Tornado Preparedness

Staying Safe

Finding a safe space as a tornado approaches can be more difficult than it sounds.

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RECOMMENDED ACTIONS

Immediately take shelter when there's a tornado warning. You're encouraged to find a location in the interior portion of your home, preferably in a basement. The idea is that the lowest possible floor with plenty of surrounding walls provides the best protection against wind and flying projectiles. Unfortunately, you may be away from home when disaster strikes, at work or in a shopping center, so it's important to keep up with impending weather systems — and be aware of your surroundings. You might have to take cover in an unlikely location.

AVOIDING DEBRIS

Wherever you are, stay well away from windows. Instead, shelter in a bathroom, center hallway or closet. Wind-driven explosions of glass can kill, or at the very least cause serious injuries. Make sure your emergency kit includes a sleeping bag or heavy blanket, because they can also provide protection from flying debris. Get underneath a sturdy piece of furniture like a heavy dinner table, if possible. Be aware of bulky items on any floors above you like refrigerators and pianos, and try to shelter elsewhere in case the structure above gives way.

STURDY STRUCTURES

Be aware that all indoor places as not built the same. Long-span structures like theaters and gyms are especially prone to collapse because the roof is often only supported by the outside walls. If you are living in or visiting a mobile home, the CDC urges complete evacuation as a storm approaches. Tornadoes can turn these homes over, or potentially carry them away. Even if the mobile home remains upright, its walls are not strong enough to withstand tornado-force winds. Build a tornado shelter, or plan ahead by coordinating with friends or family members on where you'll go instead. Find a sturdy nearby structure, again ideally with a basement.

IF YOU'RE OUTSIDE

If you are outside or in a vehicle when a tornado strikes, avoid areas with lots of trees. If there's no nearby shelter, lie flat in a low-lying area such as a ravine or ditch. Never try to outrun a tornado in your car since they can be easily tossed by raging winds. Protect your head with your hands or a nearby object. Stay away from bridges and overpasses.

Tornadoes 101

Tornadoes are devastating, but actually quite rare.

Here's a look at the special circumstances required to create this dangerous weather pattern.

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HOW THEY'RE FORMED

Only roughly one in 1,000 storms will produce a tornado, according to the National Center for Atmospheric Research. They emerge from rotating supercells created when cold dry air meets warmer, wetter air — often along what's known as Tornado Alley between Canada and Mexico. Rotation can happen when winds from different altitudes whip around at different speeds, creating a horizontal column. But even then, a tornado doesn't always follow. The column has to take in a flow of air called an updraft first, then bend downward and touch the ground.

AN INVISIBLE DANGER

Rain and hail send the funnel cloud toward the surface, which is why they're such an important early indicator for a possible tornado. Unfortunately, tornadoes can and do happen at night, when the only warning signs for those who are asleep would be provided by news forecasters and weather radios. But a funnel cloud doesn't actually become easily seen with the naked eye during the daytime until it begins picking up dirt and other debris.

