

Protect Your Employees and Business from Flood Damage

Allianz Risk Consulting



Introduction

Floods are treacherous and a leading cause of business interruption. Whether or not your business is in a designated flood zone, flooding can still occur on your property. Rivers, lakes, creeks and levees can overflow onto streets, and potentially into buildings and outdoor storage areas.

How you protect your organization and employees from a flood may be critical to the success of your business and the health and welfare of your employees. It's never too early to prepare.

As a business owner, there are several steps you can take to help reduce damage from flood hazards. Primarily, it's important to establish a strategic emergency plan to quickly respond to a flooding event and a flood recovery plan that details the necessary steps to take after a flood. Allianz Global Corporate & Specialty risk consultants have compiled the following information to help you prepare.

Flood Causes

Whether it's from melting snow, hurricanes or thunder storms, water can cause severe damage to your property and business operations. Careful attention should be given to loss mitigation before, during and after major weather events and flooding.

The most common causes of flooding include:

- Heavy rains – Intense rainfalls can cause rivers to overflow into surrounding flood plains and surface water to flow into other areas
- Hurricanes – Hurricanes are often accompanied by heavy rains and therefore cause significant riverine flooding in inland areas
- Ice Jams – In colder climates, flooding can be caused by the obstruction of a river or stream by ice
- Sheet Flows – This flood type generally occurs where mountains intersect. Water from rain or melting snow flows down the slope in wide paths or sheets

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- Seiche – A seiche is an oscillation of water from a lake or bay caused by seismic disturbances, wind wave, or unusual abrupt changes in atmospheric pressures that abnormally raise the water level, causing rivers to overflow their banks
- Storm Surge – Low pressure associated with a hurricane causes the ocean water surface beneath the hurricane's eye to be lifted
- Tsunamis – Large ocean waves caused by undersea earthquakes of magnitudes greater than 6.5 on the Richter scale. Tsunami waves can reach heights of 30 to 50 feet and approach the coast at 500 mph

Planning Ahead

To help mitigate loss from such flooding events, create and document formal emergency and recovery plans.

The following actions are considered critical:

- In the event of heavy rainfall or imminent flooding, monitor the weather report and stream/river water levels
- Focus the plan on specific equipment or facility areas that are vital to production or business
- If possible prior to actual flooding, de-energize or relocate important equipment to a different facility or to a higher floor
- Relocate stock and equipment off the floor or to a higher floor
- Consider permanently mounting electric motors and control panels above the floor
- Record contact information for vendors and contractors who can provide needed supplies or services
- Make sandbags available so they can be placed at entry points to prevent water entry
- Equip entries with floodgates or doors
- Maintain a diesel pump on site for water extraction
- Educate employees on emergency evacuation (include procedures and assignments for personnel)
- Establish procedures for accounting for personnel, customers and visitors
- Test your emergency plan periodically and make appropriate adjustments

Develop a detailed list indicating the order in which processes are to be shut down and the facility secured. Determine the length of time needed to accomplish

these tasks in advance so that appropriate actions can be initiated at the proper time. Planning is also necessary to provide alternate feeds or non-electric drives for vital equipment so that electricity can be shut down before hazardous conditions occur.

Give one person authority to act as the main coordinator throughout the emergency. This person should monitor the flood advisories issued by the National Weather Service and decide if the conditions warrant a shutdown. Implement precautions and appropriate actions as soon as a flood warning has been announced.

The following information can be used in creating your flood recovery plan:

- Pre-Flood Checklist
- After-Flood Checklist
- Flood Preparedness Resources

Pre-Flood Checklist

- Assemble supplies and equipment at a secure central location. Suggested items include:
 - Portable pumps and hoses
 - Emergency lighting
 - Lumber and nails
 - Sandbags
 - Mops and squeegees
 - Tarps
 - Tools
 - Shovels
 - Axes
- Ensure that the premises has supplies, such as:
 - Nonperishable food
 - First aid equipment
 - Lighting
 - Two-way radios
 - Stored drinking water
- Shut down processes safely and drain open tanks of flammable or combustible liquids
- Have enough personnel to move vehicles to a safe area
- Brace unsupported structural members at construction sites
- Anchor yard items that can be moved by flood waters, such as trailers, propane tanks or lumber. Move stored materials inside if practical. Barricade critical outdoor equipment with sandbags to provide protection against floating debris

- Fill emergency generator and fire pump fuel tanks
- Inspect all fire protection equipment to be sure it is in service
- Check travel brakes on movable cranes and bridges and anchor them in accordance with the manufacturer's out-of-service instructions
- Place sandbags at vulnerable building openings and around critical outdoor equipment. Divert water from critical areas such as holes in foundations, doorways and sills
- Move important machinery, stock and reports to higher elevations. By knowing the past flooding history of the area, reasonably safe areas can be selected. If major equipment cannot be moved, coat vulnerable metal surfaces with grease
- Shut off all flammable and combustible liquid, other dangerous chemicals and gas lines at their source to prevent discharge if pipes are broken by floating debris. Support exposed piping properly
- Make sure above – and below – ground tanks are properly anchored to prevent floatation. Fill empty tanks with water or product. Extend vent lines on active tanks above the anticipated maximum water level
- Tie down portable containers of flammable or combustible liquids
- Shut off electrical power at the main source when that building is in imminent danger of flooding
- Back up and store essential business data at an off-site facility
- Begin salvage and clean-up operations as soon as possible so that production can be resumed
- If employees assist in clean up, provide safety equipment (eye protection, headgear, dust masks, clothing)
- Be alert for displaced snakes and other wildlife that may be disoriented and potentially dangerous
- Be careful of possible impairment to fire protection equipment
- Repair any opening made in a building by debris
- Restore all critical power, utilities and phone service
- Be careful around damaged or submerged power lines. Notify the utility company of necessary repairs
- Clear drains of debris
- Caution emergency crews and salvage teams against smoking or using heat-producing devices if flammable liquids or gases may be present
- Clean and disinfect everything that got wet. Mud left from floodwater can contain sewage and chemicals
- Thoroughly inspect electric motors, switchgear and cables, and clean and dry them as needed before energizing. Even if it is not immersed, electrical equipment can absorb sufficient moisture to reduce its insulation resistance to a dangerously low level
- Examine steam and process lines and any refractory-containing equipment for wet insulation. In some cases, contaminated insulation must be stripped and restored rather than dried in place
- Test sources of boiler, process feed and cooling water, and any materials in underground storage tanks for contamination before use
- Mechanical equipment should be cleaned with casings opened for inspection. Check shafting for alignment and flush lubricating systems
- Take photos of damaged areas
- Clear area of all debris and separate undamaged items from damaged items
- Complete a damages list. If anything is perishable, throw it away immediately
- Report all losses immediately to your insurance carrier
- Evaluate the impact of the event with your key personnel and your insurance company

After-the-Flood Checklist

- Avoid floodwater. Water may be contaminated by oil, gasoline, or raw sewage. It may also be electrically charged from underground or downed power lines
- Assess damage to the structure (roof, windows, walls) immediately. Pay particular attention to foundation damage. Don't allow employees to enter potentially unstable structures. If unsure, consult with a structural engineer or other qualified party
- Find a temporary location if current facility is determined to be unsafe