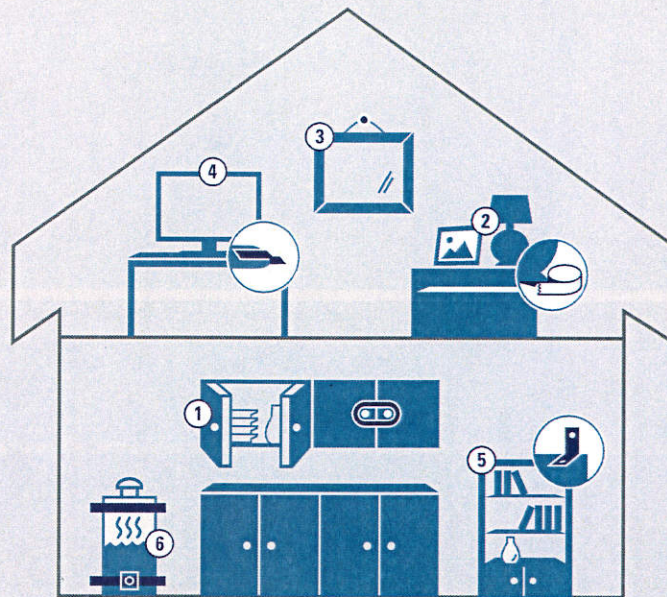
## DEVELOP A COMMUNICATIONS PLAN

Your family may not be together when an earthquake hits, so it is important to know how you will contact one another and how you will get back together in case of an emergency. Landline and cellular phone systems are often overwhelmed following a disaster, so you may need to use text messaging or social media to communicate with family and friends. Keep important numbers written down in your wallet in case you cannot access the contact list in your phone. For more information, including a sample household communications plan, visit [www.ready.gov/make-a-plan](http://www.ready.gov/make-a-plan).

# 1 | Protect Yourself Before an Earthquake

To prevent potential injuries, take the time to secure your space. Secure items that might fall, fly, or slide in an earthquake (see [www.earthquakecountry.org/step1](http://www.earthquakecountry.org/step1)). Imagine if the room was picked up and shaken up and down and side to side and then determine what items would be thrown around. Periodically review the locations where you spend time—your home, workplace, or school—to look for potential hazards and secure them.

## DO A HAZARD HUNT FOR POTENTIAL HAZARDS AND THINGS THAT MIGHT FALL



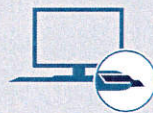
**1.** Cabinet doors can fly open allowing contents to crash to the floor; secure them with latches.



**2.** Objects such as framed photos, books, lamps, and other items that you keep on shelves and tables can become flying hazards. Secure them with hooks, adhesives, or earthquake putty to keep them in place. Move heavy or breakable items to lower shelves.



**3.** Mirrors, pictures frames, and other hanging items should be secured to the wall with closed hooks or earthquake putty. Do not hang heavy objects over beds, sofas, or any place you may be seated.



**4.** Electronics such as computers, televisions, and microwave ovens are heavy and expensive to replace. Secure them with flexible nylon straps.



**5.** Bookcases, filing cabinets, china cabinets, and other tall furniture should be anchored to wall studs, (not drywall), or masonry. Use flexible straps that allow them to sway without falling to the floor.



**6.** Secure your water heater, refrigerator, and other major appliances with the appropriate straps screwed into the wall studs or masonry to help keep them from falling over and rupturing gas or electric connections. Gas appliances should have flexible connectors to absorb the shaking while reducing the risk of fire.

**NOTE:** These adhesives, straps, hooks, latches, and other safety devices are available at most hardware and home improvement stores as well as online retailers.

# 1 | Protect Yourself Before an Earthquake



## STRENGTHEN YOUR BUILDING

Make sure your home and other buildings you spend time in are safer during earthquakes and more resistant to earthquake damage. Get professional help to assess the building's structure and then take steps to install nonstructural solutions, including foundation bolting, cripple wall bracing, and reinforced chimneys. If you live in a mobile home, consider installing an earthquake-resistant bracing system. These measures can help reduce major damage to the building. If you are a renter, ask your landlord or property manager to make the necessary improvements to make the building safer. Examples of structures that may be more vulnerable in an earthquake are those not anchored to their foundations or having weak crawl space walls, unbraced pier-and-post foundations, or unreinforced masonry walls or foundations. Check with your local office of emergency management to ask if there are volunteer teams in your community to help with assessments. Visit [www.fema.gov/earthquake-safety-home](http://www.fema.gov/earthquake-safety-home) for guidance on nonstructural ways to reduce damage and earthquake resistant structural design or retrofit.

**PRACTICE:** Everyone should know what to do in an earthquake and should practice how to **Drop, Cover, and Hold On**. Join the Great ShakeOut and America's PrepareAthon! to practice how to protect yourself and to help spread the word. Visit [www.shakeout.org](http://www.shakeout.org) and [www.ready.gov/prepare](http://www.ready.gov/prepare) to learn more. Learn and practice first aid skills and emergency response skills through training such as the Community Emergency Response Team (CERT) Program.

