

# FIRE CODE SAFETY ALERT

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

In 2010 and 2011 the NFPA received reports of incidents where sprinkler systems, which had been protected from freezing with antifreeze solutions (using concentrations of 50% or more of glycerine or propylene glycol), may have contributed to the initial fuel load of some fires. This has resulted in Tentative Interim Amendments to the most recent versions of NFPA Sprinkler (13, 13D and 13R-2013) and Sprinkler Maintenance (25-2011) Standards.

Information on this topic and results of work recently completed by NFPA's respective Technical Committees and Standards Council effective August 2012 can be found at: [www.nfpa.org/antifreeze](http://www.nfpa.org/antifreeze).

In the most recent and upcoming 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 in force in Alberta. The 2002 versions of the above mentioned standards are referenced by the Alberta Fire and Building Codes 2006. This topic will be studied and Alberta specific additions/alterations to the new editions of these standards may be made where they are referenced in the upcoming versions of the Alberta Fire and Building Codes.
- **SECONDLY**, in the Alberta climate, the reduced concentration and protection to the -20°C point is not acceptable. 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 must be replaced with dry-pipe systems. Similarly, given existing knowledge, a designer or contractor should consider alternatives to a wet-pipe sprinkler system when considering protection for areas subject to freezing.

Alberta Municipal Affairs, Safety Services and the Safety Codes Council are working with other provincial jurisdictions, the National Research Council, NFPA, Canadian Automatic Sprinkler Association and other stakeholders, to develop information and alternative procedures for owners, designers and contractors.

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October 19, 2011 (Revised October 3, 2012)

For more information, please call 1-866-421-6929 or visit [www.municipalaffairs.alberta.ca](http://www.municipalaffairs.alberta.ca).

ISBN 978-0-7785-7134-6



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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,
- Modification of discharge pressures in anti-freeze protected areas,
- Climate appropriate insulation and/or bulk-heading of sprinkler pipes subject to freezing conditions,
- Providing electrical heat tracing along sprinkler pipes subject to freezing conditions.

Enquiries indicate that a significant amount of ongoing work is taking place in academic, research and development, and industry circles to quantify the identified problem and the factors that may contribute to it as well as develop appropriate solutions. Alberta Municipal Affairs continues to monitor and provide input to these efforts.

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](mailto: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.