



A Fact Sheet prepared by the National Telecommunications Safety Panel

Introduction

Hurricanes are powerful storms formed at sea that have sustained winds in excess of 74 miles per hour. Hurricanes are often accompanied by tidal surges and flash floods, which typically cause more damage than the hurricane's wind. Hurricanes often spawn tornadoes, which are violent whirlwinds that can travel at speeds of 250 miles per hour or more. Unlike hurricanes, tornadoes form quickly and travel in very unpredictable directions.

Hurricanes produce significant hazards to the community. Telecommunications employees who perform restoration work are vulnerable to injury if safe work practices are not properly followed. Extreme care must be taken to identify all hazards created by hurricanes, and each hazard must be addressed in a thoughtful manner.

There is direct correlation between a hurricane's category, the extent of damage, and safety and health hazards encountered. Following is a summary of hurricane categories, with potential damage descriptions:

| Category | Sustained Winds | Expected Damage |
|----------|--|-----------------|
| 4 | 131 – 155 mph | Severe |
| | More extensive wall failures with some complete roof structure failure on small residences. Major erosion of beaches. 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. | |
| 5 | Above 155 mph | Catastrophic |
| | 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. | |

| Category | Sustained Winds | Expected Damage |
|----------|---|-----------------|
| 1 | 74 - 95 mph | Minor |
| | No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage. | |
| 2 | 96 – 110 mph | Moderate |
| | 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. | |
| 3 | 111 – 130 mph | Major |
| | Some structural damage to small residences and utility buildings with a minor amount of wall 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. | |

What Are the Main Hurricane Hazards?

Storm Surge / Inland Flooding

Storm surge is an abnormal rise in sea level 50 to 100 miles wide that sweeps across the coast near where the "eye" of the hurricane makes landfall. The surge of high water, topped by waves, can increase the mean water level by 15 feet or more, and is devastating to areas impacted. Along the immediate coast, storm surge and flooding are the greatest threat to life and property. Most hurricane-related deaths are caused by drowning.

Winds

Hurricane force winds, 74 mph or more, can destroy buildings and mobile homes. Winds often stay above hurricane strength well inland. Debris such as signs, roofing material, and small items left outside become flying missiles in hurricanes.

Heavy Rains and Floods

Widespread torrential rains often in excess of 10 inches can accompany a hurricane and can produce destructive floods. This is a major threat to areas well inland. In the last 30 years, inland flooding has been responsible for more than half the deaths associated with hurricanes in the United States.

Tornadoes

Hurricanes also produce tornadoes, which add to the hurricane's destructive power. Damage from tornadoes can be devastating.

What Precautions Should Be Taken For Re-entry After the Storm?

- Access to affected areas will be controlled by the local authorities. Access to storm damaged areas may be limited until search and rescue operations are complete and safety hazards, such as downed trees and power lines, are cleared.
- Enter storm damaged area only after authorities advise that it is safe to do so.
- Stay tuned to local radio and TV for information.
- Have a valid Company ID. Security operations will include checkpoints.
- Avoid loose or dangling power lines and report them immediately to the power company, police, or fire department.
- Beware of snakes, insects, and animals driven to higher ground by floodwater.
- Take pictures of the damage, for possible insurance claims.
- Drive only if absolutely necessary and avoid flooded roads and washed-out bridges.
- Enter all buildings with caution.
- Open windows and doors to ventilate and dry any structures entered.
- Check for gas leaks--if you smell gas or hear blowing or hissing noises, open a window and quickly leave the building. Contact the local utility for assistance.
- Look for electrical system damage--if you see sparks or broken or frayed wires, or if you smell hot insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician first for advice.
- Check for sewage and water line damage--if you suspect sewage lines are damaged avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company and avoid the water from the tap.

What Kind of General Safety and Health Hazards Are Associated With Hurricanes?

