



# HURRICANE

## Safety Tips



### DEFINING A HURRICANE

A hurricane is a type of tropical cyclone, the general term for all circulating weather systems (counterclockwise in the Northern Hemisphere) over tropical waters. Tropical cyclones are classified as follows:

- Tropical Depression -- An organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph (33 knots) or less.
- Tropical Storm -- An organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 to 73 mph (34-63 knots).
- Hurricane -- An intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. In the western Pacific, hurricanes are called "typhoons," and similar storms in the Indian Ocean are called "cyclones."

Hurricanes are products of the tropical ocean and atmosphere. Powered by heat from the sea, they are steered by the easterly trade winds and the temperate westerlies as well as by their own ferocious energy. Around their core, winds grow with great velocity, generating violent seas. Moving ashore, they sweep the ocean inward while spawning tornadoes and producing torrential rains and floods.

Each year on average, ten tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Many of these remain over the ocean. However, about five hurricanes strike the United States coastline every three years. Of these five, two will be major hurricanes (category 3 or greater on the Saffir-Simpson Hurricane Scale).

Source: U.S. DEPARTMENT OF COMMERCE , NOAA, National Weather Service

### Hurricane Scale

All Hurricanes are dangerous, but some are more so than others. The way storm surge, wind and other factors combine determines the destructive power of a hurricane.

To make comparisons easier and to make the predicted hazards of approaching hurricanes clearer to emergency forces, hurricane forecasters at the National Oceanic and Atmospheric Administration use a disaster-potential scale which assigns storms to five

categories. This can be used to give an estimate of the potential property damage and flooding expected along the coast with a hurricane Saffir-Simpson Hurricane Scale.

## Saffir-Simpson Hurricane Scale

Category	Definition	Effects
One	Winds 74-95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.
Two	Winds 96-110 mph	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	Winds 111-130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet above sea level (ASL) may be flooded inland 8 miles or more.
Four	Winds 131-155 mph	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	Winds greater than 155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

Source: U.S. DEPARTMENT OF COMMERCE , NOAA, National Weather Service

## "Hurricane Watch"

In preparing for the hurricane season, the first step is understanding the warnings that are issued by the National Weather Service:

A hurricane WATCH means that hurricane conditions MAY threaten an area within 24-36 hours. When a hurricane WATCH is issued, everyone in that area should listen for further advisories and be prepared to act promptly.

When a hurricane WATCH is issued, people in the affected area should:

- Frequently listen to your radio, television or NOAA Weather Radio for official bulletins on the progress of the storm.
- Fuel and service family vehicles. Service stations may be unable to pump fuel because of flooding or loss of electrical service.
- Moor small craft or move to safe shelter.
- Inspect and secure mobile home tie downs.
- Tape, board or shutter all window and door openings. Wedge sliding glass doors to prevent lifting from their tracks.
- Check for batteries, flashlights and battery-operated radios.
- Check on your supply of canned food, first aid supplies, drinking water and medications.
- Secure or bring inside lawn furniture and other loose, lightweight objects, such as garbage cans and garden tools that could become a projectile in high winds.
- Have on hand an extra supply of cash.

## **"Hurricane Warning"**

In preparing for the hurricane season, the first step is understanding the warnings that are issued by the National Weather Service:

A hurricane WARNING is issued when hurricane conditions are expected in a specified coastal area in 24 hours or less. Hurricane conditions include winds of 74 miles an hour (64 knots) and/or dangerously high tides and waves.

Actions for protection of life and property should begin immediately when the warning is issued, including:

- Frequently listen to your radio, television or NOAA Weather Radio for official bulletins on the progress of the storm.
- Complete preparation activities such as putting up storm shutters, storing loose objects, etc. Move valuables to upper floors.
- Store drinking water in clean jugs, bottles and cooking utensils. The water system in your town could become contaminated or damaged by the storm.
- Check your battery-powered equipment. Your radio may be your only link with the outside world. Emergency cooking facilities and flashlights will be essential if utility services are interrupted.
- Follow instructions issued by local authorities. Leave IMMEDIATELY if told to do so.
- Leave low-lying areas that may be swept by high tides or storm waves.
- If you plan to leave your home, leave early (if possible, in daylight) to avoid the last-minute rush that could leave you stranded. Stay with friends or relatives, at a low-rise inland hotel/motel, or go to a predesignated public shelter outside a flood zone.

