

Preparing for Arctic Freeze & Winter Storms

Before the heavy snow warnings are broadcast and the frigid blasts of arctic weather arrive, it's important to prepare your facility and your employees. Preparations now can save costly damage to equipment and facilities and maintain important fire and life safety systems.

Loss Data

A study by property insurer FM Global¹ for the period 1984 through 1995 revealed over 3500 freeze-related insurance claims. Of these incidents, 42% were due to sprinkler leakage, which accounted for 17% of the gross dollar loss estimate. Process equipment breakdown due to freezing accounted for 10% of the incidents but 26% of the gross dollars.

FM Global's analysis revealed a pattern of freezing over the Christmas holidays when planned reductions in production, shutdowns, and vacations occur. Idle facilities contributed to reduced space heating, reduced or no heat in production equipment, and few or no people to monitor temperature and respond to freeze conditions.

Winter Preparations

Walk the entire roof and check to ensure roof drains, gutters, and downspouts are clear. Clean any accumulations of leaves or other debris that could be swept into and clog drains. Check all roof mounted equipment to ensure air conditioners, fan housings, antennas, signs, and other equipment is properly anchored and access panels are secure. Check to ensure roof flashing is intact and roof vents are tight. Plan for access to the roof in case the roof hatch is inaccessible.

Evaluate the structural strength of sections of roofs likely to accumulate heavy snow drifts and water. Excessive snow drifts increase the weight applied to the structure and can cause collapse. These areas include intersections of low and high roofs; valleys between two peaked roofs; intersection of roof and roof mounted equipment. Look for bent, deflected, twisted roof members/decks that might indicate susceptibility to overload.

Prepare all sprinkler systems, heating systems, process equipment, emergency generator, and snow removal equipment or service. Check that sufficient heat will be available in buildings protected by wet pipe sprinkler systems. Drain condensate from the low points of all dry pipe sprinkler systems and ensure that heating equipment in valve closets are working properly. Check fire pump house and suction/gravity tank heaters as well. Use approved heat trace on exposed pipes that cannot be drained.

Preparations before the Arctic Freeze or Winter Storm

- Determine personnel and resource needs to protect the facility and handle storm cleanup.
- Review emergency plans for loss of heat, electricity, and protection system impairments. Assign responsibilities and review alerting and communications procedures.
- Test emergency generators under a full load at least annually. Maintain generator fuel tanks $\frac{3}{4}$ full. Arrange for fuel delivery before a storm approaches

¹ FM Global Property Loss Prevention Data Sheet 9-18/17-18, January 2007



When an Arctic Freeze or Winter Storm is Forecast

- Monitor National Weather Service and local news media advisories.
- Have security guards check for low temperatures, open doors, cracked windows, or other openings that can allow the cold to enter.
- Check fire protection and life safety systems periodically.
- Monitor temperatures in areas with water pipes to detect low temperatures—especially those not normally occupied.
- Check exterior windows to ensure they are intact and water tight and doors align with frames.
- Prepare to activate your emergency management and business continuity plan and alert staff to respond if called.
- Keep driveways clear for emergency vehicle access. Coordinate with your contractor or Public Works as needed.
- Clear the exterior of exit doors to allow for emergency egress.
- Shovel areas around sprinkler valves and fire hydrants to allow emergency access.
- Inspect roof drains and remove any debris.
- Clear roof drains of ice dams to allow melting snow to drain.
- Clear exterior down spouts of snow or ice buildup at outlets.
- Stay alert for the beginning of ponding-deflection cycles. As snow compresses, it

absorbs rainwater and the increased weight on the roof will create depressions where water will accumulate and not drain. Often this condition worsens and leads to roof collapse.

- Remove dangerous snow loads if deemed safe. Priority areas include changes in roof elevation, moderate or low-sloped peaked single gable or curved roofs where winds cause drifting, valleys formed by multiple-gable or multiple peaked roofs, and roofs with multiple projections.
- Remove snow from standing seam metal roofs in strips starting at the peak to the eaves alternating side to side to assure the roof load is maintained in balance.
- Maintain awareness of surface water flooding caused by poor street drainage. Direct surface water away from the building.

If Heat is Lost and Pipes Freeze

- Use only approved space heaters to provide temporary heating. Check with the local fire department to determine what is approved for your area. Kerosene and propane heaters should only be used if permitted and in supervised areas where adequate ventilation and fire protection is available.
- Do not use torches to thaw frozen pipes.
- Follow insurer and fire department required impairment precautions if sprinkler systems freeze.

Additional Resources

Links to dozens of documents to help you with all aspects of your loss prevention, hazard mitigation, emergency response, and business continuity program can be found on the [“Resources” page](#) of the Preparedness, LLC website.

Check out our [blog](#) if you are interested in developments in national standards, industry best practices, current events, and what it means for your preparedness program.

About Preparedness, LLC

Preparedness, LLC is a client-focused risk consulting company. Our mission is to assist our clients safeguard people, protect property and minimize business interruption. Our vision is to thoroughly understand each client’s business and become a long-term, trusted advisor.

If you have questions; or need assistance with the development, implementation, or evaluation of your preparedness program, please contact us.

