



Emergency checklist: wind

For locations exposed to hurricanes, cyclones, typhoons or severe localized wind



During the past 25 years, 11% of all damage sustained by FM clients was related to wind. Approximately 70% of those losses were attributed to severe tropical storms.

Studies of severe windstorms show conclusively that windstorm-related damage can be prevented or at least minimized with an organized plan of action before, during and after a storm. Hurricanes, typhoons and cyclones are all tropical storms caused by severe low pressure systems, but they are called different names depending on where they occur. In the Caribbean, the Gulf of Mexico and the United States, these storms are called hurricanes, but in the West Pacific (China, Hong Kong, Japan, Korea, the Philippines and Taiwan), they are known as typhoons. And, in the South Pacific (Australia, Fiji and Samoa) and Indian Ocean, they are called cyclones.

If you don't have an emergency response plan specific to windstorm, it's not too late. Start planning right away. This checklist offers suggestions you can build into your plan to minimize windstorm-related damage. Use the extra space provided to add procedures specific to your facility. If you need help, or would like someone to review your plan with you, contact your local FM office.

Pre-windstorm planning

In preparation for hurricane season:

- Develop a windstorm emergency response plan, and educate appropriate personnel in its aims and procedures.
- Staff and train an emergency response team (ERT) whose members are willing to stay on-site during a windstorm (if safe to do so). Ask for volunteers. Arrange for support/assistance during the storm

for families of those who will remain at the facility. Also, notify local emergency preparedness authorities about your plans to have personnel on-site.

- Designate a weather monitor who will report weather conditions and keep the ERT leader up to date on conditions before, during and after a windstorm.
- Give the ERT leader the authority to implement the plan based on predetermined checkpoints (e.g., when a storm is within a certain distance from a facility). This responsibility includes shutting down operations and sending personnel home.
- The ERT leader also should ensure that operational managers carry out predetermined tasks at each warning stage of the storm. To guarantee this, task checklists should be distributed to all involved, completed and returned to the ERT leader.

Elements of the Plan

Identify all critical areas of a facility, and make sure someone on all shifts knows the proper shutdown procedures and is authorized to implement them.

- Maintain an updated list of the telephone numbers and contacts for local offices of emergency preparedness and for your local FM office. Contact local authorities to plan and coordinate activities before the need for emergency action. That way, both you and they will be better prepared.
- Arrange backup communications, such as two-way radios or cellular phones, and have spare batteries and a diesel-driven emergency generator on-site.
- Identify a hot site (an off-site data processing location where you can continue business immediately) or a cold site (an off-site location where you can set up your own data processing equipment). Also consider identifying a business recovery facility where you can resume general operations.
- Maintain ongoing agreements with contractors for supplies and repairs that may be needed after a windstorm. If possible, use contractors who are from outside potential windstorm areas. Local contractors may be overcommitted.
- Order emergency supplies and maintain them throughout the windstorm season.
- Have straps or other means on hand to brace/anchor yard storage, signs, cranes and roof-mounted equipment. Replace any missing fasteners for roof-mounted equipment.
- Inspect and repair roof coverings and edges a few months before windstorm season.
- Provide pre-fitted windstorm shutters and/or plywood for windows and doorways where practical.
- Perform a dry-run installation of windstorm shutters annually. If practical, leave shutters in place.
- Prepare for windstorm-related flooding with sandbags and an ample supply of brooms, squeegees and absorbents.

- Identify and consider removal of any large trees that could fall and damage buildings, fire pump houses or power and communication lines.
- Have plans in place for site security after a windstorm.

Impending windstorm

Your country's weather service will provide advance warning to those in areas likely to be in the path of an approaching storm. In the United States, the National Weather Service issues a hurricane watch when sustained winds of 74 mph (120 km/hr) or greater pose a potential threat within 36 hours. A hurricane warning in the United States indicates hurricane conditions are expected within 24 hours. The warning stages differ from country to country, and you should be familiar with the system applied where your facilities are located. Windstorms also can be tracked on the internet (see Web resources on page 4). Use the advance warning to begin taking action consistent with your emergency plan.

As the windstorm forms:

- Map the windstorm front and stay up-to-date on the storm's progress.
- Begin implementing your windstorm emergency response plan. Take specific actions based on the predetermined checkpoints outlined in your plan (you have, for example, already determined you will begin shutting down processes when a storm is a certain distance away).
- Inspect, clean out drains and gutters and make emergency repairs to drains, gutters and flashing.
- Check/maintain all necessary backup equipment, such as emergency generators and communication devices.
- Ensure that the ERT members who volunteered to stay on-site have proper supplies and equipment (drinkable water, nonperishable food, medical supplies, flashlights and walkie-talkies).
- Repair aboveground tanks.
- Fill fuel tanks of generators, fire pumps and all company-owned vehicles.
- Fill other liquid storage tanks.