- In any case, leave mobile homes for more substantial shelter.
- Notify neighbors and a family member outside of the warned area of your evacuation plans.
- Put food and water out for a pet if you cannot take it with you. Public health regulations do not allow pets in public shelters, nor do most hotels/motels allow them.

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## **TERMS TO KNOW**

By international agreement, tropical cyclone is the general term for all cyclone circulations originating over tropical waters, classified by form and intensity as follows:

- Tropical disturbance: A moving area of thunderstorms in the Tropics that maintains its identity for 24 hours or more. A common phenomenon in the tropics.
- Tropical depression: Rotary circulation at surface, highest constant wind speed 38 miles per hour (33 knots).
- Tropical storm: Distinct rotary circulation, constant wind speed ranges 39-73 miles per hour (34-63 knots).
- Hurricane: Pronounced rotary circulation, constant wind speed of 74 miles per hours (64 knots) or more.
- Small craft cautionary statements. When a tropical cyclone threatens a coastal area, small craft operators are advised to remain in port or not to venture into the open sea.
- Gale Warnings may be issued when winds of 39-54 miles an hour (34-47 knots) are expected.
- Storm Warnings may be issued when winds of 55-73 miles an hour (48-63 knots) are expected. If a hurricane is expected to strike a coastal area, gale or storm warnings will not usually precede hurricane warnings.
- A Hurricane Watch is issued for a coastal area when there is a threat of hurricane conditions within 24-36 hours.
- A Hurricane Warning is issued when hurricane conditions are expected in a specified coastal area in 24 hours or less. Hurricane conditions include winds of 74 miles an hour (64 knots) and/or dangerously high tides and waves. Actions for protection of life and property should begin immediately when the warning is issued.
- Flash Flood Watch means a flash flood is possible in the area; stay alert. Flash Flood Warning means a flash flood is imminent; take immediate action.
- Tornadoes spawned by hurricanes sometimes produce severe damage and casualties. If a tornado is reported in your area, a warning will be issued.

Source: U.S. DEPARTMENT OF COMMERCE , NOAA, National Weather Service

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## **BE PREPARED**

In preparing for the 2004 Hurricane Season, make plans for action:

- Know the hurricane risks in your area. Learn the storm surge history and elevation of your area.
- Learn safe routes inland.
- Learn the location of official shelters.

- Ensure that enough non-perishable food and water supplies are on hand.
- Have at least a one week supply of medications on hand.
- Obtain and store materials, such as plywood, necessary to properly secure your home.
- Clear loose and clogged rain gutters and downspouts.
- Keep trees and shrubbery trimmed of dead wood.
- Review your insurance policy.
- Determine where to move your boat in an emergency.
- Make plans now on what to do with your pets should you be required to evacuate your residence. Public health regulations do not allow pets in public shelters, nor do most hotels/motels allow them.

Individuals with special needs or others requiring more information should contact their County Emergency Management Office.

## **Family Emergency Supplies**

Have these items in your residence ready to use in the event of an emergency:

