

Flood Checklist

Allianz Risk Consulting



Introduction

Floods can occur anywhere, making them one of the most common natural disasters with the potential to cause significant damage to buildings, contents, and yard storage. In addition, the time required for clean up and recovery can result in a substantial interruption to business operations even after the flood waters have receded. Even if your property is not susceptible to flooding, the surrounding infrastructure (i.e. roads, railroads, etc.) may be exposed. This could create problems with ingress and egress, possibly resulting in a business interruption.

Floods are a natural catastrophe that can be caused by many different events, including overflowing of natural or manmade bodies of water, surface water, tidal water, rainwater runoff, rising ground water, sewer back-up, or from blocked yard and roof drainage systems. Flooding poses a greater threat in low-lying areas, near a body of water, or downstream from dams, but even the smallest streams, creek beds, ditches, culverts, or drains can overflow and create flooding. Some floods develop slowly over a period of days, but flash floods can develop within a few minutes to a few hours and possibly without any visible signs of rain.

The best way to prevent flooding for new construction is to avoid building in flood prone areas. If this is not possible, construct buildings above anticipated flood water levels and design to limit the potential for flood water entry. For existing buildings subject to flooding, the key to mitigating potential loss is the development and implementation of a formal flood emergency plan.

In an effort to help you minimize the damage that may occur as a result of flooding, Allianz Risk Consulting has developed the following checklist that should be completed before, during and after a flood. This checklist is not intended to be all inclusive and should be used as a guide, taking into consideration your specific site conditions and processes.

Should you have any questions about flood or want to discuss any aspect of risk management in greater detail, please feel free to contact your local engineer at Allianz Risk Consulting. For any insurance claims, please contact your insurance broker or Allianz Global Corporate & Specialty.

Flood Hazard Analysis

The key to minimizing flood damage is adequate preparation before the event.

Assess the property and surrounding area for flood exposure, including consideration of the following:

- Nearby flood sources, such as rivers, creeks, streams, drainage ditches, canals, lakes, oceans, elevated reservoirs or dams, ground water, etc.
- Flood maps indicating your site is in a flood plain.
- Historical flood events.
- Areas where water runoff can accumulate.
- Basement areas with important equipment, utilities, stock, or records.
- Sewer or drain lines where water can backup into buildings.
- Access roads for the property susceptible to flooding that could create ingress/egress problems.

Contact your local ARC engineer to assist in evaluating your flood exposure.

Pre-Flood Planning

If your site is subject to flooding, the following should be completed:

- Develop a comprehensive, written flood emergency plan to mitigate the exposures. The plan should include:
 - Assigning emergency organization roles and responsibilities.
 - Providing training at least annually.
 - Assembling emergency supplies and equipment in an elevated location not susceptible to flood waters, such as sandbags, pumps, plastic tarps, mops, squeegees, emergency lighting, fuel for equipment, etc.
 - Planning for salvage and recovery, including maintaining a list of key vendors, contractors, and salvage services.
 - A business continuity plan for restoring operations after the event.

The plan should be reviewed at least annually and updated as needed.



- Participate in a flood warning system if available. If a flood warning system is not available, designate a person to maintain contact with local authorities or monitor the media for predicted flood levels and time frame for flooding. Inform management and maintenance personnel accordingly. Allow sufficient time needed to implement emergency procedures.
- Review buildings for potential openings where flood water may enter and seal openings as necessary.
- Inspect all existing flood prevention systems if provided, such as dikes, walls, flood barriers, etc., and make repairs as necessary.
- Install back-flow prevention devices in sewer and drain lines to prevent floodwater from backing up into buildings.
- Be prepared to place sandbags at vulnerable building openings and around critical outdoor equipment.
- Relocate important equipment, stock, and records to higher elevations not subject to flooding. For equipment and stock that cannot be relocated, be prepared to cover with plastic tarps or store on pallets.
- Secure all outdoor items that cannot be relocated, such as tanks, trailers, equipment, etc. In case of a flood event, fill empty tanks with water or product to prevent them from floating away.
- Install grates, trash racks, curbs, etc. to protect inlets to all drains and storm water drainage systems against blockage from debris.
- Inspect the following areas to ensure they are free from debris that could cause water to backup:
 - Floor and yard drains.
 - Culverts, tunnels, and bridges along rivers, streams, creeks, etc.

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- Provide emergency power for storm water systems that are dependent on electrically driven pumps. Locate emergency power supplies at an elevation above the expected flood level.
- Inspect and test all basement sump pumps to verify they are fully operational.
- Backup important computer data and relocate to a location not subject to flooding.
- Isolate, neutralize, or remove from the site any chemicals that can react violently with each other.
- Determine if access roads to the facility are likely to flood and if there are alternate routes.
- If flooding is imminent, safely shut down operations:
 - Shut off processes and equipment following established procedures.
 - Shut off all flammable and combustible liquid and gas lines at their source to prevent discharge from broken piping.
 - Shut off the building's electrical power. Note: Power to electric motor-driven fire pumps should remain in service.
 - Enforce "No Smoking" and "No Cutting or Welding" rules. Protect or shut off other possible flame sources.
- Utilities, including electricity, gas, water, compressed air, HVAC, steam, etc. (isolate as necessary).
- Production & process equipment.
- Areas subject to flooding, including basements.
- Notify utility companies of any outages or damage.
- Call in key personnel and notify contractors to begin major repairs. Make sure facility safety procedures are fully implemented before work commences. This includes controlling ignition sources such as smoking and hot work. Follow all hot work permit procedures.
- Initiate salvage operations to perform the following:
 - Relocate flood damaged stock and equipment to dry areas.
 - Clean and dry equipment, placing priority on critical high-valued equipment.
 - Inspect and repair electrical systems and equipment before re-energizing.
 - Clear any debris from floor and yard drains, drain pipes, catch basins, etc.
 - Remove water and dehumidify damp areas. Monitor air humidity levels over an extended period of time in areas with highly sensitive equipment.
- Review the effectiveness of the flood emergency plan and revise as needed.

During a Flood

- Emergency response team personnel should remain at the facility if safe to do so and be prepared to respond.
- Continue to monitor the media for information on potential flood damage, access to property, utility outage, etc. Update management and maintenance accordingly.
- Monitor flooding in all buildings.

After a Flood

- Secure the site to prevent unauthorized entry.
- Organize and prepare emergency crews for salvage and cleaning operations.
- If safe to do so, conduct an immediate damage assessment, paying particular attention to the following:
 - Undermining or structural damage to the building, such as foundations.
 - Fire protection equipment, maintaining as much fire protection in service as possible by isolating damaged sections, then making repairs and restoring systems back to service as soon as possible. Notify ARC if any system will be impaired for more than 10 continuous hours.



If needed, please contact your insurance broker or Allianz Global Corporate & Specialty for assistance in reporting a claim.