

FIRE CODE SAFETY ALERT

Sprinkler Systems with Antifreeze Solutions (NFPA 13, 13D, 13R and 25)

Over the past 18 months NFPA has received reports of a number of incidents where sprinkler systems, which have been protected from freezing with antifreeze solutions (using concentrations of 50% or more of glycerine or propylene glycol), have been thought to contribute to the initial fuel load of some fires. This has resulted in some amendments of the most recent versions of NFPA Sprinkler (13, 13D and 13R-2010) and Sprinkler Maintenance (25-2011) Standards. Information on this topic from NFPA can be found at:

www.nfpa.org/antifreeze

In the most recent versions of these standards, NFPA has reduced the acceptable concentrations of these anti-freeze solutions to an amount which would only provide freeze protection to approximately -20°C. This is higher than the design temperatures of existing and planned systems in Alberta.

BEFORE owners in Alberta start modifying the anti-freeze solutions in existing and planned sprinkler systems, the following should be considered.

- **FIRSTLY**, the changes and amendments to the NFPA Standards are NOT currently in force in Alberta. The 2002 versions of all the above mentioned standards are what the Alberta Fire and Building Codes 2006 currently reference.
- **SECONDLY**, in the Alberta climate, the reduced concentration and protection to the -20°C point is neither acceptable nor appropriate. To alter the concentrations of the solution in existing systems would very likely cause these systems to fail in a typical Alberta winter.
- **THIRDLY**, it is not appropriate to suggest that these systems now must be replaced with dry-pipe systems. By the same token, given existing knowledge, a designer or contractor may want to consider alternates to a wet-pipe sprinkler system where previously accepted anti-freeze concentrations are used in areas subject to freezing.

Staff from Alberta Municipal Affairs – Codes and Standards Unit and the respective Technical Sub-Councils of the Safety Codes Council are working, along with NFPA and Industry, to develop further information, interpretation and procedures for owners, designers and contractors as well as investigate alternative methods of protection.

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For more information, please call 1-866-421-6929 or visit www.municipalaffairs.alberta.ca.

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Some alternatives being evaluated include:

- Other means of modifying the water used in sprinkler systems to reduce the freezing point to an appropriate level,
- Insulation and/or bulk-heading of sprinkler pipes subject to freezing conditions,
- Providing electrical heat tracing along sprinkler pipes subject to freezing conditions.

Alberta Municipal Affairs welcomes input from owners and industry on other alternatives which could be considered. These suggestions can be forwarded to the Chief Fire Administrator at kevan.jess@gov.ab.ca.

At present Safety Codes Officers, contractors and owners are advised to continue to maintain the freeze protections levels that systems were designed for and that have worked in the past. Antifreeze concentrations in the systems must NOT be reduced unless alternative freeze protection measures are in place.