

# Natural Environment Safety Hazards

Have you ever helped prepare your home for a hurricane? Do you know what to do in the event of an earthquake? How can you keep yourself safe in a lightning storm? Where is the safest place to be during a tornado? If you have visited or lived in different regions of the United States, you may have first-hand knowledge and experience with these and other hazards in our environment. It's important to know how to protect yourself from natural dangers such as flash floods, hurricanes, freezing and scorching temperatures, tornadoes, and other environmental hazards.

## Cool it in the Heat

High temperatures, especially when they are combined with humidity, can lead to heat exhaustion and, in extreme cases, even to death. We can't control the temperature or humidity, but we can take steps to protect ourselves from the dangers of heat stress. Try to stay in air-conditioned buildings, cool basements or in shaded areas when the temperature and humidity rise. Since physical activity causes our bodies to heat up, it's best to avoid strenuous activities during the hottest time of the day.

To stay cool and protect your skin from burning, wear both sunscreen and light-colored cotton clothing. Dark colors tend to absorb the heat and make you warmer. Most importantly, drink plenty of water to keep your body from overheating. It's especially important to carry an adequate supply of water with you when you head off on long walks or bicycle rides and when hiking.

## Protect Yourself From Freezing

Every year many people die from the cold, or rather from the loss of body heat. High winds can greatly increase the loss of body heat from exposed skin. This cooling affect of moving air is called the wind chill factor. For example, a person caught outside at a temperature of 15 °F with a wind speed of 30 miles per hour will, in effect, experience a wind chill temperature of -25 °F. Exposed flesh at this temperature may freeze within one minute!

The best way to preserve body heat is by dressing properly. If you will be outside in low temperatures, wear several layers of loose clothing. Ideally, the outer layer should be of water repellant material. Since the body's extremities are more prone to freeze first, take care to protect your hands and feet. Mittens are much better than gloves for protecting your hands. Wearing several pairs of socks inside your shoes will keep your feet warm.

Due to numbness from the cold, people are often unaware that they are getting frostbite. There are four degrees to frostbite. First, ice crystals form on the skin and that part of your body will feel very cold. Second, you will feel a warm, burning sensation. In the third stage, your skin will turn red, pale, or white. In the fourth stage, you may see dark blue or black areas under the skin and experience pain for several hours. If medical care is not given, infection will set in, and the affected body part may be lost.

The best way to avoid frostbite is to stay indoors during severe cold. If you must go outside, it is important to dress properly, keep your skin dry, drink plenty of fluids, and if possible, stay out of the wind. If frostbite does begin to set in, warm the affected body part, as quickly as possible, in a warm water bath (100 °F to 110 °F). If this is not possible, hold the affected part next to your body. For example, put your hands under your armpits. The old wives' tale of rubbing the frostbitten area with snow is untrue. In fact, do not rub the frostbitten area with anything! It is normal for you to experience pain when the frostbitten area begins to thaw. Try to avoid using fingers and toes that have been recently thawed and seek a doctor's care immediately.

Take precautions when traveling during the winter. Stay ahead of the weather by listening to weather reports and avoid driving in snow or ice storms. If you must drive, make sure your fuel tank is full and that you carry along the following items: food, extra clothing, blankets, sleeping bags, matches, candles, a shovel, and a tow rope. If you are trapped by snow, be careful about running the car's heater to keep warm. If you do this, you *must* shovel the snow away from the car's exhaust pipe(s), otherwise exhaust fumes could enter the car and kill you. It is also advisable that you run the motor for a few minutes at a time, rather than continuously.

## Flash Flood Warning!

Flash floods are perhaps the most deadly of all floods. They can occur in mountain areas, small streams, desert washes, or the middle of large cities. Moving at incredible speeds, they can sweep bridges, boulders, cars, and buildings along with their roaring water. Giant walls of water can wipe out entire areas in minutes.

If you are camping or hiking in a valley, close to mountains, or near a small stream or a dry wash, be on the lookout for rainy weather. Even if it is not raining in your immediate location, heavy rains rushing down mountains or through valleys miles away can cause a wall of flood water to reach you in a very short time. Because the hard, dry desert soil absorbs very little rain, flash floods are common there after a sudden downpour. TV and radio stations try to warn people about flash floods. A flash flood *watch* is issued when flash flooding is possible. It tells you to be alert and to stay tuned for further updates. A flash flood *warning* is issued when a flash flood is actually happening. It means that people in these areas must act immediately to save themselves. They may have only minutes to move to higher ground to escape the approaching waters.

