

HOW TO PREPARE FOR AN EARTHQUAKE

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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

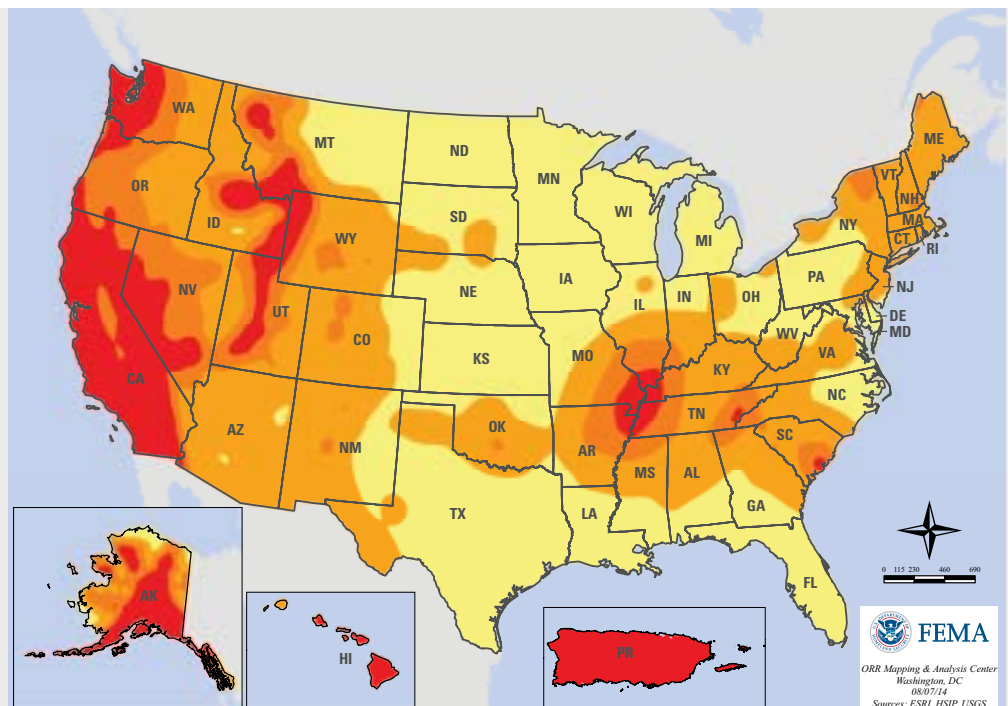
collapsing walls or other parts of the building. Transportation, power, water, gas, and other services may be disrupted. In some areas, shaking can cause liquefaction—when the ground acts more like a liquid. When this happens the ground can no longer support the weight of a building. In coastal areas,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



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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).
- 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.

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.



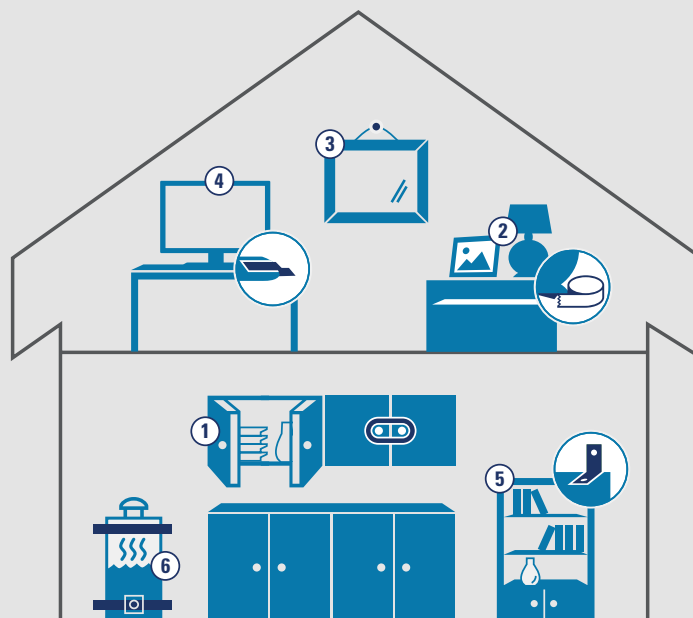
DEVELOP A COMMUNICATIONS PLAN

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.

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). 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 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 and 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.

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.

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: | THEN: |
|---|--|
|  <p>INDOORS</p> | <p>DROP to your hands and knees.</p> <p>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.</p> <p>HOLD ON to any sturdy shelter until the shaking stops.</p> <p>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.</p> |
|  <p>OUTDOORS</p> | <p>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.</p> |
|  <p>IN BED</p> | <p>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.</p> |
|  <p>IN A MOVING VEHICLE</p> | <p>It is difficult to control a vehicle during the shaking so stop as quickly and safely as possible, and stay in the vehicle.</p> <p>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.</p> |

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
- *Earthquake Preparedness: What Every Childcare Provider Needs to Know.* 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
- *Seven Steps to Earthquake Safety.* www.earthquakecountry.org/sevensteps

RELATED WEBSITES

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

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

