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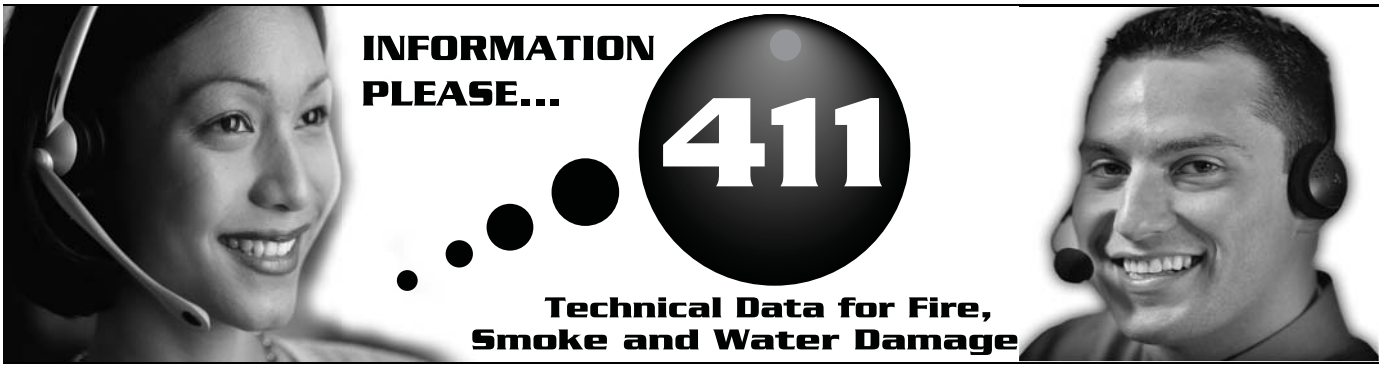


# Freezing Weather and Water Damage

Property damage caused by freezing weather occurs more frequently and creates greater damage than is commonly thought. When water freezes, its volume increases by approximately eleven percent (11%) and this expansion exerts tremendous force. This force is sufficient to break concrete or even steel! When even a small amount of water enters a structure and freezes, the resulting expansion further damages and weakens the structure allowing more water to enter. The damage cycle continues until the source problem (the initial entry point) is repaired.

A number of variables acting separately or together contribute to freeze damage. A drop in temperature, the type of building construction, the amount and quality of insulation, the direction and force of wind, and other weather-related conditions are all contributing factors.

An occupied building is not completely free from freeze-related damages even when it is constructed to withstand freezing weather and is properly maintained and heated. However, a significant amount of freeze damage occurs when a building is not occupied, especially if the owners are gone for an extended period, and the heating system is not on during the freezing weather. In northern climates, many people go south for the winter. They winterize their homes before they leave by draining the plumbing system and adding antifreeze to plumbing fixtures. Frequently this is not completely effective, and the owners find freeze damage when they return.

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Draining the plumbing system needs to be thorough and complete. If the water lines sag or bow, it can result in a low spot that is nearly impossible to completely drain. To be most effective, draining the water lines should be accompanied by the use of compressed air to blow out the lines. If this is not done, water will rest and freeze in the low points of the lines and may cause the pipes to break. The damage then is discovered only after the water is turned back on and escapes from that break. Virtually all plumbing lines are placed inside of walls and are not visible. As a result, a freeze-caused leak is only discovered when water damage to floors, carpet, walls, or ceilings becomes visible. Occasionally the sound of spraying water can be heard by an occupant, but by then it may already be too late. The leak has already caused some degree of damage.

People living in the south usually consider themselves immune from this type of damage. Because of this sense of security, construction in the southern parts of the country often does not adequately

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take into consideration that fact that the temperature does occasionally drop below freezing. When that happens and property is poorly insulated, then damage will occur.

Winter wind, snow or ice storms frequently damage electric power lines and equipment resulting in interruptions of electric power. Most heating systems depend on electricity, and when the power goes off, so does the heat. In severe cold weather, this can result in extensive freeze damage before power is restored.

Buildings that are poorly designed and do not withstand weather well can contribute to their own damage. Many old buildings were not insulated at all. To avoid freezing, plumbing lines were commonly run along the inside of interior walls and ceilings rather than enclosed within the walls. In some cases, many lines simply ran inside of un-insulated walls. During renovation of some old homes, blown or foam insulation has been added into wall cavities between interior and exterior wall surfaces and between each stud. This process many times served to insulate heat away from pipes that were located inside of walls and adjacent to the exterior wall surfaces or in attics, actually making them more susceptible to freezing.

The type and age of the plumbing system is also a factor. Rust or corrosion weakens pipes, making leaks easier to occur. When freeze expansion occurs, such pipes will often split open. As thawing begins or when the water is turned back on, this situation will result in water damage.

There is also a form of direct damage that can occur from extreme cold even though no moisture is present. Most building materials and personal property are unaffected by cold alone, provided they are dry. Extremely cold temperatures can damage some sensitive computer and other electronic components. In northern climates, temperatures commonly fall below zero and occasionally dip to minus 40 to 50 degrees. The contraction associated with those extremely low temperatures can congeal Liquefied Petroleum Gas (LPG) and fuel oil, causing heating system failure.

Regardless of the circumstances—if water damage occurs from freezing or other sources, call your local Purofirst or Puroclean office. These professionals will mitigate the loss to prevent further damage and will then provide restoration services to return the property to a pre-loss condition as quickly as possible. All Purofirst and Puroclean offices have professional, well-trained technicians who provide the latest state-of-the-science services to all property damaged from water, fire/smoke, mold, and other disasters.

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