

## Tornado Fact Sheet

### Tornado

Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. They cause damage when they touch down on the ground. Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

### AM I AT RISK?

Minnesota is within an area in the USA commonly called "Tornado Alley". Tornadoes are most common between March and August, but they can occur at any time. They are also more likely to occur between 3pm and 9pm, but they can occur at any time. About 1,200 tornadoes hit the U.S. yearly.

### WORDS TO KNOW

- **Tornado Watch:** Tornadoes are possible. Remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio or television for information.
- **Tornado Warning:** A tornado has been sighted or indicated by weather radar. Take shelter immediately.
- **Funnel:** A long shape that is wider at the top and skinny on the bottom, like an ice cream cone.
- **Hail:** Frozen rain.
- **Storm Shelter:** A room or space built below ground level and without windows that is a safer place to be during a tornado.

### DID YOU KNOW?

Tornadoes are sometimes called twisters. In the northern hemisphere tornadoes usually rotate in a counterclockwise direction. Weather radars are used to detect tornadoes and give advanced warning.

### RECEIVE ALERTS

How will you receive alerts, warnings and official information and instructions?

The National Weather Service issues watches and warnings that are distributed via NOAA All-Hazards Radio alerts and through radio and television stations.

The Wireless Emergency Alert (WEA) system which will send warnings directly to WEA capable cell phones in affected areas. These short messages are like a text message, and will be broadcast to all mobile phones within range of designated cell towers.

The alerts will tell you the type of warning, the affected area, and the expected duration of the event.

### FACT CHECK

1. There is never a lot of damage cause by tornadoes.  
a. True b. False
2. Which of the following are actions you can take to protect your home?  
a. Building a safe room in your house  
b. Using devices like anchors, straps and clips to secure buildings  
c. Reinforcing garage doors for strength  
d. All of the above
3. Sometimes tornadoes bring \_\_\_\_\_ with them.  
a. Flash floods  
b. Hail  
c. Snow  
d. Sleet
4. What two types of air cause vertical columns of rotating air when mixed?  
a. Warm and cold  
b. Humid and dry  
c. Cold and wet  
d. Hot and wet
5. What does it mean if you hear on the radio or TV there's a "tornado warning"?  
a. There is no threat of a tornado  
b. A tornado has been spotted  
c. A tornado has just passed  
d. A tornado could happen

## **TORNADO DO'S AND DON'TS**

### **Do**

- Have a tornado plan and preparedness kit.
- Collect your wallet, keys, required medications and any other necessities and keep them with you.
- If you are already inside a structure, go to a pre-designated shelter area such as a safe room, basement, storm cellar or the lowest building level.
- Take further shelter under something sturdy, like a heavy table or mattress. Protect your head and crouch down as low to the floor as possible.
- Avoid areas near windows and glass doorways.
- Listen to a NOAA Weather Radio, regular radio or television for tornado updates. (Battery-powered devices are best, in case the electricity goes out.)
- Keep pets on a leash or in a crate or carrier.
- Crouch as low as possible to the floor, facing down. Cover the back of your head with your hands.
- If you're in a mobile home, get out, even if it's tied down. You are probably safer outside, even if that means seeking shelter out in the open.
- If you're outside with no shelter, lie flat in a ditch or depression and cover your head with your hands. Be aware of the potential for flooding.
- Watch out for flying debris. Flying debris from tornadoes causes most fatalities and injuries.
- Stay inside until you're certain the storm has passed, as multiple tornadoes can emerge from the same storm.
- Put on sturdy shoes.
- Stay away from power lines, broken glass, nails and other dangerous objects after the tornado.
- Wait for information and instructions from emergency crews or local officials.

