

#1

IDENTIFY POTENTIAL HAZARDS IN YOUR HOME AND BEGIN TO FIX THEM.

Earthquake safety is more than minimizing damage to buildings. We must also secure the contents of our buildings to reduce the risk to our lives and our pocketbooks.

Several people died and thousands were injured in the Northridge earthquake because of unsecured building contents such as toppling bookcases. Many billions of dollars were lost due to this type of damage. Much of this damage and injury could have been prevented in advance through simple actions to secure buildings and contents.

You should secure anything 1) heavy enough to hurt you if it falls on you, or 2) fragile and/or expensive enough to be a significant loss if it falls. In addition to contents within your living space, also secure items in other areas, such as your garage, to reduce damage to vehicles or hazardous material spills.

There may be simple actions you can do right now that will protect you if an earthquake happens tomorrow. **START NOW** by moving furniture such as bookcases away from beds, sofas, or other places where people sit or sleep. Move heavy objects to lower shelves. Then begin to look for other items in your home that may be hazardous in an earthquake.

Some of the actions recommended on this page may take a bit longer to complete, but all are relatively simple. Most hardware stores and home centers now carry earthquake safety straps, fasteners, and adhesives.

In the kitchen

Unsecured cabinet doors fly open during earthquakes, allowing glassware and dishes to crash to the floor. Many types of latches are available to prevent this: child-proof latches, hook and eye latches, or positive catch latches designed for boats. Gas appliances should have flexible connectors to reduce the risk of fire. Secure refrigerators and other major appliances to walls using earthquake appliance straps.



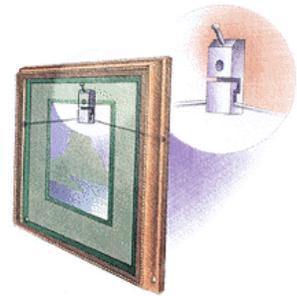
Objects on open shelves and tabletops

Collectibles, pottery objects, and lamps can become deadly projectiles. Use either hook and loop fasteners on the table and object, or non-damaging adhesives such as earthquake putty, clear quake gel, or microcrystalline wax to secure breakables in place. Move heavy items and breakables to lower shelves.



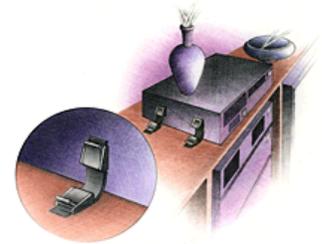
Hanging objects

Mirrors, framed pictures, and other objects should be hung from closed hooks so that they can't bounce off the walls. Pictures and mirrors can also be secured at their corners with earthquake putty. Only soft art such as tapestries should be placed over beds or sofas.



Electronics

Televisions, stereos, computers and microwaves and other electronics are heavy and costly to replace. They can be secured with flexible nylon straps and buckles for easy removal and relocation.



Furniture

Secure the tops of all top-heavy furniture, such as bookcases and file cabinets, to a wall. Be sure to anchor to the stud, and not just to the drywall. Flexible fasteners such as nylon straps allow tall objects to sway without falling over, reducing the strain on the studs. Loose shelving can also be secured by applying earthquake putty on each corner bracket.

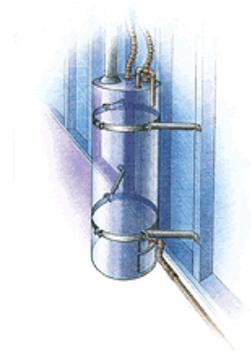


In the garage or utility room

Items stored in garages and utility rooms can fall, causing injuries, damage, and hazardous spills or leaks. They can also block access to vehicles and exits. Move flammable or hazardous materials to lower shelves or the floor.

Water heater

Unsecured water heaters often fall over, rupturing rigid water and gas connections. If your water heater does not have two straps around it that are screwed into the studs or masonry of the wall, then it is not properly braced. This illustration shows one method of bracing a water heater. Bracing kits are available that make this process simple. Have a plumber install flexible (corrugated) copper water connectors, if not already done.