As the windstorm continues:

- Strap or anchor to the roof deck all roof-mounted equipment such as HVAC units and exhaust vents.
- Protect/relocate vital records.
- Install windstorm shutters/plywood over windows. Install bracing for dock doors.
- Take the following steps so items outdoors will not blow away or cause damage:
 - Remove all loose debris
 - Anchor or relocate all nonessential equipment to a safe indoor location
 - Secure storage of flammable-liquid drums, or move them to a sheltered area (but never into main facility areas).
 - Anchor all portable buildings (e.g., trailers) to the ground
 - Secure large cranes
 - Make sure outdoor signs are properly braced
- Inspect all fire protection equipment, such as sprinkler control valves and fire pumps.
- Have cash on hand for post-windstorm needs, such as buying food and supplies, or paying employees and contractors.
- Clean out drains and catch basins.
- Protect computers, machinery and stock with tarpaulins and waterproof covers.
- Remove as many goods as possible from the floor, or ship them out of the facility.
- Isolate, neutralize or remove from the site any chemicals that can react violently with each other.
- Shut down all noncritical and nonessential electrical equipment.

When the storm is imminent:

- Shut off gas to minimize fire loss.
- Protect or shut off other possible flame sources.
- Disconnect the main electrical feeds to the facility, if possible, to prevent a potential fire caused by short-circuiting of damaged equipment.
- Shut down operations that depend on outside power sources in an orderly manner, following established procedures.

During the windstorm

Emergency response personnel should stay at the facility only if safe to do so.

- Patrol the property continuously and watch for roof leaks, pipe breakage, fire or structural damage. During the height of a windstorm, personnel should remain in a place that has been identified as safe from wind and flood.
- Constantly monitor any boilers that must remain on line.
- During power failure, turn off electrical switches to prevent reactivation before necessary checks are completed.

After the windstorm

- Secure the site.
 - Survey for damage.
 - Survey for safety hazards, such as live wires, leaking gas or flammable liquid, poisonous gas and damage to foundations or underground piping.
 - Repair damage to the automatic sprinkler system and get it back in service as soon as possible. Use FM's Red Tag Permit System (P7427) whenever sprinkler piping and/or water supplies are impaired.
 - Call in key personnel and notify contractors to start repairs. Make sure safety systems are fully implemented before work is allowed to begin. This means controlling smoking and using FM's Hot Work Permit System (P9311). Require contractors to share responsibility for establishing firesafe conditions before and during the job.
- Begin salvage as soon as possible to prevent further damage.
 - Cover broken windows and torn roof coverings immediately.
 - Separate damaged goods, but beware of accumulating too much combustible debris inside a building.
 - Remove water from buildings. Dry/wipe wet equipment and storage. Use dehumidifiers as needed.
 - Contact your local FM office for assistance in restoring fire protection and reporting the loss.
 - Clean roof drains and remove debris from roof to prevent drainage problems.
 - Visually check any open bus bars, conductors and exposed insulators before restarting main electrical distribution systems.

Helpful FM Publications/ Resources:

- Emergency Checklist – Flood (P9805)*
- The Emergency Response Team (P8116)*
- Flood Emergency Response Plan (P0589)
- Pocket Guide to Emergency Response (P9914)*
- Preparing for Hurricanes, online seminar for FM clients only** ***
- Protecting Roofing Systems Against Windstorm Damage (P0283)
- Protecting Your Facility Against Major Windstorms (P9811)
- Tropical Cyclone Tracking Chart and Planning Guide (P0639)
- Understanding the Hazard: Wind from Tropical Storms (P0046)* ***

Helpful internet resources:

- FM—fm.com
- Australian Bureau of Meteorology (Australia, South Pacific and Indian Oceans)—bom.gov.au
- Federal Emergency Management Agency—fema.gov
- Japan Meteorological Agency—jma.go.jp
- Joint Typhoon Warning Center—metoc.navy.mil/jtwc/jtwc
- National Hurricane Center (North America, Central America and Caribbean)—nhc.noaa.gov
- National Oceanic and Atmospheric Administration—noaa.gov
- Severe Weather Information Centre—severeweather.wmo.int

* Available in several languages

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