**GATHER CRITICAL DOCUMENTS:** Once the immediate danger passes, having your legal, financial, and medical documents will help you to receive assistance and work with your insurance company. Take time now to safeguard critical documents and take pictures or videos of your belongings. Download *Be Smart, Protect Your Critical Documents and Valuables* for a checklist. [www.ready.gov/financialpreparedness](http://www.ready.gov/financialpreparedness).

**DISCUSS:** Talking about disasters and helping others prepare makes everyone safer. Discuss what you have done to prepare with your family, friends, neighbors, and colleagues.

**STORE:** Gather and store the basic supplies your family would need for at least three days if grocery stores and other services are unavailable, if power is out, or you are unable to stay in your home. A sustained power outage can have a significant impact on people who require electricity to power medical equipment, so make sure that you have a plan to take care of yourself and your family during an outage.

# 1 | Protect Yourself Before an Earthquake

## ASSEMBLING EMERGENCY SUPPLIES

Take the time now to collect the emergency supplies you would need if the power was out, water supplies were cut off, and grocery stores were not open. You can build your supplies over time by adding a few items as your budget permits. Basic emergency supplies should include the following, most of which you probably already have in your home.



**WATER** – Ensure you have at least 1 gallon of water per person per day for at least 3 days. (Store a longer than 3-day supply of water, if possible). An average person needs to drink about 3/4 of a gallon of fluid daily. Individual needs vary depending on age, gender, health, level of activity, food choices, and climate. You may also need stored water for food preparation.



**FOOD** – Store at least a 3-day supply of non-perishable food for members of your household, including pets. Consider special dietary needs (e.g., infant formula). Include a non-electric can opener for canned food.



**FLASHLIGHT, RADIO, and CELL PHONE CHARGER** – You will need to be able to charge these items without electricity. Your flashlight and radio should be either hand-cranked or battery-powered, and stored with extra batteries. Your cell phone charger should be hand-crank, solar, or able to be charged from a car outlet.



**MEDICAL** – Include first aid kit, prescription and non-prescription/over-the-counter medications, and medical supplies.



**SANITATION** – Pack supplies for sanitation, such as hand sanitizer, towelettes, paper products, and plastic bags, for use when water resources are limited.



**ASSISTIVE TECHNOLOGY** – Include battery backup power for power-dependent mobility devices, oxygen, and other assistive technology needs.



**CLOTHING AND BLANKETS** – Ensure you have clothing with long sleeves and long pants, thick-soled shoes, and work gloves to protect yourself after the earthquake, and a sleeping bag or warm blanket for each person, if you live in a cold-weather climate.



**WHISTLE** – Include a whistle to signal for help.



**CASH** – Store cash in case ATMs are not functioning after the earthquake.



**FIRE EXTINGUISHER** – Earthquakes can cause fires to break out; have a fire extinguisher so you can put out any small fires. Use a fire extinguisher only if you are physically capable.

Consider storing supplies in several locations if possible. This means having basic supplies of food and water in locations, including your workplace, your vehicle, and, if possible, other places you and members of your household regularly spend time (e.g., house of worship, community center, and school).

It is important to consider the unique needs of your family, including access and functional needs, and the needs of children and pets. You may need to include: extra water; special food, such as infant formula or pet food; and supplies or equipment, such as diapers, glasses, or medical equipment.

**Download Emergency Supply Checklist at [www.ready.gov/build-a-kit](http://www.ready.gov/build-a-kit).**

## 2 | Protect Yourself During an Earthquake

**DROP, COVER, AND HOLD ON.** During an earthquake, minimize your movements to a few steps to a nearby safe place. If you are indoors, stay there until the shaking has stopped and you are sure it is safe to exit.



### IF YOU ARE:



**INDOORS**

### THEN:

**DROP** to your hands and knees.

**COVER** your head and neck with your arms. This position protects you from falling and provides some protection for vital organs. Because moving can put you in danger from the debris in your path, only move if you need to get away from the danger of falling objects. If you can move safely, crawl for additional cover under a sturdy desk or table. If there is low furniture, or an interior wall or corner nearby and the path is clear, these may also provide some additional cover. Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.

**HOLD ON** to any sturdy shelter until the shaking stops.

**DO NOT** run outside! **STAY** where you are until the shaking stops. **DO NOT** get in a doorway as this does not provide protection from falling or flying objects and you likely will not be able to remain standing.



**OUTDOORS**

If you can, move away from buildings, streetlights, and utility wires. Once in the open, Drop, Cover, and Hold On. **STAY THERE** until the shaking stops. This might not be possible in a city, so you may need to duck inside a building to avoid falling debris.



**IN BED**

If you are in bed: **STAY** there and **COVER** your head and neck with a pillow. At night, hazards and debris are difficult to see and avoid; attempts to move in the dark result in more injuries than remaining in bed.



**IN A MOVING  
VEHICLE**

It is difficult to control a vehicle during the shaking so stop as quickly and safely as possible, and stay in the vehicle.

Avoid stopping near or under buildings, trees, overpasses, and utility wires. Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that the earthquake may have damaged.