Additional information, including how-to instructions, is available at www.daretoprepare.org.



CREATE A DISASTER-PREPAREDNESS PLAN.

Will everyone in your household do the right thing during the violent shaking of a major earthquake? Before the next earthquake, get together with your family or housemates to plan now what each person will do before, during and after.

Once the earthquake is over, we will have to live with the risk of fire, the potential lack of utilities and basic services, and the certainty of aftershocks. By planning now, you will be ready. This plan will also be useful for other emergencies.

Plan NOW to be safe during an earthquake:

- Practice "drop, cover, and hold on." (See [Step 5](#))
- Identify safe spots in every room, such as under sturdy desks and tables.
- Learn how to protect yourself no matter where you are when an earthquake strikes.

Plan NOW to respond after an earthquake:

- Keep shoes and a working flashlight next to each bed.
- Get a fire extinguisher for your home. Your local fire department can train you and your family to use it properly.
- Teach everyone in your household to use emergency whistles and/or to knock three times repeatedly if trapped. Rescuers searching collapsed buildings will be listening for sounds.
- Identify the needs of household members and neighbors with special requirements or situations, such as use of a wheelchair, walking aids, special diets, or medication.
- Take a Red Cross first aid and cardiopulmonary resuscitation (CPR) training course. Learn who else in your neighborhood is trained in first aid and CPR.
- Know the location of utility shutoffs and keep needed tools nearby. Make sure you know how to turn off the gas, water, and electricity to your home. Only turn off the gas if you smell or hear leaking gas.
- Install smoke alarms and test them monthly. Change the battery once a year, or when the alarm emits a "chirping" sound (low-battery signal).
- Work with your neighbors to identify who has skills and resources that will be useful in an emergency, and who may need special attention (children, elderly, disabled, etc.)
- Check with your city or county to see if there is a Community Emergency Response Team (CERT) in your area. If not, ask how to start one.

Plan NOW to communicate and recover after an earthquake:

- Select a safe place outside of your home to meet your family or housemates after the shaking stops.
- Designate an out-of-area contact person who can be called by everyone in the household to relay information.
- Provide all family members with a list of important contact phone numbers.
- Determine where you might live if your home cannot be occupied after an earthquake or other disaster.
- Know about the earthquake plan developed by your children's school or day care. Keep your children's school emergency release card current.
- Keep copies of essential documents, such as identification, insurance policies, and financial records, in a secure, waterproof container, and keep with your disaster supplies kits. Include a household inventory (a list and photos or video of your belongings). Financial recovery planning resources are listed at www.daretoprepare.org

Have occasional earthquake "drills" to practice your plan. Share your plan with people who take care of your children, pets, or home.



#3

PREPARE DISASTER SUPPLIES KITS.

Personal disaster supplies kits

Everyone should have personal disaster supplies kits. Keep them where you spend most of your time, so they can be reached even if your building is badly damaged. The kits will be useful for many emergencies.

Keep one kit in your **home**, another in your **car**, and a third kit at **work**. Backpacks or other small bags are best for your disaster supplies kits so you can take them with you if you evacuate. Include at least the following items:



- Medications, prescription list, copies of medical cards, doctor's name and contact information
- Medical consent forms for dependents
- First aid kit and handbook
- Examination gloves (non-latex)
- Dust mask
- Spare eyeglasses or contact lenses and cleaning solution
- Bottled water
- Whistle (to alert rescuers to your location)
- Sturdy shoes
- Emergency cash
- Road maps
- List of emergency out-of-area contact phone numbers
- Snack foods, high in water and calories
- Working flashlight with extra batteries and light bulbs, or light sticks
- Personal hygiene supplies
- Comfort items such as games, crayons, writing materials, teddy bears
- Toiletries and special provisions you need for yourself and others in your family including elderly, disabled, small children, and animals.
- Copies of personal identification (drivers license, work ID card, etc.)