- Flashlights with extra batteries. Keep flashlights with extra, fresh batteries and keep them beside your bed and in several other locations. Do not use matches.
- Portable radio with extra batteries. Most telephones will be out of order or limited to emergency use. The radio, including NOAA Weather Radio, will be the best source of emergency information.
- First aid kit / first aid skills. Keep your first-aid kit well stocked and in a central location. Take basic first-aid and CPR courses. Keep your skills current.
- Fire extinguisher. Your fire extinguisher should be suitable for all types of fires and should be easily accessible. Teach all family members how to use it.
- Food. Store a three-day supply of food for each person. Items such as canned or dehydrated food, powdered milk and canned juices can be rotated into your daily diet and replenished on a regular basis. Include food for infants or the elderly, snack foods and items such as a non-electric can opener, cooking utensils, paper/plastic plates and plastic utensils.
- Water. Store a 3-day supply of water (one gallon per person per day). Store in air-tight containers and replace them every six months. Keep a disinfectant, such as iodine tablets or chlorine bleach, to purify water, if necessary.
- Extra blankets and clothing may be required to keep warm. Sturdy shoes protect feet from broken glass and debris.
- Alternate cooking source. Store barbecue, charcoal, starter and matches in case utilities are out of service. Do not use these methods of cooking within a confined area.
- Special items for infant, elderly, or disabled family members. Have at least a one week supply of medications and foods for infants and those on special diets.
- Tools. Have a crescent or pipe wrench to turn off gas and water if necessary and know the location of the shut-off valves.
- Important documents should be stored in a waterproof container. Examples: insurance policies, medical records, bank account numbers, Social Security card, etc. Also, checkbook, cash, credit cards, ATM cards.

## **Family Response Plan**

Prepare a plan for your family and loved ones in advance of hazardous weather. You should:

- Contact your local National Weather Service office or Emergency Management office to learn what types of disasters could occur and how you should respond.
- Learn the warning signals and evacuation plans of your community.
- Know the Emergency Alert System radio and television stations in your area that will carry official information. Also, monitor NOAA Weather Radio broadcasts, if possible.
- Discuss with family members what they should do in the event of a disaster, such as a hurricane or severe storm. Pick two places to meet: a spot outside your home for an emergency, such as a fire, and a place away from your neighborhood in case you cannot return home.
- Designate an out-of-area friend or relative whom separated family members should call to report their whereabouts. Make certain all family members have the phone number.
- Make a plan now for what to do with your pets if you need to evacuate.
- Check your home and property for potential hazards to see what actions need to be taken to ensure your safety and to protect your belongings.
- Check your insurance coverage. Flood damage is not usually covered by homeowners insurance. Inventory household items with photographs.
- Install safety features in your residence such as smoke detectors and fire extinguishers.
- Know how and when to turn off water, gas and electricity in your home.
- Know where the designated shelters are within your community and how to get to them.
- Determine if your family has any special needs and develop a plan for meeting those needs. For example: If you have a family member on a life-support system, does your electric utility know about it?
- Post emergency telephone numbers by phones.
- Teach all family members, including children, how and when to call 911 or your local EMS phone number.

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## **WEATHERING THE STORM**

As a major hurricane, or weather event, approaches, it is vitally important to listen to weather advisories and to be prepared to take action.

Modern weather forecasting provides the opportunity to prepare for a major hurricane days in advance. During this time it is important to: check home emergency supply kits for flashlights (avoid using candles which can be a fire hazard), portable radio and TV, cell phone chargers (especially ones that can be used in an auto to recharge cell phones), extra batteries; adequate food and water for each family members for at least three to five days; get cash (ATM machines can lose power during and after a storm); make arrangements for pets; secure yard items; put up window protection; prepare to evacuate early if instructed to do so.

Follow these tips as the hurricane / coastal storm approaches:

1. If you are traveling, find safe shelter immediately.
2. If you are at home or at work:
  - Only stay in a home if you have NOT been ordered to leave. Stay inside a well constructed building.
  - In structures, such as a home, examine the building and plan in advance what you will do if winds become strong. Strong winds can produce deadly missiles and structural failure.
  - Turn refrigerator to maximum cold and open only when necessary.
  - Turn off utilities if told to do so by authorities.
  - Turn off propane tanks.
  - Unplug major appliances.
  - Fill large containers with water.
3. If winds become strong:
  - Stay away from windows and doors even if they are covered. Take refuge in a small interior room, closet or hallway.
  - Close all interior doors. Secure and brace external doors.
  - If you are in a two-story house, go to an interior first-floor room, such as a bathroom or closet.
  - If you are in a multiple-story building and away from the water, go to the first or second floors and take refuge in the halls or other interior rooms away from the windows.
  - Lie on the floor under a table or another sturdy object.
  - Remain indoors during the hurricane. Do not be fooled by the "eye" or the lull that occurs as the storm center moves overhead. The other side of the hurricane "eye" has winds that will rapidly increase and will come from the opposite direction.

