Foam System Testing - The New Age

Prepared for: Maintenance Managers / Emergency Services Advisors

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IS FOAM SOLUTION REALLY A PROBLEM?

Overview

Firefighting Foam Systems must be tested annually. The process is fairly straightforward, however it's the aftermath that is causing quite a stir in the industry. If you're in charge of your foam system testing, you've probably been asked this question a few times in the last number of years;

"What do we do with the foam solution from the annual testing?"

In days gone by the solution would get dumped on the ground, or maybe end up in a tanker or vac truck and get disposed of in an injection well. New governmental regulations and the general public awareness of PFOA & PFOS (the persistent chemicals found in traditional AFFF firefighting foams) now has everyone scrambling. The SDS on firefighting foam indicates that the proper disposal method is incineration and this can get very costly depending on location.

How do we deal with foam disposal in this new age?

First, you need to understand that the Fire System that you are managing is unlike any of the other equipment you are probably in charge of. This equipment comes with a strict set of maintenance instructions that you MUST follow (NFPA Codes), and these instructions are made into LAWS by your Provincial Government (Provincial Fire Codes), and these laws MUST be followed. Many people aren't aware, but you can be held PERSONALLY LIABLE for deviation from these required standards.

We have seen a lot of this in the news recently:

Global NEWS World Canada Local Politics Money Health Entertainment Lifestyle

New Fines for Fire Code Violations

The Alberta legislature has passed a bill that imposes fines up up to $500,000 for fire code violations. Under the new law, fines for a first offence increase to $100,000.

CTV NEWS

City lays 65 Alberta Fire Code charges against Okotoks company and 10 employees…

OSHA Cites, Fines Texas Chemical Plant Owner & Managers $514,600.00 after explosions & fire.

ARE YOU SURE IT'S THE LAW?

The National Fire Code of Canada

The National Fire Code is a baseline standard for fire protection across many different industries throughout the provinces in Canada. Typically, the NFC is adopted by each province, who then can choose to modify specific areas within the code to their own specifications. Once adopted by the individual provinces as their "Provincial Fire Code" it then becomes the law within that jurisdiction. In looking through the National or Provincial Fire Codes, you will quickly find that they make reference to the NFPA as the "standard" that must be followed.

The NFPA Codes

The National Fire Protection Association (NFPA) is a United States trade association, albeit with some international members, that creates and maintains private, copyrighted standards and codes for usage and adoption by local governments. The association was formed in 1896 by a group of insurance firms that were looking to standardize the use, installation, and maintenance of sprinkler systems.

How the Provincial Fire Codes & the NFPA Codes work together

The NFPA codes as we see them today are not law, but rather a set of procedures, guidelines and recommended best practices for any and all things relating to fire protection. Local governments across North America, including the Provincial Governments of Canada, often make specific reference in their fire and safety codes to the NFPA, and it is therefore the provincial governmental fire codes that actually "make the NFPA codes law" - so to speak. So, if the Alberta Fire Code says, "you shall maintain your fire extinguishers as per NFPA 10", then as a business owner or manager you MUST read, understand, and perform the requirements contained within NFPA 10, because it's the law. If you choose not to do it - or maybe only do a portion of it, then you are subject to the consequences outlined within the Alberta Fire Code. The penalties and fines can be substantial.

Is Annual Firefighting Foam Testing the Law?

It's a legitimate question, and one we get asked on a regular basis - and the answer is **YES, it's the law** *(NFC 6.1.1.1 (1), NFPA 25 11.3).* There are many industrial companies that have adopted their own "in-house" procedures to this question - such as proportion testing every other year, or every 3rd year to keep their costs down. To be clear, this is in violation of NFPA 25 & NFPA 16, and because the Provincial Fire Code says that you shall maintain your fire protection systems as per the standards set forth in the relevant NFPA Codes - it would be deemed that laws are being broken in this regard. Should there be a fire incident on site that ended up in a major loss and/or injuries as a result of the fire, the investigation will most certainly begin with a close look at the testing records and whether or not the legal requirements for the testing and maintenance of these life safety systems were being met. Many employees can find themselves in personal litigation along with the company should that scenario occur.