Household disaster supplies kit

Electrical, water, transportation, and other vital systems can be disrupted for several days or much longer in some places after a large earthquake. Emergency response agencies and hospitals could be overwhelmed and unable to provide you with immediate assistance. Providing first aid and having supplies will save lives, will make life more comfortable, and will help you cope after the next earthquake.

In addition to your personal disaster supplies kits, store a **household** disaster supplies kit in an easily accessible location (in a large watertight container that can be easily moved), with a supply of the following items to last at least 3 days and ideally for 2 weeks:

- Water (minimum one gallon a day for each person)
- Wrenches to turn off gas and water supplies
- Work gloves and protective goggles
- Heavy duty plastic bags for waste, and to serve as tarps, rain ponchos, and other uses
- Portable radio with extra batteries (or hand crank for charging)
- Additional flashlights or light sticks
- Canned and packaged foods
- Charcoal or gas grill for outdoor cooking and matches if needed
- Cooking utensils, including a manual can opener
- Pet food and pet restraints
- Comfortable, warm clothing including extra socks
- Blankets or sleeping bags, and perhaps even a tent
- Copies of vital documents such as insurance policies

Use and replace perishable items like water, food, medications and batteries on a yearly basis.

A special note about children

If earthquakes scare us because we feel out of control, think how much more true this must be for children, who already must depend on adults for so much of their lives. It is important to spend time with children in your care before the next earthquake to explain why earthquakes occur. Involve them in developing your disaster plan, prepare disaster supplies kits, and practice "drop, cover, and hold on."

Consider simulating post-earthquake conditions by going without electricity or tap water.

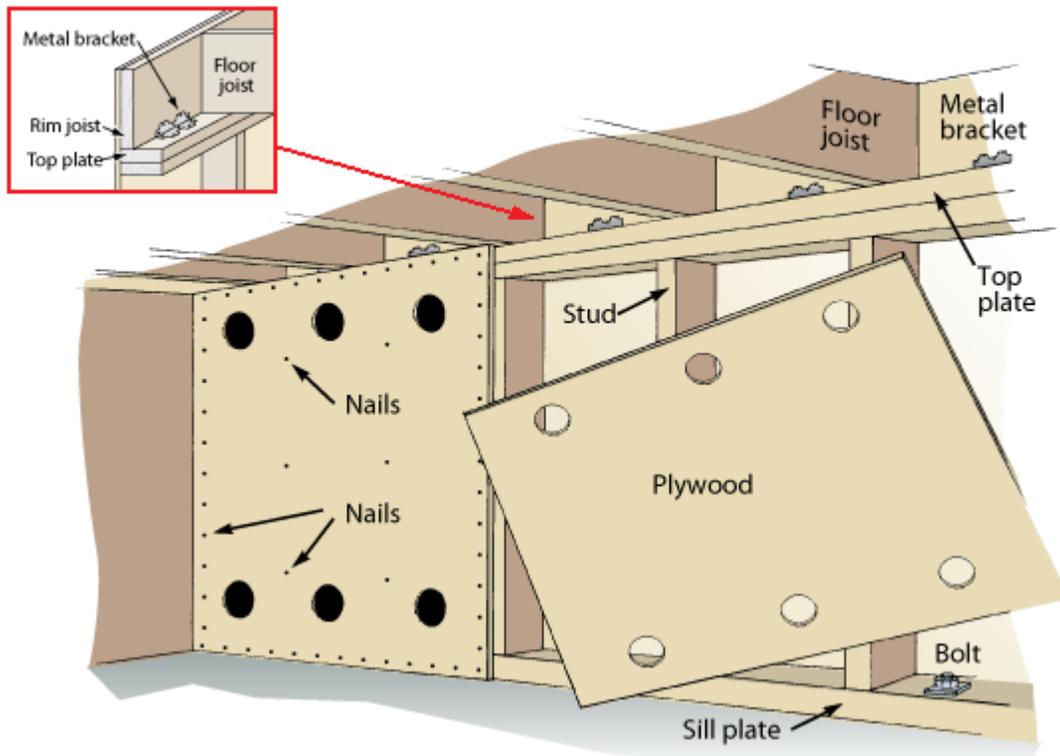
After the earthquake, remember that children will be under great stress. They may be frightened, their routine will probably be disrupted, and the aftershocks won't let them forget the experience. Adults tend to leave their children in order to deal with the many demands of the emergency, but this can be devastating to children. Extra contact and support from parents in the early days will pay off later. Whenever possible, include them in the recovery process.