### **Do Not**

- If warning issued do not wait until the tornado is visible before heading to shelter.
- Do not use elevators because the power may fail, leaving you trapped.
- Do not go to the southwest corner of your shelter (this is the direction from which most tornadoes approach).
- Do not open windows (you'll be further exposed to flying glass and debris).
- Do not get under an overpass or bridge. You are safer in a low, flat location.
- Never try to outrun a tornado in urban or congested areas in a car or truck. Instead, leave the vehicle immediately for safe shelter.
- Do not light candles or use open flames, even after the storm has passed. Ruptured gas lines can create a fire hazard so it's better to use flashlights.

## **ANSWERS TO QUESTIONS**

1. b.; 2. d.; 3. b.; 4. A; 5. b.

## **QUICK FACTS YOU SHOULD KNOW ABOUT TORNADOES**

- They may strike quickly, with little or no warning.
- They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- The average tornado moves Southwest to Northeast, but tornadoes have been known to move in any direction.
- The average forward speed of a tornado is 30 mph, but may vary from stationary to 70 mph.
- Waterspouts are tornadoes that form over water.
- Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.

## BE PREPARED

### BEFORE

- Build an emergency kit and make a family emergency plan and communications plan
- Listen to NOAA Weather Radio or to commercial radio or television newscasts for the latest information. In any emergency, always listen to the instructions given by local emergency management officials.
- Be alert to changing weather conditions. Look for approaching storms.
- Look for the following danger signs:
  - Dark, often greenish sky
  - Large hail
  - A large, dark, low-lying cloud (particularly if rotating)
  - Loud roar, similar to a freight train.
- If you see approaching storms or any of the danger signs, be prepared to take shelter immediately.

### AFTER

- Be careful as you leave your tornado shelter, since there might be unseen damage waiting for you on the other side of doors. If your home has been damaged, walk carefully around the outside and check for things like loose power lines, gas leaks, and general structural damage. Leave the premises if you smell gas or if floodwaters exist around the building.
- Wear sturdy shoes or boots. There may be broken glass or nails on the ground that could hurt you if you stepped on it.
- Never go near or touch dangling or loose power lines. They could electrocute you.
- Text, don't talk. Unless there is a life-threatening situation, if you have a cell phone, send a text so that you don't tie up phone lines needed by emergency workers. Plus, texting may work even if cell service is down.

### DURING

#### *If you are in a building:*

- Go to a pre-designated area such as a safe room, basement, storm cellar, or the lowest building level. If there is no basement, go to the center of a small interior room on the lowest level (closet, interior hallway) away from corners, windows, doors, and outside walls. Put as many walls as possible between you and the outside. Get under a sturdy table and use your arms to protect your head and neck.
- In a high-rise building, go to a small interior room or hallway on the lowest floor possible.

#### *If you are in a trailer, mobile home, manufactured home or office:*

- Get out immediately and go to the lowest floor of a sturdy nearby building or pre-identified storm shelter. Mobile homes, even if tied down, offer little protection from tornadoes.

#### *If you are outside with no shelter nearby:*

Note: If you are not in a sturdy building, there is no single research-based recommendation for what last-resort action to take because many factors can affect your decision. Possible actions include:

- Immediately get into a vehicle, buckle your seat belt and try to drive to the closest sturdy shelter. If your vehicle is hit by flying debris while you are driving, pull over and park.
- Get into a vehicle and buckle your seatbelt. Put your head down below the windows and cover your head with your hands and a blanket, coat, or other cushion.
- If you can safely get significantly lower than the level of the roadway, exit your car and lie in that area, covering your head with your hands.
- If there is no car or shelter, try to find a ditch or area lower than the ground and lie down. Cover your head with your arms and a blanket, coat or other cushion if possible. You are safer in a low, flat location than under a bridge or highway overpass.

## **OUTDOOR WARNING SIRENS**

Sirens are owned by Minneapolis and are activated by Hennepin County at the recommendation of the National Weather Service. Sirens are used for severe weather warnings, as well as for other situations when people should take shelter. Weather-related sirens are triggered when the National Weather Service has issued a tornado warning, and/or if there are reports of sustained straight-line winds in excess of 70 mph.

