

Possible Disasters

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U.S. Natural Disasters

- Floods
- Earthquakes
- Fires
- Hurricanes
- Tornadoes
- Volcanoes
- Tsunamis
- Extreme Cold & Heat

These are the most common natural disasters that affect the U.S. Know the ones that are most likely to affect your area, and have a general knowledge of all possible disasters in case you're at a different location at the time of a disaster.

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Floods

- Most common disaster in the U.S.
- Turn around, don't drown



WIKI/2017

Flooding is the most common natural disaster in the United States. If you live in a flood-prone area, secure your home by elevating your furnace and water heater. You may need to construct some barriers and store sandbags. You also may need to purchase flood insurance if you live in a flood zone. Be safe in floods. Never drive or walk through flooded areas.

The most common flood hazards to impact the U.S. are flash flooding, river flooding, storm surge and coastal inundation, burn scars/debris flows, ice/debris jams, snowmelt, dry wash and dam breaks/levee failure.

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Flooding Terms

- Flood Watch – possible
- Flash Flood Watch
- Flood Warning – is occurring or will occur
- Flash Flood Warning



FBI/USDOJ/Blitzer

These terms better prepare you for understanding the flood alerts often broadcast.

- Flood Watch – Flooding is possible. Tune into alert systems for further information.
- Flash Flood Watch – Flash flooding is possible. Be prepared to move to higher ground. Listen to alert systems.
- Flood Warning – Flooding is occurring or will occur. Be prepared for possible evacuation.
- Flash Flood Warning – A flash flood is occurring. Seek higher ground.

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Earthquakes

- One of the most frightening and destructive disasters
- Expect deaths, injuries and property damage



Robert A. Epner/CAL, ENR

Earthquakes can cause severe damage. Use caution following an earthquake in moving around and opening cabinets or doors. Be prepared for aftershocks and listen to emergency stations for information.

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If You're in an Earthquake

- Indoors – duck, drop and take cover
- Outdoors – go to open area
- Driving – stop where safe and stay in car
- Mountains – be alert for falling rocks



If you are indoors when an earthquake strikes, duck or drop to the floor. Take cover under a sturdy desk, table or other furniture, not in a doorway. Hold on to it and be prepared to move with it. Hold the position until the ground stops shaking and it is safe to move. If in your bed, cover your head to prevent injury from glass and other objects. Stay clear of windows, fireplaces, woodstoves, and heavy furniture or appliances that may fall over. Stay inside to avoid being injured by falling glass or building parts.

If you are outside, get into an open area, away from buildings, trees and power lines.

If you are driving, stop if it is safe, but stay inside your car. Stay away from bridges, overpasses and tunnels. Move your car as far out of the normal traffic pattern as possible. If possible, avoid stopping under trees, light posts, power lines or signs.

If you are in a mountainous area or near unstable slopes or cliffs, be alert for falling rock and other debris that could be loosened by the earthquake.

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Earthquake Terms

- Fault
- Aftershock
- Epicenter
- Seismic Waves
- Magnitude



Become familiar with these terms:

- Fault – the fracture in rocks where displacement may occur or has occurred during a quake
- Aftershock – a similar or lesser intensity shock that follows the main quake
- Epicenter – the place on the Earth's surface above the point of the beginning rupture. A quake may extend for hundreds of miles from the epicenter.
- Seismic Waves – vibrations that travel from the quake at speeds of several miles per second. Most of the destruction of an earthquake is caused by these waves.
- Magnitude – the amount of energy released from a quake. A 7.0 on the Richter scale is an extremely strong quake.

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Fires

- 501,500 structure fires
- 2,685 deaths and 13,000 injuries
- \$10.3 billion in property damage (2015)
- Wildland – 4 of 5 started by people



In 2015, the National Fire Protection Association reported more than a half million structure fires, causing 2,685 deaths, 13,000 injuries and \$10.3 billion in property damage. The beginning of winter often is called “fire season” since restarted furnaces, wiring and alternative heating equipment cause so many house fires.

Wildfire is one of the most destructive natural forces. While sometimes caused by lightning, the majority of wildfires are human-caused. The term “wildfire” is applied to any unwanted, unplanned fire burning in forests, shrubs or grass.