People often miscalculate the power behind fast moving water and attempt to cross flooded roads. If you come upon a flash flooded area, *never* drive a car or walk through it, even if the water doesn't seem very deep. A surge of new floodwaters could arrive without warning and sweep you away.

## Tornado Alley

People who have experienced a tornado describe its deafening sound as one of a massive freight train racing through their house. This terrifying noise is just one indicator of nature's most violent storms. Tornadoes, or twisters, are often associated with severe thunderstorm activity and the winds generated by its whirling funnel column can reach speeds up to 300 miles per hour. A tornado destroys anything in its path, sucking up cars, buildings, and trees like a vacuum cleaner, and spreading debris for miles.

About 75% of the world's tornadoes happen in the continental United States. Most occur east of the Rocky Mountains in a corridor stretching from Texas to Iowa, nicknamed "Tornado Alley." Tornadoes can occur at any time of the year, but the peak "tornado months" are April, May, and June.

Your chances of being struck by a tornado are quite small and your odds of surviving one are very much in your favor, if you follow basic safety procedures. First and foremost, have a storm plan in place and be prepared to move to a storm shelter if a tornado threatens to strike. At home, an underground storm cellar is the safest place to be. If an underground shelter is not available, go to the corner of a basement *toward the tornado* so dangerous flying objects will be blown over and away from you. If there is no basement, go to the lowest level of your house and move to a room, hallway, or closet in the center of the house. Crouch under the stairs, under sturdy furniture, or along an inside wall. Stay away from windows! Cover your head with your hands. Since bathrooms are often the strongest room in the house, sitting in a bathtub with a mattress pulled over you is another good option. Opening windows or doors to equalize air pressure is an old wives' tale! Under no circumstances should you do this! Creating an opening for the wind actually increases your risk to injury. Have a first-aid kit, flashlights, a radio for weather bulletins, and extra batteries on hand.

Due to their lightweight construction, mobile homes offer little protection from tornadoes. It is best to seek shelter elsewhere and *not* try to ride out the storm in one. A car is one of the most dangerous places to be during a tornado! Do not try to outrun a tornado in your car! Seek shelter! If you are outdoors, and there is no strong structure nearby, hide in a ditch or other low-lying area.

## When Lightning Strikes

When storm clouds release a huge electrical discharge, lightening occurs. A single lightning bolt strikes the earth with 30 million volts of electricity and heats the air around it to 20,000 °F or hotter, but only lasts 1/10th of a second. Lightning strikes the ground about 25 million times per year in the United States and occurs most often during the summer months. On the average, lightning strikes result in 100 deaths and 300 injuries each year in the U.S. It also starts about half of all U.S. forest fires.

There are a number of ways you can minimize your chances of being struck by lightening. The best precaution is to move indoors. When lightning strikes a building, it tends to travel along electrical and metal plumbing circuits. Therefore, it is a good idea to avoid using electrical equipment, such as computers or refrigerators, touching plumbing fixtures, or talking on phones. (Cordless or cellular phones are okay.)

Outdoors, one of the safest places to be is inside a completely shut car with the windows rolled up. If your car should be hit by lightning, the rubber tires would provide insulation and the metal frame would conduct electrical current to the ground, keeping you out of harm's way.

If you are caught outdoors and cannot get into a car, keep away from the following: hilltops, tall buildings, lone trees, flag poles, boat masts, large open fields, and golf courses. If you are on a tractor or horse, get off. Lightning often strikes the tallest object -- which could be you or something tall you are standing next to. Because water and metal are both excellent conductors of electricity, avoid water activities such as swimming or boating, and keep clear of wire fences and railroad tracks. If you are with a group of people, spread out because lightning can strike one person and jump sideways to an object several feet away.

If your hair begins to stand on end or a plastic raincoat suddenly lifts into the air, this is a warning that you are about to be struck by lightning! Squat as low as possible, without letting your hands touch the ground. **DO NOT LIE FLAT ON THE GROUND!** If you lie flat and lightning strikes the ground nearby, electrical charges can travel through your entire body and cause your heart to stop beating.