#4

IDENTIFY YOUR BUILDING'S POTENTIAL WEAKNESSES AND BEGIN TO FIX THEM.

Buildings are designed to withstand the downward pull of gravity, yet earthquakes shake a building in all directions -- up and down, but most of all, sideways. There are several common issues that can limit a building's ability to withstand this sideways shaking.

Additional information, including how-to instructions, is available at www.daretoprepare.org.



This cutaway diagram shows how weak cripple walls can be strengthened by properly attached plywood sheets.

Common building problems

Most houses are not as safe as they could be. The following presents some common structural problems and how to recognize them. Once you determine if your building has one or more of these problems, prioritize how and when to fix them, and get started.



"WE HAVE GOOD BUILDING CODES SO WE MUST HAVE GOOD BUILDINGS"

The best building codes in the world do nothing for buildings built before a code was enacted. While the codes have been updated, the older buildings are still in place. Fixing problems in older buildings -- retrofitting -- is the responsibility of the building's owner.

Inadequate foundations. Look under your house at your foundation. If the foundation is damaged or built in the "pier and post" style, consult a contractor or engineer about replacing it with a continuous perimeter foundation. Look for bolts in the mudsills. They should be no more than 1.8 meters (6 feet) apart in a single story and 1.2 meters (4 feet) apart in a multistory building. Adding bolts to unsecured houses is one of the most important steps toward earthquake safety. This can be done by a contractor or by someone skilled at home maintenance.

Unbraced cripple walls. Homes with a crawl space should have panels of plywood connecting the studs of the short "cripple" walls (see figure). You or a contractor can strengthen the cripple walls relatively inexpensively.

Soft first stories. Look for larger openings in the lower floor, such as a garage door or a hillside house built on stilts. Consult a professional to determine if your building is adequately braced.

Unreinforced masonry. All masonry (brick or block walls) should be reinforced. Some communities have a program for retrofitting buildings made of unreinforced masonry. If your house has masonry as a structural element consult a structural engineer to find what can be done. Inadequately braced chimneys are a more common problem. Consult a professional to determine if your chimney is safe.

For those who rent

As a renter, you have less control over the structural integrity of your building, but you do control which apartment or house you rent:

- Structures made of unreinforced brick or block walls can collapse and cause great loss of life.
- Apartment buildings with "tuck-under" parking space openings can also collapse.
- Foundation and cripple wall failures can cause expensive damage but less loss of life.
- Objects attached to the sides of buildings, such as staircases, balconies, and decorations, can break off in earthquakes.

Ask your landlord these questions:

- What retrofitting has been done on this building?
- Have the water heaters been strapped to the wall studs?
- Can I secure furniture to the walls?

If you live in a mobile home...

Look under your home. If you only see a metal or wood "skirt" on the outside with concrete blocks or steel tripods or jacks supporting your home, you need to have an "engineered tie-down system" or an "earthquake-resistant bracing system" (ERBS) installed. An ERBS should have a label on the bracing that says, "Complies with the California Administrative Code, Title 25, Chapter 2, Article 7.5."



PROTECT YOURSELF DURING EARTHQUAKE SHAKING- DROP, COVER, AND HOLD ON.

The previous pages have concentrated on getting ready for the next earthquake. What should you do during and after earthquakes?