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## EVACUATION

If an EVACUATION is ordered by local government officials:

- If instructed to leave - do so! The temptation to "tough it out" can put lives at risk - yours and the personnel who may be sent on an otherwise avoidable rescue mission.
- Follow the instructions and advice of local government officials. If you are advised to evacuate, do so promptly. If you are advised to go to a certain location, go there. Do not go anywhere else.
- If certain travel routes are advised, use those routes rather than trying to find short cuts. If you are told to shut off water, gas or electrical service to your home before leaving, do so. Also, find out from the broadcast reports where emergency housing and feeding stations are located, in case you need to use them.
- Leave as soon as officials instruct that you do to avoid being marooned on flooded highways.
- Make certain you have enough fuel for your car.
- As you travel, keep listening to the radio for additional instructions.
- Watch for washed-out roads, earth slides, broken water or sewer mains, loose or downed electrical wires and falling or fallen objects.
- Watch out for areas where rivers or streams may flood suddenly.

- Do not try to cross a stream or pool of water unless you are certain that the water will not be over your knees, or above the middle of the wheels of your car, all the way across. Sometimes the water will hide a bridge or part of a road that has been washed out. If you do decide it is safe to cross, put your car in low gear and drive very slowly to avoid splashing water into your engine and causing it to stop. Also, remember that your brakes may not work well after the car has been in deep water. Try them out a few times when you reach the other side.

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## INLAND FLOODING

When you hear "hurricane," think inland flooding:

- Learn your vulnerability to flooding by determining the elevation of your property. Evaluate your insurance coverage; as construction grows around areas, floodplains change. If you are in a flood area, consider what mitigation measure you can do in advance.
- In high flood-prone areas, keep materials on hand like sandbags, plywood, plastic sheeting, plastic garbage bags, lumber, shovels, work boots and gloves. Call your local emergency management office to learn how to construct proper protective measures around your home.
- Be aware of streams, drainage channels and areas known to flood, so you or your evacuation routes are not cut off. If you choose or are told to evacuate, move to a safe area before access is cut off by flood water.
- Monitor local radio / television broadcasts or NOAA Weather Radio.
- Avoid driving into water of unknown depth. Moving water can quickly sweep your vehicle away.
- Restrict children from playing in flooded areas.
- Test drinking water for potability; wells should be pumped out and the water tested before drinking.
- Do not use fresh food that has come in contact with floodwaters. Wash canned goods that come in contact with floodwaters with soap and hot water.
- Stay away from downed power lines.

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## AFTER THE STORM

- Remain where you have taken shelter until informed by local authorities that it is safe to leave.
- Keep the radio/television turned on for advice and instructions from local government on where to go for medical care, emergency assistance for housing, clothing and food, as well as other ways in which you can help your family and community recover.
- If possible, advise relatives and friends that you are safe.
- Stay out of the disaster area. Do not sightsee. Sightseeing disrupts essential rescue work and may be dangerous.
- Obey all curfew and emergency orders which are issued.
- If you must drive, use caution. Be aware of road and bridge washouts and storm debris on roadways.
- Avoid loose or dangling wires and report them immediately to the proper authorities. Assume that all downed wires are alive with electricity.

- Report broken sewer or water mains and downed electrical lines.
- Take extra precautions to prevent fire. Lowered pressure in water mains may make firefighting extremely difficult.
- Check for gas leaks. Use a flashlight to inspect for damage. Do not use candles and other open flames indoors.
- Have your electric, gas and water connections checked by professionals before turning them back on.
- Use your emergency supply of water or boil water before using until there is official word that the water is safe.
- Check refrigerated food for spoilage if the power has been off during the storm.