WET CHEMICAL EXTINGUISHING SYSTEMS

INTRODUCTION

National Fire Protection Association (NFPA) documents describe a level of fire protection agreed on by persons representing a variety of interests. The guidance in these documents does not reflect unique conditions or special considerations, such as system performance under adverse conditions. Nor does NFPA guidance reflect the increased system reliability that AXA XL Risk Consulting recommends for high valued properties.

This PRC Guideline takes a position on the provisions of NFPA 17A that AXA XL Risk Consulting believes require clarification or changes. To understand the position, this PRC Guideline must be read with a copy of NFPA 17A. The provisions of the NFPA document are not repeated.

POSITION

General

NFPA 17A is limited to wet chemical extinguishing systems. They are primarily used as pre-engineered systems. Dry chemical extinguishing systems are covered in NFPA 17 and PRC.13.1.1.1.

Wet chemical combines with cooking oils, fats, and flammable liquids to form a vapor suppressing foam that floats on the surface. Wet chemical is a liquid slurry of water and potassium carbonate-based chemical, potassium acetate-based chemical, or a combination of both agents expelled by a pressurized gas. Many of the physical problems of dry chemical systems, such as caking or packing, fitting orientation, and agent migration, are not problems with the wet chemical agents.

Some hybrid wet chemical systems use proprietary liquids and continue water discharge after the agent is expelled. The predominant means of discharging wet chemical systems is by an expellant gas. Most wet chemical systems are of the stored gas type, although some use pressure cartridges.

After a system is discharged, prompt clean up is essential to prevent any possible corrosion to electrical components and equipment. Clean water can be used for this.

System Actuation

Provide automatic systems. An emergency means of manual system operation that is completely independent of the electric control unit is also required. See PRC.13.0.3 regarding requirements for mechanical emergency manual releases.

Detection Devices

Provide a listed automatic detection system. See PRC.13.0.1 regarding requirements for detection and control. Fusible link operation is not acceptable unless direct flame impingement is expected.

Supervision

Provide electrical or pneumatic supervision, as appropriate, for the detection, actuation and alarm systems.

Connect the system to a listed alarm system that provides trouble, supervisory, and actuation alarms.

Monitor the pressure in stored gas systems. In cartridge type systems using CO_2, the cylinders must be weighed periodically because CO_2 exists as both a liquid and a gas. Gas pressure can leak out, leaving the system inoperable. Any amount of CO_2 will still show an adequate pressure.

Connected Reserve

Provide a connected reserve for all special extinguishing systems.

Even with a connected reserve, provide approved automatic sprinkler protection in accordance with NFPA 13 in case the system fails to control or extinguish the fire.

Protection Of Common Exhaust Ducts

Where common exhaust ducts and plenums are encountered, use pre-engineered systems specifically listed to address such hazards and sized to handle the added capacity of the system. Multiple systems designed to operate simultaneously should do so by operation of a single detection device.

Plans

Review submittals for pre-engineered systems with multiple nozzles should contain an isometric drawing of the actual installation. Details should include pipe sizes and lengths. The design must be within the parameters of the manufacturer's design manual for the proposed system. See PRC.13.0.2 for requirements regarding plan submittals.

Submittals for engineered systems must provide complete details such as:

- Application rate
- Quantities of wet chemical
- Piping layout
- Nozzle details
- Wiring diagram

Acceptance procedures require that dry chemical systems be reviewed in the local AXA XL Risk Consulting Plan Review office in accordance with PRC.1.3.0.2.

Approval Of Installations

Functional testing of all equipment is required. Perform actual discharge tests on all engineered systems. Test pre-engineered system configurations that were not tested as part of the listing process or are not shown in the manufacturer's equipment manuals. The contractor must certify that the completed installation meets the listing and approval requirements. See PRC.13.0.5 and PRC.13.0.5.A regarding acceptance testing.

Maintenance

Provide a service contract with the manufactures' representative to ensure the system is properly maintained. See PRC.13.0.4, PRC.13.0.5 and PRC.13.0.5.A for requirements regarding maintenance and testing.