The area near the exterior walls of a building is the most dangerous place to be. Windows, facades and architectural details are often the first parts of the building to collapse. To stay away from this danger zone, stay inside if you are inside and outside if you are outside.

If you are...

Indoors: **Drop, cover, and hold on.** Drop to the floor, take cover under a sturdy desk or table, and hold on to it firmly. Be prepared to move with it until the shaking stops. If you are not near a desk or table, drop to the floor against the interior wall and protect your head and neck with your arms. Avoid exterior walls, windows, hanging objects, mirrors, tall furniture, large appliances, and kitchen cabinets with heavy objects or glass. Do not go outside!



In bed: If you are in bed, hold on and stay there, protecting your head with a pillow. You are less likely to be injured staying where you are. Broken glass on the floor has caused injury to those who have rolled to the floor or tried to get to doorways.

In a high-rise: Drop, cover, and hold on. Avoid windows and other hazards. Do not use elevators. Do not be surprised if sprinkler systems or fire alarms activate.

Outdoors: Move to a clear area if you can safely do so; avoid power lines, trees, signs, buildings, vehicles, and other hazards.

Driving: Pull over to the side of the road, stop, and set the parking brake. Avoid overpasses, bridges, power lines, signs and other hazards. Stay inside the vehicle until the shaking is over. If a power line falls on the car, stay inside until a trained person removes the wire.

MYTH #5 Don't be fooled!



"HEAD FOR THE DOORWAY."

An enduring earthquake image of California is a collapsed adobe home with the door frame as the only standing part. From this came our belief that a doorway is the safest place to be during an earthquake. True- if you live in an old, unreinforced adobe house. In modern houses, doorways are no stronger than any other part of the house. You are safer under a table.

In a stadium or theater: Stay at your seat and protect your head and neck with your arms. Don't try to leave until the shaking is over. Then walk out slowly watching for anything that could fall in the aftershocks.

Near the shore: Drop, cover and hold on until the shaking stops. Estimate how long the shaking lasts. If severe shaking lasts 20 seconds or more, immediately evacuate to high ground as a tsunami might have been generated by the earthquake. Move inland 3 kilometers (2 miles) or to land that is at least 30 meters (100 feet) above sea level immediately. Don't wait for officials to issue a warning. Walk quickly, rather than drive, to avoid traffic, debris and other hazards.

Below a dam: Dams can fail during a major earthquake. Catastrophic failure is unlikely, but if you live downstream from a dam, you should know flood-zone information and have prepared an evacuation plan.



AFTER THE EARTHQUAKE, CHECK FOR INJURIES AND DAMAGE.

First take care of your own situation. Remember your emergency plans. Aftershocks may cause additional damage or items to fall, so get to a safe location. Take your disaster supplies kit.

If you are trapped by falling items or a collapse, protect your mouth, nose, and eyes from dust. If you are bleeding, put pressure on the wound and elevate the injured part. Signal for help with your emergency whistle, a cell phone, or knock loudly on solid pieces of the building, three times every few minutes. Rescue personnel will be listening for such sounds.

Once you are safe, help others and check for damage. Protect yourself by wearing sturdy shoes and work gloves, to avoid injury from broken glass and debris. Also wear a dust mask and eye protection.

MYTH #6 Don't be fooled!



"EVERYONE WILL PANIC DURING THE BIG ONE!"

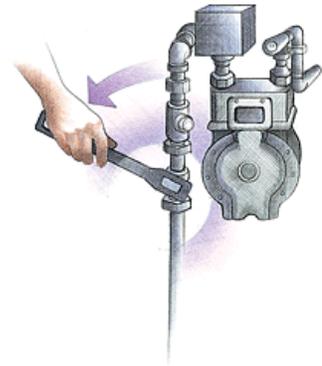
A common belief is that people always panic and run around madly during and after earthquakes, creating more danger for themselves and others. Actually, research shows that people usually take protective actions and help others both during and after the shaking. Most people don't get too shaken up about being shaken up!