## 3 | Protect Yourself After an Earthquake

Once the shaking has stopped, wait a minute before getting up and then look around for debris or other dangers. If you are able to safely move to exit the building and there is an open space to go to, exit the building and avoid damaged areas and downed power lines. For buildings in metropolitan areas that do not have nearby open space, it may be safer to remain in the building until you are certain you will avoid additional glass and debris that may fall from nearby buildings. Remember aftershocks may cause further damage to weakened structures and present hazards to those exiting buildings. Drop, Cover, and Hold On whenever you feel shaking.



Monitor local news reports (battery-operated radio, TV, and cell phone text alerts) for emergency information and instructions.



If you are trapped, do not move about or kick up dust. Cover your mouth with a handkerchief or clothing. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust. Use your cell phone to call or text for help. Tap on a pipe or wall, or use a whistle, if available, so rescuers can locate you.



If you are in a damaged building and there is a safe way out through the debris, leave and go to an open space outside. If you can do so safely, take a moment to take what you might need immediately and can carry easily, such as a purse or go bag. Once outside, do not re-enter until the building is certified to be safe.



Check for injuries and provide assistance if you have training. Assist with rescues if you can do this safely.



If you are near the coast, learn the tsunami risk for your area. If you are in an area that may experience tsunamis, when the shaking stops, walk inland or to higher ground immediately. Monitor official reports for more information on the area's tsunami evacuation plans.



Stay away from damaged areas. Never use a lighter or matches near damaged areas. Check for and extinguish small fires.



Have your utilities inspected by qualified professionals for damage to electrical system, sewage, gas, and water lines.



If your home has been damaged and is no longer safe, and you need a place to stay, text SHELTER + your zip code to 43362 (4FEMA) to find the nearest public shelter in your area. A sample text would be SHELTER 12345. Follow local media for information on shelters.

## 3 | Protect Yourself After an Earthquake

- Earthquakes can destroy or make buildings and roads unsafe.
- Use extreme caution around debris. Do not attempt to remove heavy debris by yourself and assist with rescues only if you can do so safely.
- Wear protective clothing, including a long-sleeved shirt, long pants, work gloves, and sturdy, thick-soled shoes during clean-up. These will protect you from further injury from broken glass, exposed nails, or other objects.
- Do not touch electrical equipment if it is wet or you are standing in water.
- If you smell gas, call 9-1-1.
- Photograph or take a video of damage to your property to assist with filing an insurance claim.
- Know that this will be an emotional time and it is normal to feel a little blue. Seek help for yourself or others if depression or anxiety persists or seems out of proportion for the circumstances.



- Expect aftershocks. These additional earthquakes are usually less violent than the main quake but can be strong enough to further damage weakened structures. They can occur in the first hours, days, weeks, or even months after the quake. Be ready to protect yourself.

### ADDITIONAL INFORMATION

The following resources and websites can help you further prepare for, respond to, and recover from an earthquake.

#### RESOURCES

- *Avoiding Earthquake Damage: A Checklist for Homeowners.* [www.cert-la.com/education/AvoidingEarthquakeDamage.pdf](http://www.cert-la.com/education/AvoidingEarthquakeDamage.pdf)
- *Earthquake Preparedness: What Every Childcare Provider Needs to Know.* [www.fema.gov/library/viewRecord.do?id=1520](http://www.fema.gov/library/viewRecord.do?id=1520)
- *Homebuilders' Guide to Earthquake-Resistant Design and Construction.* <https://www.fema.gov/media-library/assets/documents/6015>
- *How to Series: Protect Your Property from an Earthquake.* [www.fema.gov/library/viewRecord.do?id=3260](http://www.fema.gov/library/viewRecord.do?id=3260)
- *Seven Steps to Earthquake Safety.* [www.earthquakecountry.org/sevensteps](http://www.earthquakecountry.org/sevensteps)

#### RELATED WEBSITES

America's PrepareAthon! [www.ready.gov/prepare](http://www.ready.gov/prepare)  
Ready Campaign, [www.ready.gov/earthquake](http://www.ready.gov/earthquake)  
American Red Cross Earthquake Preparedness, [www.redcross.org/prepare/disaster/earthquake](http://www.redcross.org/prepare/disaster/earthquake)  
FEMA Earthquake Safety at Home, [www.fema.gov/earthquake/earthquake-safety-home](http://www.fema.gov/earthquake/earthquake-safety-home)  
Great ShakeOut Earthquake Drills, [www.shakeout.org](http://www.shakeout.org)  
U.S. Fire Administration Earthquakes and Fire Safety, [www.usfa.fema.gov/citizens/home\\_fire\\_prev/earthquakes.shtm](http://www.usfa.fema.gov/citizens/home_fire_prev/earthquakes.shtm)  
U. S. Geological Survey (USGS), [www.earthquake.usgs.gov](http://www.earthquake.usgs.gov)

For more information on America's PrepareAthon!, log on to [www.ready.gov/prepare](http://www.ready.gov/prepare), email us at [prepareAthon@fema.dhs.gov](mailto:prepareAthon@fema.dhs.gov), or join the conversation online at #PrepareAthon.

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**PrepareAthon!**  
BE SMART. TAKE PART. PREPARE.