Safety Hazards

According to the National Weather Service, about 70 percent of injuries during hurricanes and tornadoes result from vehicle accidents, and about 25 percent of injuries result from being caught out in the

storm. Some of the safety-specific hazards associated with hurricane restoration work include:

- Hazardous driving conditions due to slippery roadways
- Slips and falls due to slippery walkways
- Falling and flying objects such as tree limbs and utility poles
- Electrical hazards from downed power lines or downed objects in contact with power lines
- Falls from heights
- Burns from fires caused by energized line contact or equipment failure

Health Hazards

| Biological Hazards | |
|---------------------------------|--|
| Diseases | <ul style="list-style-type: none"> • Boil water or drink bottled water • Do not eat any food that may have come into contact with contaminated floodwater or that has spoiled due to lack of refrigeration. Eat pre-packaged food that does not require refrigeration. • Always wash your hands with soap and water. Use water that has been boiled or disinfected. • Tetanus or other immunizations may be necessary. Consult with your personal physician. |
| Animals/ Insects/ Snakes | <ul style="list-style-type: none"> • Mosquitoes - To protect yourself from mosquitoes, wear clothes with long sleeves and long pants. Use insect repellents. • Snakes – Evaluate the work area before you enter. Move all objects with a stick. • Animals - If flooding has occurred, wild animals as well as domestic animals may have been forced from their natural habitats and homes. Remember, most animals are disoriented and displaced, too. Do not corner an animal. • Rats - May be a problem during and after a flood. Take care to secure all food supplies. • If bitten by any animal or snake, seek immediate medical attention. |
| Physical Hazards | |
| Heat Stress | <ul style="list-style-type: none"> • Rest when necessary to avoid exhaustion from working extended shifts. • Keep well hydrated to avoid heat related effects. |
| Chemical Hazards | |
| Releases | Release of hazardous chemicals from industry, business or even homes is possible in the aftermath of a hurricane. Be cautious whenever you are working near these types of situations. |

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What Kind of Safety and Health Hazards Are Associated With Normal Work Activities that are Performed in the After-Math of a Hurricane?

Repairing Downed Telecommunications Lines

Special precautions need to be taken when repairing downed lines. Repairing downed or damaged lines entails many of the activities involved in installing and removing overhead lines and in general maintenance on overhead lines. The crucial difference is that in emergency conditions there are unknown hazards and the potential for changing hazards as work progresses. Under these conditions workers must be extra vigilant and cautious.

Potential hazards include:

- Electrocution by contacting downed energized lines, or contacting objects, such as broken tree limbs, in contact with fallen lines.
- Falls from heights.
- Being struck or crushed by falling poles, towers or parts thereof, or tree limbs.
- Being injured in vehicular accidents when responding to an emergency situation.
- Burns from fires caused by energized line contact or equipment failure.

Downed Or Damaged Power Lines

Stay well clear of any downed or damaged power lines. Establish a safe distance from the lines and report the incident to the responsible authority. Only properly-trained electrical utility workers should handle damaged power lines.

Removing Downed Trees

When hurricanes occur, downed trees can block public roads and damage power lines. Emergency crews are often sent out to clear downed trees during these storms.

Potential hazards include:

- Electrocution by contacting downed energized lines or contacting broken tree limbs in contact with fallen lines.
- Falls from trees.
- Being struck or crushed by falling tree limbs.
- Being injured by emergency equipment such as chain saws and chippers.
- Proper PPE, including gloves, foot protection, eye protection, fall protection, hearing protection and head protection, should be used when using chainsaws and chippers to clear downed trees.

Using Hand Tools

- Use a foreign voltage detector to test all poles, lines and metallic objects in the vicinity of the work area for stray voltage.
- Only appropriate power equipment, designed for outdoor use, should be utilized outdoors in wet conditions.
- All saws, chippers, and other tools should be used properly and in accordance with manufacturers' recommendations.
- It is important that all equipment is well-maintained and functioning correctly.
- In addition, all equipment should have proper guarding, working controls, and other safety features as installed by the manufacturer.

Caught in a Vehicle

Drivers in the hurricane's path who are not going to be driving their car should park it on high ground, as close as possible to a sturdy building, and seek shelter as quickly as possible. Avoid driving through standing water. If you come upon a flooded street, take an alternate route.

Water Hazards

Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jackets or buoyant work vests. Ring buoys with at least 90 feet of line shall be provided. At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water. If using boats, ensure all operators have been properly trained.

Additional Information:

Occupational Safety & Health Administration

<http://www.osha.gov/SLTC/emergencypreparedness/guides/hurricane.html>

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10669

Centers for Disease Control and Prevention (CDC)

[Hurricane: A Prevention Guide to Promote Your Personal Health and Safety.](#)

Federal Emergency Management Agency

<http://www.fema.gov/hazards/hurricanes/>