RISK TO LIFE AND PROPERTY

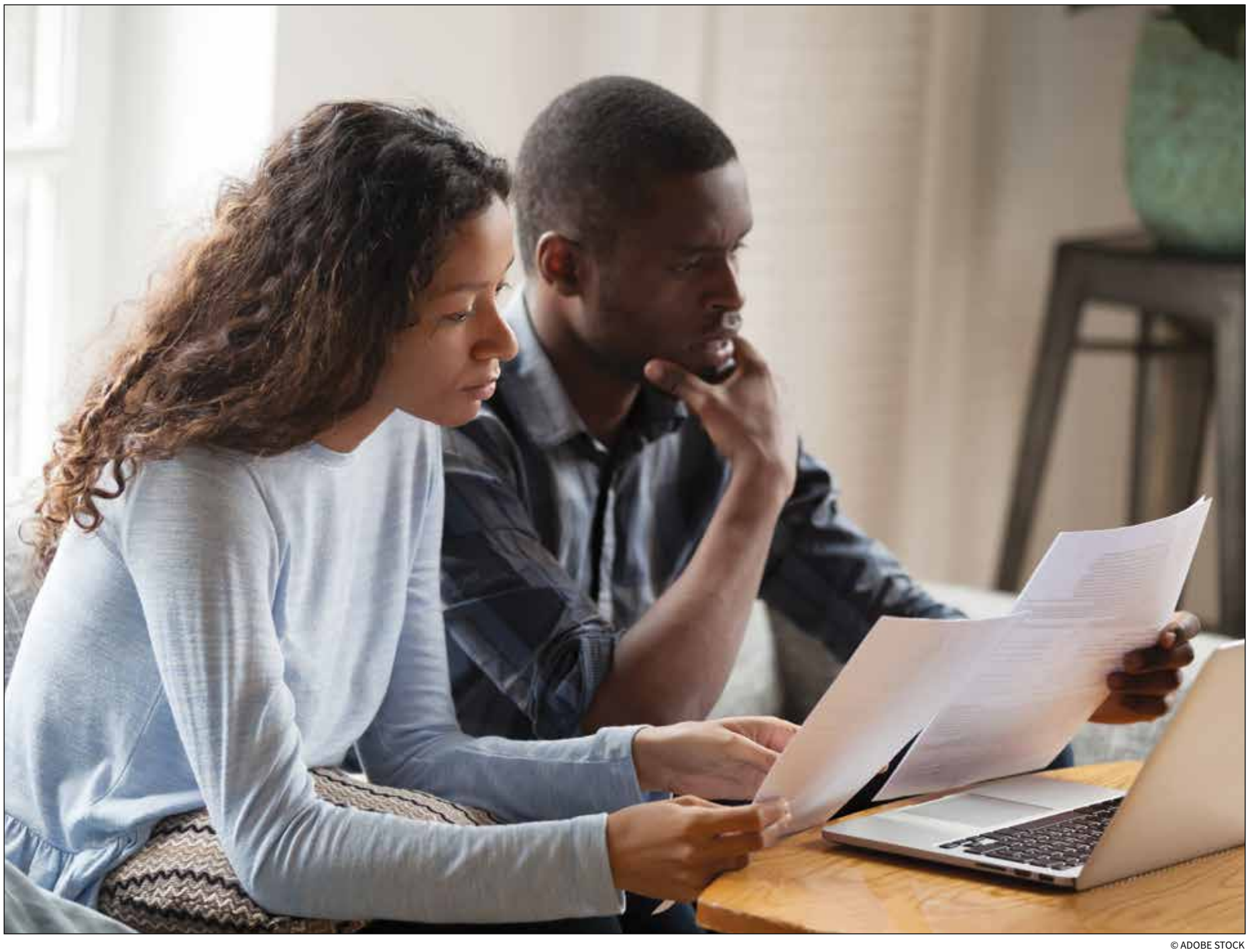
Tornadic winds can reach up to 300 miles per hour, destroying homes and making projectiles out of every-day objects. Some destruction has been as much as a mile wide. There are other related dangers: These weather systems also include heavy rains, lightning, hail and flash flooding. The area known as Tornado Alley, which stretches from central Texas to western Ohio along the country's midsection, isn't the only hot spot. In fact, all of the U.S. is potentially at risk, according to Ready.gov. Areas adjacent to the Gulf of Mexico may see increased activity because hurricanes and tropical storms can spin off convective winds that produce tornadoes; frequent near-daily rains are also a breeding ground.

STAY TORNADO AWARE

Tornadoes may form at any time of the year, but are most common in the warmer months. The National Centers for Environmental Information reports, for instance, that Tornado Alley experiences its most damaging systems in late spring and early fall. But the Gulf Coast, on the other hand, sees the worst tornadoes in the autumnal months of October through December.

Know Your Coverage

Tornadoes appear and disappear within minutes, but they can be incredibly destructive even during such a short span of time.



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Will your home insurance cover it? The answer is yes, because the industry classifies tornadoes as every-day windstorms, rather than singular catastrophic events like earthquakes or floods.

FOCUS ON DEDUCTIBLES

Your basic homeowner policy should cover costs to repair damage from a tornado, according to the Property Casualty Insurers Association of America. The issue may be your deductible — in particular if your home doesn't take a direct hit. Wind and rain can wreak havoc on your home, without severely damaging it. If you've chosen to limit your premiums by agreeing to a higher deductible, costs from nearby or smaller tornadoes can add up quickly. Consider a costlier premium with a smaller deductible if you live in a tornado-prone area.

TAKING INVENTORY

Replacing storm-soaked belongings is next on your checklist. Make a list of your possessions, to ensure you have adequate coverage for what's inside. If possible, attach receipts to your list — especially for big-ticket items like appliances and electronics. Take photos or a video, so there is a visual record. Store it all in a protected place, either in a remote safe-deposit box or inside a lockbox inside your designated safe room. Making a claim will be far easier, should the time come. Personal property coverage either replaces these lost items, or helps you recoup their costs. This very important add-on also protects you against other weather-related events like lightning or wildfire, as well as vandalism and theft.