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Wildfires

- Select building materials & plants that resist fire
- If trapped, crouch in pond, river or pool



You cannot outrun a fire

Create safety zones to separate your home and outbuildings from vegetation. Keep your home fire resistant by removing flammable and dry materials. Use fire-resistant building materials.

In case of a wildfire, be prepared to evacuate immediately if advised to do so.

If you are trapped, crouch in a pond, river or pool. Do not put wet clothing or bandanas over your nose or mouth because moist air causes more damage to airways than dry air at the same temperature. If there is no body of water, look for shelter in a cleared area or among a bed of rocks. Lie flat, face down, and cover your body with soil. Breathe the air close to the ground to avoid scorching your lungs or inhaling smoke.

You cannot outrun a fire. Wildland fires move very fast and create their own wind, helping them move even faster and burn even hotter.

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Hurricanes & Tropical Storms

- Cyclones with tropical origins & winds 74+ mph
- Flooding is major hazard
- Category scale:
 - 1 = damage to unanchored homes, vegetation, signs
 - 5 = catastrophic damage to most buildings and flooding



Hurricanes are tropical cyclones with winds 74 miles per hour or higher that generally occur from June to November. Hurricanes can cause catastrophic damage to coastlines and inland. The most life-threatening hazard is flooding. Hurricane categories are based on the storm's wind speed, pressure and possible damage.

- Category 1: Sustained winds 74-95 mph, minimal damage to unanchored homes, vegetation, signs
- Category 2: Sustained winds 96-110 mph, moderate damage to mobile home, roofs, possible flooding
- Category 3: Sustained winds 111-130 mph, extensive damage to small buildings
- Category 4: Sustained winds 131-155 mph, extreme damage to roofs, trees, homes, possible flooding
- Category 5: Sustained winds more than 155 mph, catastrophic damage to most buildings and flooding (Saffir-Simpson Hurricane Scale at www.fema.gov/areyouready/hurricanes.shtm)

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Hurricane Preparedness

- Secure property (storm shutters, straps & clips)
- Trim trees
- Tighten and unclog rain gutters
- Bring in loose items
- Prepare a safe room
- Listen to radio
- Plan for animals



If you live along the Gulf of Mexico or East Coast, prepare for hurricanes. Install hurricane shutters or purchase plywood to have ready to cover windows and doors. Install roof straps or clips. Keep areas free of overhanging trees and limbs that could break easily in the wind. Tighten rain gutters and downspouts and clean them on a regular schedule. Bring lawn furniture, trash cans and other loose items inside. Evacuate if you're instructed to do so, but if you stay in your home, have a safe room ready away from windows and glass. Listen to a battery-operated radio for information. Also, plan ahead for protection for animals.

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Tornadoes

- Often little or no warning
- Watch – tornadoes are possible
- Warning – tornado sighted or indicated by radar



A tornado is nature’s most violent storm: a violently rotating column of air extending from the base of a thunderstorm to the ground.

Tornadoes may strike with little or no warning. They usually occur in the spring and summer months east of the Rocky Mountains and March through May in the southern states, though they may strike at any time of year and any time of day.

A tornado watch means conditions are appropriate for a possible tornado. A tornado warning means a tornado has been sighted or indicated on weather radar.

If you’re in a tornado warning area, see a funnel or hear the roar, take cover immediately. The wind may calm down before the tornado hits.

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Take Shelter from a Tornado

- In building: go to lowest level away from windows
- In vehicle or mobile home: go to nearest sturdy building
- Outside: lie flat in depressed area and cover head



If you’re in your home or another building when a tornado strikes, take shelter by going to the lowest level available. This may be a basement, cellar or safe inside room with no windows and strong walls. Do not open windows.

If you’re in a vehicle or mobile home, get out and go to the nearest sturdy building.

If you’re outside, lie flat in a depressed area, and cover your head. Watch for flooding.

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Volcanoes

- Lava, poisonous gases, flying rock and ash
- May have earthquakes, landslides and flash floods
- Mainly in Pacific Northwest, Hawaii and Alaska



Volcanoes are molten rock escaping to the Earth’s surface through lava flows, poisonous gases, flying rock and ash. The intense heat causes fire and destroys everything in its path. The volcanic ash is abrasive, acidic, odorous and gritty, and may darken the sky to a nightlike dimness.

