

## Topical Outline

### Managing Corrosion Risk in Water Based Fire Sprinkler Systems

- A. Corrosion in Water Based Fire Sprinkler Systems**
  - a. Root Causes for corrosion in fire sprinkler systems
  - b. Predominant industry myths regarding corrosion in fire sprinkler systems
  - c. What does the metal loss look like in fire sprinkler systems
- B. Root Cause for Corrosion in Water Based Fire Sprinkler Systems**
  - a. Aggressive nature of oxygen corrosion
  - b. Localized nature of corrosion within the fire sprinkler piping system
  - c. Weld seam corrosion, galvanized steel corrosion, under-deposit corrosion
  - d. Factors that accelerate the corrosion in fire sprinkler systems
- C. The Special Case of Galvanized Pipe Corrosion**
  - a. Corrosion of zinc in galvanized steel – why it's worse in fire sprinklers
  - b. Why galvanized steel pipe should not be used in fire sprinkler systems
- D. Options for Managing Corrosion in Fire Sprinkler Systems**
  - a. The five options – which ones are appropriate for the fire sprinkler industry
  - b. Fire sprinkler systems as stagnant vessels
- E. Corrosion Assessments – How Bad is the Corrosion?**
  - a. Determining the level of risk
  - b. System design analysis, materials of construction, leak history
  - c. Gathering hard data - video scoping, pipe analysis, deposit analysis, water analysis
  - d. Prepare a remediation plan – surgical pipe replacement, nitrogen inerting, monitoring
- F. Nitrogen Gas – The Ideal Solution for Corrosion Control in Fire Sprinkler Systems**
  - a. Using nitrogen gas to remove corrosive gases from fire sprinkler water
  - b. “Fill and Purge” breathing to remove oxygen– why this is so important
  - c. Dry Pipe Nitrogen Inerting (DPNI) and Wet Pipe Nitrogen Inerting (WPNI)
  - d. Nitrogen Generators – how they work, how they are employed
  - e. Nitrogen safety considerations
- G. Fire Code Developments**
  - a. Changes in NFPA 13 Installation Guide regarding corrosion for 2016
- H. Monitoring Fire Sprinkler Corrosion**
  - a. How do we monitor corrosion in fire sprinkler systems today?
  - b. In-Line Corrosion Monitoring in fire sprinkler systems
  - c. Remote monitoring of the corrosion control systems
  - d. Maintaining the nitrogen atmosphere within the system piping – WPNI and DPNI