



Risk Control

The Cold Weather Preparation Checklist

Before cold/snowy/icy weather

- Update Emergency Program for winter, including procedures for cold/snowy/icy weather.
 - Appoint members of the Emergency Team to monitor weather and initiate winter procedures
 - Develop procedures for when you lose heat and/or electricity
- Determine which processes need continued building heat or electricity for safety (processes that are subject to solidification or runaway reactions) and require prompt attention.
- Identify equipment, processes and piping that contain or use water or other liquid subject to freezing. Promptly and thoroughly drain them if heat or electricity is lost.
- Identify building areas that are unusually difficult to heat or that lose heat rapidly. Install thermometers for temperature monitoring during cold spells.
- Identify equipment that is vulnerable to freezing. Prepare the equipment for cold weather by:
 - Draining and securing any idle equipment
 - Draining condensate frequently
 - Providing heat or locating the equipment in a heated enclosure and/or providing antifreeze
- Service the heating system before winter begins. Make sure adequate supplies of fuel are on hand.
- Inspect and maintain the building shell to minimize openings. Fix windows and doors to close tightly. Caulk, insulate and weather-strip doors. Close and seal dampers, louvers and vents.

During cold/snowy/icy weather

- Monitor temperatures every few hours in vulnerable areas.
- Provide heat or steam tracing for exterior piping that either contains liquids or needs to maintain constant temperatures.
- Use tarps to erect temporary windbreaks upwind (prevailing wind direction) of vulnerable buildings and equipment.

Before snowfall occurs

- Make sure the Emergency Program covers winter emergencies, including excessive snow loads.
- Determine the maximum "safe" snow depth for the roof based on the roof's live load capacity (indicated by building plans and specifications or by engineering analysis of the roof design) and the properties of accumulated snow for the area.
- Inspect the roof structure for damage or deterioration and repair or reinforce as needed.
- Inspect roof drains and downspouts and clean accumulated debris to prevent clogging of the drainage system.
- Look for water ponding on the roof and eliminate the causes.

During snow accumulation

- Regularly monitor snow depth on the roof, especially areas where snow tends to drift:
 - In roof valleys and low roof sections adjacent to higher sections or structures
 - On the downwind side of pitched roofs
 - Against parapets more than two feet high
 - Against penthouses or other large roof structures more than 15 feet wide
- Remove snow accumulations from the roof before the snow reaches 50 percent of the "safe" maximum depth. Do not send employees onto the roof once the snow load approaches the live load capacity. Remove snow during a storm only if the forecast indicates that the total snowfall will result in dangerous accumulations.
- Remove snow in layers uniformly across the roof to prevent unbalanced loads that might cause a collapse. Avoid making snow piles on the roof during the removal process.
- Clear snow and ice from storm drains and catch basins. Check the roof drainage system to make sure that it is not clogged with ice or debris.
- Prevent roof cover damage by using care with snow removal equipment (shovels, ice spades or snow blowers). It is not necessary to clean completely to the roof surface if melting snow and water can freely flow to drains.

Wet pipe sprinkler systems – most freeze-ups result from failure to provide adequate heat

- Provide adequate heating to prevent freezing during the severe, protracted cold periods, especially in attics, entries, stair towers, shipping rooms, penthouses and under floor spaces. Where false ceilings are installed under sprinklers or piping with pendent heads, be sure that concealed spaces receive sufficient heat. Look for isolated drafts or cold air leaks into areas or spaces where there are sprinklers. High winds may accompany low temperatures. Check that the heating system is delivering heat to all areas.
- Repair windows and doors, and keep them tightly closed.
- Enclose piping exposed outdoors in heated, weather-tight materials.
- Maintain extra heat during periods of extreme cold to keep the sprinkler piping from freezing.
- Maintain a tight building envelope. Look for areas where cold winds can blow, and close small openings and keep all doors (especially large shipping doors) tightly closed, except when needed.
- During severe cold with an interruption of heating dropping temperatures in the building close to 5 degrees Celsius, you may need to drain the water from wet pipe sprinkler piping. If not done, ice plugs can obstruct the piping or damage fittings and sprinklers.
- After prolonged, abnormally cold weather, make drain tests on sprinkler risers (if possible) to determine if underground mains are frozen. Open the drain wide and let it run 30 seconds or more, then shut it off. If pressure fails to return to normal, clear ice from the mains ASAP.
- Check room temperatures frequently, especially if near 5 degrees Celsius.
- If you need to drain the system, fire protection afforded by sprinklers is no longer available. Curtail all hazardous operations during this period. Post a continuous fire watch with fire fighting equipment and a way to summon help.
- Do not use open flames or torches for thawing frozen water pipes near combustibles or buildings.

Dry pipe systems

- Dry pipe systems generally freeze due to water collecting in improperly pitched pipes, failure to remove accumulated water from low point drains, or failure to drain the system properly after the valve has tripped.
- Air is usually supplied to a dry pipe system by a compressor. Locate air intakes in a cold, dry atmosphere. Avoid warm, damp areas, since moisture introduced with the air condenses in the sprinkler piping and collects at low points where it may freeze. Install air driers on the air intake. An alternative is to use dry nitrogen gas (for air).
- Install valved drains at all low points that cannot be eliminated. Open the drain valves (at least monthly) to check that piping is free of water. Pay special attention to low points under stairs or platforms.
- Repair/replace/refasten broken, missing or loose pipe hangers for proper pitch of sprinkler piping and good drainage.
- The valve enclosure can be heated electrically from permanently mounted heaters under thermostat control to 5 degrees Celsius or more. Steam or hot water heating systems from boilers (on 24-hour basis) can also be used. Put a thermometer in the enclosure and check it at least daily. The use of heat tape is now permitted again by the NFPA. A temperature signaling device can be installed and monitored by a central station alarm service.

Antifreeze systems

- These types of systems are generally used in small, unheated building areas, such as loading docks. They use an antifreeze solution generally consisting of water and a water-soluble liquid (glycerin or certain glycols). Test antifreeze solution annually to be sure of a proper solution-to-water mixture.

Hydrants

- Make sure that all fire hydrants drain properly. Water can often be heard draining from the hydrant and/or you will notice suction if you place a hand over the hydrant hose connection as it drains.

Gravity/suction tanks

- Do not allow ice inside the tank and/or on any part of the tank structure.
- Formation of heavy icicles through tank leakage is dangerous and could result in collapse. People may also be in danger of falling icicles.
- Heating devices should keep water temperature in the tank at or above 6 degrees Celsius and check daily to make sure of this.
- Service heating and circulation equipment before winter to permit time for repairs or maintenance.

Fire pumps

- Keep pump rooms heated above 5 degrees Celsius especially in detached buildings. For diesel pumps, follow manufacturer's advice on room temperature.
- Protect the suction source from freezing. If suction is taken from open water, make sure that the piping and intake are located completely below frost level underground and deep enough to prevent obstruction by ice.
- Keep intake screens clear of ice obstructions.

For more information, please contact your local CNA Risk Control Consultant or visit cnacanada.ca.
