



LOSS CONTROL BULLETIN



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PREVENTING FIRE SPRINKLER FREEZE-UPS #106

Cold weather brings the danger of impaired fire protection because of water freezing in sprinkler piping and other system components. Frozen fire protection systems can result in not only fire losses due to crippled detection or extinguishing systems, but also extensive water damage to the building and contents resulting from burst piping. The breaking of piping, valves and inevitable water damage as the result of frozen piping usually occurs when temperatures once again rise above freezing and the ice begins to thaw. Automatic sprinkler system freeze-ups occur when insufficient heat is provided to a building either by a shutdown of the heating system, cold air coming through broken windows, cracks in a wall, insufficient insulation material in ceilings/walls, inadequate antifreeze in a loop section of the system and other physical deficiencies. Though losses occur as the result of extreme cold conditions, losses occur more frequently in climates that are not normally associated with cold weather when unexpected cold fronts impact the area. It is important that the Club physically inspect all buildings and any area protected by automatic sprinkler protection before the cold weather season arrives. This is to insure that there are no areas with insufficient heat and that physical features and precautions are in place to insure that susceptible elements of the system are not exposed to cold weather.



GENERAL PRECAUTIONS

The following preventive measures should be considered prior to and during cold weather season:

- Have employees keep alert for and report potential or existing cold weather problems.
- Check fire protection systems more frequently than normal during cold weather.
- Do not attempt do-it-yourself repairs on fire safety equipment. Rather obtain the services of trained service personnel.
- Do not use torches or other open flame devices to thaw pipes or other equipment.
- The use of temporary heating equipment, such as salamanders and other un-vented, portable fuel-burning heaters, is not recommended as these heaters introduce fire and health hazards. Portable electric heaters also present unnecessary fire and health

hazards. It is suggested that existing heating systems be extended or upgraded where possible.

- Do not store excessive quantities of fuel or flammable liquids in areas not designed for that purpose.
- During the annual servicing of the sprinkler system by your contractor, have them demonstrate the operation of all valves. Have appropriate club personnel rehearse closing the valves so they can shut down the system in the event of a burst pipe.
- Water supplies and fire pumps should be kept from freezing.
- Plan to remove snow from fire hydrants, post indicator valves and fire department pumper connections.

The following procedures and safeguards will help prevent wet pipe systems from freezing during cold weather.

WET PIPE SYSTEMS

Freezing of wet pipe (water normally in the piping at all times) sprinkler systems occurs most often due to a lack of adequate heat. However, open doors, window, and vents, broken windows, cracks in walls, loose shingles and siding, and similar building maintenance defects are also responsible for a number of frozen systems each year.

- Keep doors, windows and vents closed when not in use or when resulting drafts will allow subfreezing air to contact sprinkler piping. Repair broken windows, doors and other items in need of fixing. Remember the possibility that high winds may accompany periods of low temperatures.
- Where sprinkler piping may be exposed to outside temperatures, such as when it is run between two buildings, the pipe should be heated or adequately insulated.
- Provide heating of adequate capacity to maintain the temperature at no less than 40°F near sprinkler piping during the severest protracted cold spell that might reasonably be expected. Particular attention should be given to piping in attics, entries, penthouses, stairways, under floor areas, above ceilings, shipping, and similar out-of-the-way areas where low temperatures might occur. Heat should be provided by extension of the existing heating system. Where drop ceilings are used, removing a few strategically placed ceiling tiles will allow extra heat into the opened area during cold weather.
- If it is known that the sprinkler system is to be exposed to freezing temperatures, such as when a building or building section's heating system is planned to be shut off, or if heating is interrupted for more than a few hours, precautionary measures must be taken. The system's water may have to be drained and a fire watch established or temporary heating provided.
- For loading docks or other sections of the system that may have an antifreeze loop system, the specific gravity of the antifreeze solution must be checked prior to the cold weather season to ensure that it has the proper proportions of antifreeze and water. Make sure the valve is open.

DRY PIPE SYSTEMS

Dry pipe sprinkler systems, because they do not normally contain water in their piping, are less likely to freeze than wet pipe systems. Nonetheless, certain precautions should be taken to

ensure that freezing does not become a problem in such sprinkler systems when cold weather arrives:

- Drain any water or condensate from auxiliary drains and all other low points. Don't forget the drains under the stairs or platforms. The use of a checklist is suggested.
- Be sure the dry pipe valve and riser on the water supply side of the valve are adequately protected against freezing. Heat the valve enclosure using electrical heater strips under thermostatic controls so that a minimum of 50°F can be maintained.
- Ascertain that sufficient air is in the system to allow for a drop in pressure that occurs under low temperatures; the pressure should be checked daily during cold weather (preferably at night when temperatures are usually lowest) or provide supervision of the pressure and low-pressure alarms. Inadequate pressure can result in the dry pipe valve tripping and subsequent freezing of the water that enters the system piping.
- Air is usually supplied to a dry pipe system by a compressor. The air intakes into the compressor should be located in a cold, dry atmosphere. Avoid warm, damp areas, since moisture introduced with the air condenses in the piping and collects at low points where it may freeze. Air dryers should be installed on the air intake.
- Repair, replace or refasten broken, missing or loose sprinkler pipe hangers to ensure proper pitch of sprinkler piping and to provide good drainage.
- A temperature-signaling device monitored by a central station alarm service can be installed in the valve room or enclosure.

IMPORTANT NOTICE – The information and suggestions presented by Bollinger, Inc. in this Loss Control Bulletin are for your consideration in your loss prevention efforts. They are not intended to be complete or definitive in identifying all hazards associated with your club, preventing workplace accidents, or complying with any safety related, or other laws or regulations. You are encouraged to alter them to fit the specific hazards of your club and to have your legal counsel review all of your plans and club policies.