◦ Tornado

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Tornado Preparedness

Overview

- A tornado is a rapidly rotating column of air that extends from a thunderstorm to the ground. It is often referred to as a twister or cyclone.
- Tornadoes come in various sizes and intensities, ranging from weak, short-lived tornadoes to violent, long-track tornadoes that can cause widespread devastation.

Causes

- Supercell Thunderstorms: The majority of tornadoes form within a specific type of thunderstorm known as a supercell. Supercells are large, organized thunderstorms characterized by a persistent rotating updraft called a mesocyclone.
- Atmospheric Instability: Tornadoes require unstable atmospheric conditions to form. This instability typically results from the presence of warm, moist air near the surface and cooler, drier air aloft.
- Interaction with Boundaries: Tornadoes frequently develop along boundaries between air masses with different properties, such as cold fronts, warm fronts, or drylines.

Effects

- Structural Damage: Tornadoes can cause extensive damage to buildings, homes, and other structures in their path. The powerful winds associated with tornadoes can tear off roofs, collapse walls, and destroy entire buildings.
- Injury and Loss of Life: Tornadoes can result in injuries and fatalities due to their destructive force and the impacts of flying debris.
- Disruption of Communities: Tornadoes can disrupt communities by damaging critical infrastructure, disrupting transportation networks, and causing power outages.

Preparedness

1. **Create a Tornado Emergency Plan:**

- Identify multiple evacuation routes from your home or workplace, including routes to the designated safe room or shelter.
- Ensure all family members or household occupants know the emergency plan and practice tornado drills regularly.

2. **Assemble an Emergency Kit:**

- Prepare an emergency kit that includes essential items such as non-perishable food, water, medications, first aid supplies, flashlights, batteries, a battery-powered or hand-crank radio, and important documents (e.g., identification, insurance policies).
- Include items specific to the needs of infants, elderly family members, or individuals with disabilities.

3. **Stay Informed:**

- Monitor weather forecasts and alerts from reliable sources, such as the National Weather Service (NWS) or local meteorological agencies.
- Invest in a NOAA Weather Radio to receive real-time alerts and warnings for tornadoes and other severe weather events.

4. **Secure Your Home And Property**

- Identify and reinforce areas of your home vulnerable to wind damage, such as windows, doors, and roofs.

- Consider installing impact-resistant windows, shutters, or reinforcing garage doors to protect against flying debris.

5. **Develop an Evacuation Plan:**

- Know the location of public tornado shelters in your community and have a plan to reach them safely if necessary.
- Practice evacuating quickly and efficiently with your family members or household occupants.

6. **Stay Calm and Take Shelter:**

- When a tornado warning is issued or if you observe signs of an approaching tornado (e.g., dark, rotating clouds, hail), seek shelter immediately.
- Move to the designated safe room or shelter in your home, or if outdoors, seek shelter in a sturdy building, basement, or underground storm shelter.

7. **Stay Alert After the Storm:**

- Remain indoors until authorities have declared the area safe and all tornado warnings have expired.
- Exercise caution when venturing outside, as downed power lines, debris, and other hazards may be present.

Building Vulnerability During Tornado

Building Collapse

- High-speed winds associated with tornadoes can exert immense pressure on the exterior walls, roof, and other structural components of buildings. As wind speeds increase, buildings may experience uplift, lateral forces, and wind-driven debris impacts, leading to structural damage and failure.
- Flying debris propelled by tornado-force winds can penetrate buildings and cause severe damage to structural elements such as walls, windows, and doors.

Types Of Structural Failure

1. Roof Failure: Tornado-force winds can lift roofs off buildings or cause them to collapse inward, particularly in buildings with lightweight or poorly anchored roofing materials.

2. Structural Deformation: Tornado-force winds can cause structural deformation, bending, or twisting of building components such as beams, columns, and trusses.
3. Structural Overturning: Tall or slender structures, such as communication towers, poles, and light structures, are prone to overturning during tornadoes due to wind-induced torsional forces and dynamic loading.

Safe Areas Within Home

1. **Basement:**

- If your home has a basement, it is often the safest place to seek shelter during a tornado.
- Choose an interior room in the basement, away from windows, and preferably under a sturdy workbench or staircase for added protection.

2. **Interior Rooms on the Lowest Level:**

- If your home does not have a basement or storm shelter, seek shelter in an interior room on the lowest level, such as a bathroom, closet, or hallway.
- Choose a small, windowless room in the center of the house, away from exterior walls and corners.

3. **Reinforced Structure:**

- If none of the above options are available, seek shelter in a reinforced structure within your home, such as a pantry, laundry room, or interior bathroom.
- Choose a room with strong walls and a solid door that can provide protection from flying debris.

4. **Under Staircase:**

- If you cannot access a basement or storm shelter, seek shelter under a sturdy staircase on the lowest level of your home. The space beneath a staircase can provide protection from falling debris and structural collapse.

5. **Storm Shelter or Safe Room:**

- If your home is equipped with a designated storm shelter or safe room, seek shelter there during a tornado.
- These specially designed rooms are constructed to withstand high winds and flying debris, providing maximum protection for occupants.