Outdoor warning sirens are meant to be heard outside. The system is not designed to provide notification inside your home or business. When sirens sound, residents should always seek shelter and tune to local weather information on radio, television, or NOAA Weather Radio for more information.

Hennepin County does not issue an “all-clear” tone from the outdoor sirens. The threat of severe weather does not stop when the sirens stop. Continue to shelter and stay tuned to local weather information on radio, television or NOAA Weather Radios for the duration of the warning period.

If the siren sounds while you are in your vehicle, seek shelter immediately. The safest place to be is in a sturdy building, on the lowest level away from windows. If there is not a building nearby, and the tornado is approaching quickly, get as far away from the road and cars as possible and lie in a low area covering your head with your arms. Do not go under an overpass; the bridge could collapse or become a wind tunnel with flying debris.

**Note:** Per Minnesota policy, the sheriff’s communication division tests/activates all sirens in Hennepin County at 1 p.m. on the first Wednesday of each month.

## **BUILD A SAFE ROOM**

Extreme windstorms in many parts of the country pose a serious threat to buildings and their occupants. Your residence may be built “to code” but that does not mean it can withstand winds from extreme events such as tornadoes and major hurricanes. The purpose of a safe room or a wind shelter is to provide a space where you and your family can seek refuge that provides a high level of protection. You can build a safe room in one of several places in your home.

- Your basement.
- Atop a concrete slab-on-grade foundation or garage floor.
- An interior room on the first floor.

Safe rooms built below ground level provide the greatest protection, but a safe room built in a first-floor interior room also can provide the necessary protection. Below-ground safe rooms must be designed to avoid accumulating water during the heavy rains that often accompany severe windstorms.

To protect its occupants, a safe room must be built to withstand high winds and flying debris, even if the rest of the residence is severely damaged or destroyed. Consider the following when building a safe room:

- The safe room must be adequately anchored to resist overturning and uplift.
- The walls, ceiling and door of the shelter must withstand wind pressure and resist penetration by windborne objects and falling debris.
- The connections between all parts of the safe room must be strong enough to resist the wind.
- Sections of either interior or exterior residence walls that are used as walls of the safe room must be separated from the structure of the residence so that damage to the residence will not cause damage to the safe room.

### **Additional information about Safe Rooms available from FEMA:**

[\*Taking Shelter from the Storm: Building a Safe Room Inside Your House\*](#). FEMA L-233. Brochure providing details about obtaining information about how to build a wind-safe room to withstand tornado, hurricane and other high winds.

[\*Taking Shelter from the Storm: Building a Safe Room Inside Your House\*](#). FEMA L-320. Manual with detailed information about how to build a wind-safe room to withstand tornado, hurricane and other high winds.

### **WEB SITES and LINKS**

If you require more information the following resources may be helpful.

*Tornado Protection - Selecting Refuge Areas in Buildings.* FEMA 431. Intended primarily to help building administrators, architects and engineers select the best available refuge areas in existing schools.

*How to Guides to Protect Your Property or Business from High Winds.*

**Wireless Emergency Alerts** or <http://www.nws.noaa.gov/com/weatherreadynation/wea.html>

#### **Weather Radio, Alerts**

<https://www.ready.gov/alerts>

[https://www.wunderground.com/prepare/weather\\_radio.asp](https://www.wunderground.com/prepare/weather_radio.asp)

#### **Make a Plan**

<https://www.ready.gov/make-a-plan>

#### **Make a Disaster Preparedness Kit**

<https://www.ready.gov/build-a-kit>

[https://www.wunderground.com/prepare/disaster\\_supply\\_kit.asp](https://www.wunderground.com/prepare/disaster_supply_kit.asp)

Find additional information on how to plan and prepare for a tornado and learn about available resources by visiting the following websites:

<http://www.fema.gov>