THE TRADITIONAL METHOD OF TESTING

Balanced Pressure & Bladder Tank Foam Proportion Testing

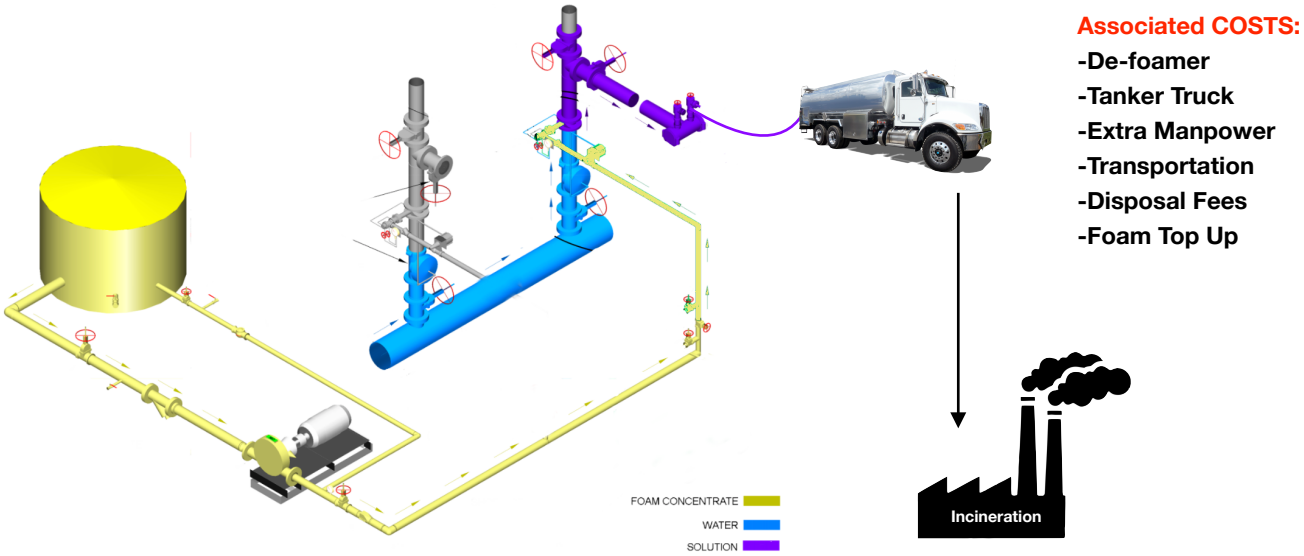
We have been travelling across North America for a lot of years performing routine testing and maintenance on many different types of foam systems. A typical day of foam testing involves 2 different steps:

1. **Foam Concentrate Analysis**

   We go to your foam storage facility - typically a bladder tank or a polyethylene storage tank - and remove a 250ml sample of the foam concentrate. If you have more than one storage container (extra totes, mobile foam apparatus, fire truck, multiple systems) than a sample from each location should be obtained. The samples get sent to a specialized laboratory where the technicians ensure that the foam meets the same benchmarks of the original solution. They test for drain time, burn back resistance, refractive index, pH, expansion ratio, surface tension and more. Upon completion of the analysis you receive a report of the results and a "Pass or Fail" for each particular sample.