OTHER CONSIDERATIONS

There can be a limit to how much personal property your home insurance will cover. So you may need to add a rider to your policy in order to increase coverage to include things like fine art, coin or stamp collections, jewelry or particularly expensive technology. Determine if your policy will pay your living expenses, should you be forced out of your home during repair or rebuilding. Adding pet coverage can help pay for veterinarian or funeral expenses. Whatever you decide, keep your homeowner-insurance company's contact information with you. In the event of a tornado, you'll need to get in touch as soon as your family is safe.

Decoding Tornado Bulletins

The National Weather Service specializes in creating timely and accurate weather bulletins meant to keep us safe from dangers like tornadoes.

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Here's what they mean — and what you should do.

TORNADO WATCH

It's critical to understand the difference between a tornado watch and a tornado warning, in order to make the right decisions to stay safe. A watch means tornadoes are possible in your area. Severe thunderstorms also have the potential to produce tornadoes. Move to a building or space that offers protection — or shelter in place if the structure is safe where you are. Remember: Watches can quickly become warnings, so stay weather aware and be prepared to follow your tornado safety plan.

TORNADO WARNING

A warning is far more serious than a watch, requiring immediate moves to protect life and property. A tornado has been sighted on the ground, or is indicated by radar. Move immediately to your pre-selected safe space, which should be an interior room with no windows on the lowest floor of a sturdy structure. Should you find yourself in a vehicle or mobile home, quickly head to a nearby shelter — or lay on a low area of ground away from trees. If a severe thunderstorm happens while you are under a tornado watch, treat the situation like a tornado warning.

THE EF SCALE

The Enhanced Fujita scale attaches a rating based on three-second gust levels, and can only be issued by the National Weather Service. The ratings help people understand the severity of these weather events after they've taken place, setting wind estimates based on the highest speeds within the tornado's path. The original measurement was named after Ted Fujita, a severe-storm research scientist at the University of Chicago who came up with this scale in 1971. Improvements were made by a panel of meteorologists and engineers, and the current enhanced scale was unveiled in 2007. Evaluations are done across several structures rather than just one, and then a final rating is announced. An EF-0 tornado had wind gusts of 65-85 miles per hour, while an EF-1 blew up to 110 mph. EF-2s are 111-135 mph, while EF-3 rates up to 165 mph. An EF-4 tornado packs winds of 166-200, followed by the catastrophically damaging EF-5 with gusts of more than 200 mph.

How to Build a Safe Room

Moving to an interior space is recommended during a tornado, but better still is a safe room. Here's how to create one.

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WHAT THEY ARE

The Federal Emergency Management Agency has set criteria for hardened structures known as safe rooms, which are meant to provide close to absolute protection for you and your loved ones during extreme weather events. Remember that risk remains anywhere in your home: EF-5 tornadoes boast winds of more than 200 miles per hour, and dry-walled spaces built with 2x4 studs are simply not built to withstand that kind of force. Rooms built in accordance with FEMA guides promise a better chance of emerging from storms without injury or death. They can be fortified to resist even EF-5-level tornadoes.

GETTING STARTED

Safe rooms typically cost between $2,500-$5,000 to build, according to Reader's Digest. Before securing the services of a professional contractor, obtain the free FEMA booklet titled "Taking Shelter From the Storm: Building a Safe Room Inside Your House." Inside, you'll find plans for construction that meet all National Performance Criteria for Tornado Shelters. The best place for a safe room is in your basement. If that space isn't available to you, build in an interior safe room on the home's first floor or — failing that — a separate place that remains easily accessible in the event of a storm. Allot five square feet of space in the room for each person who'll seek shelter.

HOW THEY'RE MADE

Safe rooms are made with reinforced concrete or concrete block, or with a combination steel design. They need to be constructed independently from the structure of your home, and securely bolted into a concrete slab to keep everything in place. The impact-resistant shell should be strong enough to protect everyone inside from wind-blown debris that account for so many injuries and deaths.

WHAT YOU'LL NEED

FEMA's map of U.S. wind zones will help you determine how strong the walls should be. Keep in mind that this space can pull double duty when not in use. If the safe room is inside your home, you can also use it as a walk-in closet, bathroom, storage room or pantry. Outside spaces can function as a storage shed. Either way, be sure to stock the room with emergency and first-aid kits, any needed medications, batteries and an emergency radio, blankets, basic tools and a flashlight, water and snacks.

