



#### **Introduction**

Severe summer weather can happen anywhere and at any time as long as the conditions are right. Even though severe weather is rare in areas of the country that are dry or cold, and more frequent in warmer, higher humidity areas, we must always be aware of the dangers that these powerful storms can impose. This week we will talk about the hazards and staying safe during thunderstorms, tornadoes, hurricanes and flash flooding.

#### **Monday      **Thunderstorms****

Thunderstorms affect relatively small areas when compared with hurricanes and winter storms. The typical storm is 15 miles in diameter and lasts an average of 30 minutes. Nearly 1,800 thunderstorms are occurring at any time around the world – that’s nearly 16 million thunderstorms each year.

Thunderstorm Hazards:

- Lightning – Average 93 deaths and 300 injuries each year by starting fires and electrocution
- Heavy rain – Makes roads slick and can cause flash floods
- High winds – Blowing debris, up to 75 miles per hour
- Hail – As small as a pea to as large as a softball
- Tornadoes – Can form off the thunderstorm

Staying Safe:

- Know the terminology:
  - WATCH – Storms are likely to occur
  - WARNING – Storm has developed in your area
- Stay informed – Local news or storm radio
- Remain indoors and avoid windows, corded phones, and plumbing.
- If outside, find shelter but avoid isolated sheds in open fields or hill tops. Get in hard top car and avoid touching metal. If in the woods, go to the lowest area you can and watch for flooding.
- After the storm, use caution when going outdoors and look out for debris and downed power lines.
  - Wear jeans, long sleeves, and heavy boots.
  - Know the hazards of power tools for cleanup and carbon monoxide with gas powered tools.

#### **Tuesday      **Tornadoes****

Tornadoes are violently rotating columns of air extending from a thunderstorm to the ground. While thunderstorms occur most frequently in the southeastern part of the United States, the highest average number of tornadoes occurs in Oklahoma. Scientists are still unsure as to why some thunderstorms produce tornadoes and some don’t. They do know that the process is complex requiring just the right temperature, humidity, wind shear, updraft, and down draft occurring at the right time and place, creating something called a Supercell, for a tornado to form.



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### *Severe Summer Weather*

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#### Tornado Hazards:

- Strong Winds - Winds can reach 310 mph inside a tornado. The winds can rip anything off the ground including trees, cars, and houses.
- The Enhanced Fujita (EF) scale measures the intensity of tornado damage: 0 = Light Damage to 5 = Incredible Damage
- Debris – Picked up by the storm, debris can bury people or turn things into damaging projectiles.
- Lightning and Hail – The hail is large and can cause damage, while lightning can cause fires and electrical hazards

#### Staying Safe:

- Know the terminology:
  - WATCH – Conditions are favorable for a tornado – watches may last for hours
  - WARNING – Tornado is sighted or indicated by radar – SHELTER IN PLACE IMMEDIATELY – warnings last for minutes – *you may have less than 2 minutes to get shelter*
- Have an emergency plan and emergency kit ready
- Go to inner room or shelter on the lowest floor. Get under something sturdy. If possible, cover yourself with blankets or mattresses.
- Don't stay in a mobile home. Go to a nearby building or shelter, or lie flat in a ditch, ravine, or culvert.
- If outside, lie flat in a ditch, ravine, or culvert and protect head with your hands. Avoid areas with trees.
- Don't try to outrun a tornado in your car.
- Don't get under your car or go under an overpass.

### **Wednesday    Hurricanes**

Hurricanes are massive storm systems that form over warm ocean waters and move toward land. Hurricanes generally form in 3 stages, and strengthen and weaken in cycles. Generally hurricanes strengthen over open, warm water and weaken over cooler land:

- Tropical Depression – When a group of thunderstorms come together and the winds in the center are between 20-34 knots (45 mph).
- Tropical Storm – Maximum sustained winds are between 35-64 knots (39-73 mph). The storm becomes better organized and begins forming the familiar hurricane circular shape while producing heavy rain. This is when the storm is given a name.
- Hurricane – Sustained winds reach 64 knots (74 mph) and a definite counterclockwise rotation around the center, called the eye. Wind gusts can be much higher speeds. The eye of the storm can be 2-3 miles wide and the winds inside are completely calm.

#### Hurricane Hazards:

- Storm Surge – Abnormal rise of water generated by storm winds that can reach heights of 20 feet and span hundreds of miles
- Storm Tide – Rising waters due to a combination of storm winds and astronomical tides
- Heavy Rainfall and Flooding – Widespread, torrential rains in excess of 6 inches which may result in destructive flash floods (slower moving and larger storms produce more rainfall – flooding can cause more destruction over a larger area than wind)



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- High Winds – Hurricane force winds (74 mph or more) can destroy buildings and turn debris into deadly projectiles
- Rip Currents – Channeled currents of water flowing away from shore cause drownings
- Tornadoes – Can occur in thunderstorms embedded in rain bands well away from the center

#### Hurricane Preparedness:

- Know the terminology:
  - WATCH – Hurricane conditions are possible
  - WARNING – Hurricane conditions are expected – issued 36 hours in advance of the onset of tropical storm force winds
- Plan evacuation based on location and community plans. Identify a place to go and stay for up to 5 days that is not in the potential path of the hurricane.
- Keep important documents in a safe place.

#### During a Watch:

- Monitor reports on storm progress. Purchase a weather radio.
- Top off gasoline tanks in your vehicles you plan to use for evacuation.
- Gather non-perishable food, water and supplies for three days. Keep in mind special needs like medications, cash (ATMs may not work), and pets.
- Protect your property: Clean gutters, boards or shutters for windows, review insurance policies.
- If planning on using a generator, run it a safe distance from the house to avoid carbon monoxide poisoning.

#### During a Warning:

- Complete storm preparations quickly and safely
- Immediately leave the threatened area if directed by local officials

### **Thursday      Flash Floods**

Flooding kills almost twice as many people each year as tornados and hurricanes combined. Nearly every day, flooding happens somewhere in the United States and cause more damage than any other weather event. Flash floods are caused by heavy rain overwhelming drainage systems, overflowing rivers from runoff upstream, broken dams, storm surges, melting snow, or tsunamis.

#### Preparation:

- Know the flood potential in your area; if flash flooding is a risk, monitor signs like heavy rain upstream and in your immediate area.
- Gather supplies, remember special needs if you have to leave or get cut off. Keep documents in waterproof containers.
- Purchase/renew flood insurance. Usually takes 30 days to go into effect. Homeowner insurance does not cover floods.

#### Safety During Flood:

- Evacuate if told to do so by local authorities



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- Do not walk, swim, or drive through flood waters. Do not drive around barriers. Stay off bridges because they could wash away.
- If trapped in a vehicle, stay inside or climb on roof if water level rises inside.
- Move to highest floor in building and move to roof if necessary. Don't go in a closed attic because rising waters could trap you inside without air.

#### Safety After Flood:

- Return home only after it is safe. Snakes and other animals may be in your house. Drive only if it's an emergency.
- Wear heavy gloves and boots during clean up.
- Don't wade in water since it can contain dangerous debris and raw sewage.
- Be aware of electrocution hazards.

#### **Friday**      **Severe Weather Experiences**

We have all experienced severe weather during our lives. Some of us may have experienced all four of the disasters we discussed this week. Please take a few minutes to share your experience and include lessons learned, hazards you encountered, and your struggles during recovery. Ask others to share as well.

For more information about severe weather preparedness go to the National Weather Service website:

<https://www.weather.gov/wrn/>