Eruptions can be accompanied by other natural hazards such as earthquakes, landslides and flash floods. They can be quiet or very explosive. Active volcanoes are mostly in the Pacific Northwest, Hawaii and Alaska.

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Take Caution with Volcanoes

- Evacuate if instructed
- If in ash fall, wear dust mask, goggles, long-sleeve shirt, long pants
- Protect animals and equipment



If a volcano erupts in your vicinity, evacuate if you’re instructed to by local authorities. Wear a dust mask, goggles, a long-sleeve shirt and long pants if you’re in ash fall.

Volcanic ash includes jagged particles of dust and glass, so it can threaten the health and lives of people and animals. Ash can damage machinery, aircraft, electronic equipment and telecommunications. Ash can accumulate and collapse buildings. Winds can carry ash for thousands of miles. Stay indoors and keep your house closed to avoid ash. The cleanup of ash will require time and protection.

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Tsunamis

- Large ocean waves caused by underwater earthquake or major landslide
- Can cause great loss of life and property damage when come ashore



Tsunamis are large ocean waves caused by an underwater disturbance such as an earthquake or major landslide into the ocean. They can move hundreds of miles per hour with waves 100 feet high. When a tsunami comes ashore, it can cause great loss of life and property damage. United States tsunamis are most likely to occur along the Pacific coast and in Alaska and Hawaii.

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Tsunami Protection

- When near the coast, move to higher ground if:
 - See water recede from shoreline
 - Feel earth shaking
 - Hear warning sirens



In a tsunami, a trough or drawback often occurs first with a dramatic receding of the water along the shoreline, exposing even parts not normally seen during low tides. After this event, expect a dramatic surge in the form of the tides climbing to maximum heights quickly. This is the main wave, and the best way to avoid it is to get to higher ground. Evacuate to higher ground if you feel an earthquake that may cause a tsunami or hear warning sirens. Keep your radio tuned to an alert station in the event of an earthquake if you are in a coastal area.

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Extreme Cold & Winter Storms

- Watch for frostbite and hypothermia
- Have winter supplies in home disaster kit



Winter storms can immobilize entire regions by closing roads and downing power lines, while extreme cold can cause frostbite and hypothermia.

Watch for frostbite, the freezing of body tissue, which could be a loss of feeling and a white appearance on the extremities. Symptoms of hypothermia, which is lower body temperature, are severe shivering, disorientation, drowsiness and exhaustion. If either occurs, seek medical assistance immediately. Wear layers of clothing for protection, including hats, gloves and scarves over your mouth to protect your lungs.

Make sure your home disaster supplies kit has items specifically needed if you're stuck at home during a winter storm. Even if your home loses power, never run a portable generator in an enclosed space since the gases can be deadly.

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Extreme Cold & Winter Storms

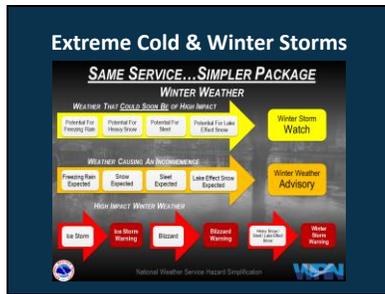
- Winterize your vehicle
- Keep gas tank full
- Add to your car disaster kit
- If stranded:
 - Stay in your car
 - Display a trouble sign
 - Clear exhaust pipe of snow
 - Run engine occasionally



Vehicles should be winterized and kept in optimum condition. Maintain a full tank of gasoline, and carry a winter survival kit that includes high-energy foods, a heat source and a container to melt snow to drink, blankets, sand or salt, and a small shovel. If your vehicle gets stuck in snow, stay with the car, display a trouble sign to indicate you need help, keep the exhaust pipe clear of snow, run the engine occasionally to keep warm and do light exercises to keep up circulation.

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The National Weather Service now issues Watch, Warning and Advisory winter weather messaging that is shorter and simpler focusing on What, Where, When, Additional Details, and Precautionary/Preparedness Actions.