America's Worst Tornadoes

Here's a look back at history's most damaging tornadoes.

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TRI-STATE TORNADO, MARCH 18, 1925

America's deadliest tornado struck Missouri, Indiana and Illinois over three-and-a-half hours. Nearly 700 people were killed, according to the National Weather Service, and another 2,000 people were injured.

TUPELO, MISSISSIPPI/ GAINESVILLE, GEORGIA, APRIL 5-6, 1936

A single storm system spun off two tornadoes that killed hundreds, while causing more than $3 million in damages in Tupelo, Mississippi, alone. Some 216 people died there, as the city's hospital and water reservoir were knocked off line. Gainesville was hit the following day, and 203 others died as fires erupted through the city's commercial district.

NATCHEZ, MISSISSIPPI, MAY 17, 1840

Dubbed the Great Natchez Tornado, the second-deadliest single twister in American history killed 317 people after striking this Mississippi River town. Most of the deceased were trapped on flatboats.

TUPELO, MISSISSIPPI, APRIL 5, 1936

More than 200 people died as this monster storm tore through Tupelo's residential district. A group of homes near Gum Pond was swept into the water, with the families still trapped inside. Officials at the time said 48 blocks were leveled. Among the survivors: A young Elvis Presley and his mother Gladys.

JOPLIN, MISSOURI, MAY 22, 2011

An incredible tornado some three-quarters of a mile wide killed more than 160 after touching down at the edge of Joplin. The storm reportedly ripped across the entire city, packing winds of more than 200 miles per hour.

FLINT, MICHIGAN, JUNE 8, 1953

A cluster of eight tornadoes killed 116 people and injured nearly 850 more during a terrible day that the National Weather Service later said was the worst 20th century natural disaster to hit Michigan. Some 90 people died in Worcester, Massachusetts, a day later, after the same storm system spawned another tornado.

SHINNSTON, WEST VIRGINIA, JUNE 23, 1944

The southernmost tornado in a series that moved across Ohio, Pennsylvania and West Virginia killed more than 100 people. In all, this system claimed the lives of more than 1,000, injuring thousands more. Some residents of these World War II-era communities assumed that were being bombed.

BANGLADESH COMPARISON

None of these U.S. tragedies compare to the Daulatpur—Saturia tornado, which hit on April 26, 1989, in Bangladesh. Approximately 1,300 people lost their lives in a single day. The country has actually endured nearly 20 tornadoes that have killed more than 100 residents apiece.

What Happens Next?

In the midst of a tornado, most injuries and fatalities are due to flying debris.

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But what happens next can be very dangerous in its own right.

FIRST DO A MEDICAL CHECK

Injuries sometimes happen without being noticed in the trauma and stress of a tornado. So it's smart to do a quick check to see if anyone requires medical attention before doing anything else. The CDC reminds everyone that the injured should not be moved, unless they appear to be in immediate danger or are risking further injury. Stop any bleeding with the application of direct pressure, then clean out open wounds with soap and clean water. You'll need to get any puncture wounds evaluated by a doctor. Next, if possible, connect with family and loved ones to make sure everyone is OK. Text and social media messages are often more reliable in these situations than phone calls.

EVALUATE THE SITUATION

Tornadoes are typically the result of a larger storm system, and there can be heavy downpours after the winds die down. Flooding and damaging hail are a constant threat. So continue monitoring battery-powered radios or TVs for critical emergency information before leaving your safe place. Wait for the all clear from forecasters or government officials. Be aware of your surroundings when exiting a structure, since it may be damaged. If it's safe, retrieve heavy boots, a long-sleeve shirt and gloves. Exposed nails, power lines and broken glass could be all around. When phone service returns, report hazards to your utility company and first responders. Don't return to badly damaged structures until advised by authorities that it's safe to do so.

LEAVING YOUR SAFE SPACE

Extreme caution must be exercised as you emerge afterward. One government study found that an astounding 50% of storm-related injuries were the result of clean up, rescue attempts and after-tornado activity. Downed power lines, compromised electrical systems and broken gas lines are common issues, leading to the risk of fires, explosions or electrocution. Turn off gas, water and electricity to your building if possible. Falling or heavy rolling objects can also be a huge danger. A third of injuries in the federal study were actually the result of stepping on nails from damaged and destroyed structures.