The majority of people who are struck by lightning do *not* die. If someone is struck by lightning and has no heartbeat, proper CPR treatment should be given immediately. The belief that a lightning strike victim continues to be electrically charged, and thus dangerous to touch, is totally untrue!

## Hurricane Safety

The largest storms in nature form over warm ocean waters and are called tropical cyclones. Tropical cyclones that occur in the western Pacific Ocean are referred to as typhoons, while those that occur in the eastern Pacific and Atlantic Oceans are commonly called hurricanes. Hurricanes are spinning tropical storms characterized by wind speeds between 74 - 225 miles per hour and heavy rains that can cause flooding and landslides. The treacherous winds of a hurricane cause a huge wall of seawater to form under the storm. This deadly seawall can build as high as 25 feet and is called the storm surge. When a hurricane hits the coast, the gale force winds, torrential rains, and dangerous storm surge cause incredible flooding, damage, and loss of life.

During a hurricane, the most dangerous place to be is along the seacoast and in low-lying areas nearby. The safest course of action is to evacuate, that is, leave the area and head inland. Because hurricanes move slowly, people usually have plenty of warning before a hurricane arrives. Hurricane forecasting has improved with the use of satellite images and the National Weather Service broadcasts hurricane warnings on TV and the radio. The hurricane season for the U.S. begins in early June and ends in late November.

If there are orders to evacuate, obey them. Local officials will designate emergency procedures and a recommended evacuation route for your city/town. Before you leave, turn off your gas, electricity, and water. If you have time, cover the windows and doors with plywood or strong metal shutters. Do not attempt to stay and ride out the storm.

During a hurricane, electrical power lines often fall and local water supplies may become contaminated and unsafe to drink. Before the hurricane hits, preparation is the key. Fill containers with clean water, enough for a five-day supply. Estimate at least 5 gallons per person. Fill sinks and bathtubs with extra water. Eat perishable food items first. Emergency supplies to have on hand include: medicines, "wet wipes," canned food, a mechanical can opener, a battery-operated radio, flashlights with lots of extra bulbs and batteries, raingear, sleeping bags, and blankets. If you must evacuate, take these supplies with you.

## Earthquake Dangers

Earthquakes occur when the plates, that make up the Earth's crust, collide or grind against one another along the fault lines that separate them. This results in a sudden release of energy that causes the Earth to tremble and shake. Although California, with its infamous San Andreas Fault, is known for its earthquake history, 39 of the 50 states are situated in earthquake-prone areas. Most quakes last less than a minute in duration, but are often followed by weaker aftershocks.

Collapsing buildings and falling debris cause most deaths during an earthquake. If you are indoors during an earthquake, stay there. Do *not* head for the doorway! The doorways in most modern homes are no stronger than any other part of the house. You are safer if you get under a sturdy table or desk and hold onto it. Stay away from windows, fireplaces, bookcases, big appliances, and heavy furniture that might fall on you. Avoid the kitchen; it is one of the most dangerous rooms in the house.

If you are caught outside during an earthquake, get into an open area, away from tall buildings, trees, power lines, light posts, or any other object that might fall on you. If you are driving, you should stop and if possible, move your car out of traffic. Do *not* stop on or under a bridge or overpass. It is safest to stay inside your car until the shaking stops. If you continue to drive, be on the lookout for cracks in the pavement, downed power lines, and fallen debris in the road. Turn on your car radio for emergency procedure updates.

A major secondary hazard after an earthquake is fire resulting from broken gas lines. If you suspect a gas leak, it is a good idea to turn off ALL your utilities. Using matches, lighters, camp stoves, or electrical appliances is out of the question UNTIL you are certain there are no gas leaks. Leaking gas can be easily ignited by even the smallest of sparks, leading to an explosion and fire.

Check yourself and others for injuries and apply basic first aid if needed. Use your phone only to report a medical or fire emergency. When checking your house for damage, wear close-toed shoes to protect yourself from broken glass. When opening cupboards or closet doors, be aware that items may have shifted during the quake and could fall on you.

Article revised by Gale Ekiss & Jeannine Kuropatkin.