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Heat Wave

- Dress appropriately
- Stay indoors
- Refrain from strenuous work or exercise during the hottest part of day
- Stay hydrated

Heat kills by pushing the body beyond its limits. Evaporation is slowed, and the body works harder to maintain normal temperatures. Most heat disorders occur because of overexposure to heat or because of overexercising. Be aware of heat cramps (a first signal that the body is having trouble with heat), exhaustion (body fluids are lost), and heat and sun strokes, which are life-threatening conditions.

A heat wave is a prolonged period of excessive heat, often combined with excessive humidity. Excessive heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region during summer months, last for an extended period and often are accompanied by high humidity. Heat waves kill more Americans than any other type of natural disaster.

To protect yourself in a heat wave, wear loose-fitting, lightweight, light-colored clothing; stay indoors; refrain from strenuous work or exercise during the hottest part of the day; and stay hydrated.

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Manmade Disasters

- Hazardous materials incidents
- Nuclear/radiological incidents
- Biological incidents
- Terrorism

Not all disasters are from natural causes.

Hazardous materials incidents can have many sources, ranging from a chemical spill on a highway to the contamination of groundwater by methane gas.

Nuclear or radiological incidents can include a nuclear power plant release or a dirty bomb.

Biological incidents include human or animal disease outbreaks, either naturally occurring or terroristic events. The three most used toxins that kill or harm people are bacteria, viruses and toxins. These are generally slow in causing harm.

Terrorism is the use of violence or threat of violence to create fear and to push an ideological goal with no regard for civilians.

In the event of manmade disasters or terrorist attacks, information may be slow in coming to you. Stay indoors and listen to emergency channels for information. Use common sense, and watch for symptoms of illness.

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Manmade Disasters: What to Do

- Go inside quickly. Bring pets inside.
- Shut and lock doors and windows.
- Turn off fans.
- Tape plastic over windows in shelter room.
- Keep radio and phone at hand.
- Avoid outside contamination until safe again.

Though some of these manmade disasters develop through time, if you suspect an immediate disaster:

- Go inside quickly, and bring pets inside.
- Shut and lock doors and windows.
- Turn off fans to avoid bringing in contaminated air.
- Tape plastic over the windows in your shelter room.
- Keep a radio and phone at hand.
- Listen to the radio or check the web for instructions.
- Avoid outside contamination until you're notified it's safe.

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Pandemic

- Pandemic: an epidemic over a wide geographical area
- Historically – Spanish flu, smallpox
- Recently – HIV and H1N1



An example of a biological incident is a pandemic. A pandemic is an epidemic of infectious disease that is spreading through human populations across a large region. A disease or condition is not a pandemic merely because it is widespread or kills many people; it also must be infectious. For instance, cancer is responsible for many deaths but is not considered a pandemic because the disease is not infectious or contagious.

For example, the Spanish flu pandemic of 1914-1918 killed 50 million to 100 million people worldwide. About 300 million people died of smallpox from 1900 until its eradication in 1980.

More recently, more than 25 million deaths have been recorded as caused by AIDS since 1981. About 60 million Americans were sickened by the 2009 H1N1 influenza, and more than 12,000 died.

Because people have little natural immunity, these diseases can spread easily from person to person, leading to a pandemic.

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Reduce Flu Chances

- Get vaccinated
- Stop germs
 - Cough in your arm, not your hand, or in a tissue
 - Wash hands often with soap and water
- If sick, stay home & take antiviral drugs if prescribed



The Centers for Disease Control and Prevention encourages people to “take three” for flu prevention and treatment.

- Vaccination is the best protection against contracting the flu. Get vaccinated for the seasonal flu.
- Stop the spread of germs by covering your nose and mouth with a tissue when you cough or sneeze and throwing the tissue in the trash after you use it. Don't have time to grab a tissue? Cough or sneeze into your arm near the elbow instead of in your hand that will spread the virus when you touch things. Also, wash your hands with soap and water or use an alcohol-based hand sanitizer often. Avoid touching your eyes, nose and mouth since the virus enters the body that way.
- If you do contract the flu, rest, drink plenty of fluids, stay home for at least 24 hours after you no longer have a fever and ask your doctor about prescription antiviral drugs that can make your illness milder and make you feel better faster but only if taken within two days of getting sick. Stay home if you're sick.