2. **Foam System Proportion Testing**

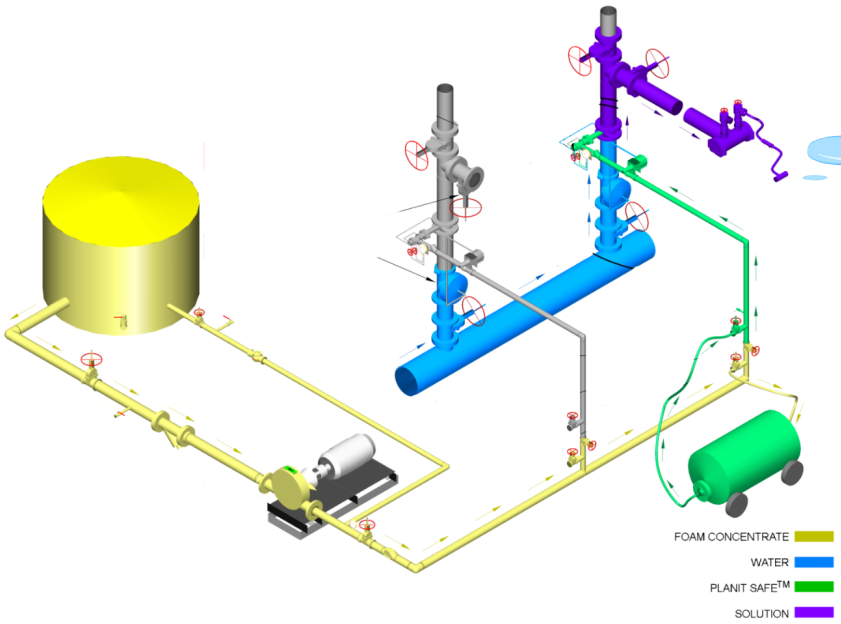
   A foam system must be tested annually to ensure the correct percentage of foam concentrate is being injected into the water stream. Details for this testing can be found in NFPA 11-11.6.4. Foam injection accuracy is very important to ensure the correct solution concentration as well as the application duration. To complete this in the traditional method, we set the desired flow rate of the system using specialized flow meters, and then tie in a tanker truck and engage the foam system. While the system is flowing and injecting foam, we take downstream samples and test them onsite to ensure they meet the NFPA 11 criteria. The foam solution is then hauled away and disposed of via high-heat incineration. (See diagram below)



IS THERE AN ALTERNATIVE?

Surrogate Liquid Proportion Testing (Planit Safe)

NFPA 25 does outline an acceptable alternative instead of actually using your existing foam stockpile in the annual testing of your foam systems. It's called "Surrogate Liquid Testing". We bring an environmentally friendly concentrate that matches the physical properties of your existing foam and we tie it into your system. We then run the system and instead of the foam in your tank or bladder being utilized, the Surrogate Liquid is drawn into the system instead. We then take readings and calculate the percentage of injection as per the testing requirements of NFPA 25. See the below diagram.



Benefits of Planit Safe:

-Environmentally Friendly
-**NO** De-foamer
-**NO** Tanker
-**NO** Extra Manpower
-**NO** Transportation
-**NO** Disposal Fees
-**NO** Foam Top Up

You can see that the foam pump provides the required system pressure for the injection of foam concentrate into the waterway - but we redirect this pressure into our customized bladder tank containing the environmentally friendly Plant Safe concentrate. Your foam system pressure squeezes the surrogate fluid contained within the bladder out of our tank, into your piping and through the ratio controller into the water stream. We then take downstream samples of the solution and test it for the correct injection percentage using the conductivity method. This solution is 100% environmentally friendly and can be discharged on the ground. Upon the completion of the test, we remove your foam from our bladder tank and place it back into your foam tank for reuse.

*Note - some minor piping modifications and valve additions may be required to utilize this system

Conclusion

Total Fire Solutions is the exclusive distributor and service provider for Planit Safe surrogate liquid testing in Canada, and we've made a significant investment in the equipment and technology required to bring this environmentally friendly solution to our customers.

We founded the company with a promise to do the job right - and we believe that this system does that.

Meet the fire code standards & protect the environment - it's a Solution we can all get behind!

For further information, please feel free to give us a call anytime.

Sincerely,

Ben Baker
Fire Systems Specialist
Total Fire Solutions