Check for injuries:

- Check your first aid kit or the front pages of your telephone book for detailed instructions on first aid measures.
- If a person is bleeding, put direct pressure on the wound. Use clean gauze or cloth, if available.
- If a person is not breathing, administer rescue breathing.
- If a person has no pulse, begin CPR (cardiopulmonary resuscitation).
- Do not move seriously injured persons unless they are in immediate danger of further injury.
- Cover injured persons with blankets or additional clothing to keep them warm.
- Get medical help for serious injuries.
- Carefully check children or others needing special assistance.

Check for damage:

- **Fire.** If possible, put out small fires in your home or neighborhood immediately. Call for help, but don't wait for the fire department.
- **Gas Leaks.** Shut off the main gas valve only if you suspect a leak because of broken pipes or the odor or sound of leaking natural gas. Don't turn it back on yourself - wait for the gas company to check for leaks. The phone book has detailed information on this topic.
- **Damaged Electrical Wiring.** Shut off power at the main breaker switch if there is any damage to your house wiring. Leave the power off until the damage is repaired.
- **Broken Lights and Appliances.** Unplug these as they could start fires when electricity is restored.
- **Downed Power Lines.** If you see downed power lines, consider them energized and stay well away from them. Keep others away from them also. Never touch downed power lines or any objects in contact with them.
- **Fallen Items.** Beware of items tumbling off shelves when you open the doors of closets and cupboards.
- **Spills.** Use extreme caution. Clean up any spilled medicines, drugs, or other non-toxic substances. Potentially harmful materials such as bleach, lye, garden chemicals, and gasoline or other petroleum products should be isolated or covered with an absorbent such as dirt or cat litter. When in doubt, leave your home.
- **Damaged Masonry.** Stay away from chimneys and walls made of brick or block. They may be weakened and could topple during aftershocks. Don't use a fireplace with a damaged chimney. It could start a fire or let poisonous gases into your home.





WHEN SAFE, CONTINUE TO FOLLOW YOUR DISASTER PREPAREDNESS PLAN.

Once you have met your household's immediate needs after an earthquake, continue to follow the plan you prepared in advance. Aftershocks will continue to happen for several weeks after major earthquakes. Some may be large enough to cause additional damage. Always be ready to drop, cover, and hold on.

Your recovery period can take several weeks to months or longer. Take the actions listed below to be safe and to minimize the long-term effects of the earthquake on your life.

The first days after the earthquake...

Use the information you put together in your disaster plan and the supplies you organized in your disaster kits. Until you are sure there are no gas leaks, do not use open flames (lighters, matches, candles, or grills) or operate any electrical or mechanical device that can create a spark (light switches, generators, motor vehicles, etc.). Never use the following indoors: camp stoves, gas lanterns or heaters, gas or charcoal grills, or gas generators. These can release deadly carbon monoxide or be a fire hazard in aftershocks.



Be in communication

- Turn on your portable or car radio for information and safety advisories.
- Place all phones back on their cradles.
- Call your out-of-area contact, tell them your status, then stay off the phone. Emergency responders need to use the phone lines for lifesaving communications.
- Check on the condition of your neighbors.

Food and water

- If power is off, plan meals to use up refrigerated and frozen foods first. If you keep the door closed, food in your freezer may be good for a couple of days.
- Listen to your radio for safety advisories.
- If your water is off or unsafe, you can drink from water heaters, melted ice cubes, or canned vegetables. Avoid drinking water from swimming pools or spas.
- Do not eat or drink anything from open containers that are near shattered glass.

The first weeks after the earthquake...

This is a time of transition. Although aftershocks may continue, you will now work toward getting your life, your home and family, and your routines back in order. Emotional care and recovery are just as important as healing physical injuries and rebuilding a home. Make sure your home is safe to occupy and not in danger of collapse in aftershocks. If you were able to remain in your home or return to it after a few days, you will have a variety of tasks to accomplish:

- If your gas was turned off, you will need to arrange for the gas company to turn it back on.
- If the electricity went off and then came back on, check your appliances and electronic equipment for damage.
- If water lines broke, look for water damage.
- Locate and/or replace critical documents that may have been misplaced, damaged, or destroyed.
- Contact your insurance agent or company right away to begin your claims process.
- Contact the Federal Emergency Management Agency (FEMA) to find out about financial assistance by visiting www.fema.gov/about/process.

If you cannot stay in your home...

If your home is structurally unsafe or threatened by a fire or other hazard, you need to evacuate. However, shelters may be overcrowded and initially lack basic services, so do not leave home just because utilities are out of service or your home and its contents have suffered moderate damage.

If you evacuate, tell a neighbor and your out-of-area contact where you are going. As soon as possible, set up an alternative mailing address with the post office. Take the following, if possible, when you evacuate:

- Personal disaster supplies kits
- Medications and eyewear
- Supply of water, food, and snacks
- Blanket/pillow/air mattress or sleeping pad
- Change of clothing and a jacket
- Towel and washcloth
- Diapers, food, and other supplies for infants
- A few family pictures or other comfort items
- Personal identification and copies of household and health insurance information.

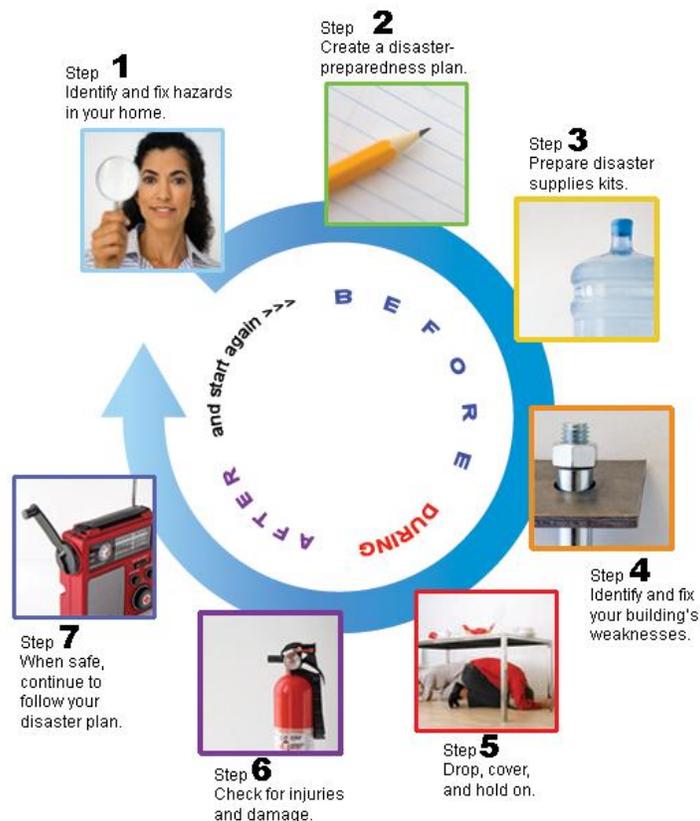


Do not take to a shelter:

- Pets (Service animals for people with disabilities are allowed; take food for them. Have a plan for your pets in advance.)
- Large quantities of unnecessary clothing or other personal items
- Valuables that might be lost, stolen, or take up needed space

Once a Presidential Declaration has been issued, FEMA may activate the Individuals and Households Program (www.fema.gov/about/process). This program includes:

- Home-repair cash grants; the maximum Federal grant available (as of 2005) is \$26,200
- Housing Assistance in the form of reimbursement for short-term lodging at a hotel
- Rental assistance for as long as 18 months in the form of cash payment
- If no other housing available, FEMA may provide mobile homes or other temporary housing



Once you have recovered from the earthquake, go back to Step 1 and do the things you did not do before, or do them more thoroughly. Learn from what happened during the earthquake so you will be safer and recover more quickly next time.