

MIC-Correcting the Record-Eighteen Years with 100% Success

By Daniel H. Pope

This article was written in response to Mr. Kochelek's article in this issue of Fire Protection Contractor magazine. Please read the statements in his article and then my comments below.

Thanks for his nice words in the first paragraph. Next, he says "all of the empirical evidence from corroding fire sprinkler systems (FSS or FPS-my designation) that we inspect continues to suggest that MIC is a minor contributor and not the primary cause of corrosion in water-based fire sprinkler systems." No data are provided to support this statement. He consistently says that "MIC is involved in less than 5% of corrosion cases", whereas, FM Global says it is 10 to 20% of cases. Did either company properly test for MIC and include someone who understands MIC? Note that FM Global in 2016 stated "It is necessary to evaluate chemical, microbiological, metallurgical and operational data to identify biotic factors as the primary contributors to corrosion damage." There is no evidence that these were done by Kochelek's ECS company. FM Global also states "Avoid using *untreated* water as the source of sprinkler water." The data show that almost 100% of potable waters contain large numbers of MIC-related microbes, because the water purveyors are not required to kill MIC microbes, and thus these waters require additional treatment to kill MIC microbes.

He next states "Pope will not let go of his erroneous hypothesis about MIC in FPS because to do so would be to admit that he was wrong and that admission could adversely affect the sale of MIC kits and treatment chemicals." The fact is that I get NO income from sale of MIC kits, treatment systems or chemicals. But twenty years of treatments with 100% success is quite a record.

Also, Kochelek's asserts in his November FPC issue that NO biocide is approved for use in FPS. The fact is that MICtreat FPS chemical was registered for use in FPS in September of 1999. This chemical is also compatible with all components of FPS. Hundreds of FPS have, since

1998, used MICtreat FPS to quickly stop corrosion and NONE has suffered pitting leaks since treatment, even though in most cases the deposits remained in the piping. This is because MICtreat FPS eliminates ALL oxygen in the water for years, including oxygen in the headspace that attempts to enter the water. Neither BTI or BTI-Products do cleaning of FPS.

FM Global statements are quoted or paraphrased in Kochelek's article in this issue of FPC magazine. I have the following comments. Section 2.1. I have no dispute with this statement as it will result in rust-however this does address other corrosion reactions which can occur over time. Section 2.2.1.9. I agree with this statement and have so stated many times in the past. Section 3.7 "MIC is responsible for 10% to 20% of damage caused by corrosion in fire sprinkler systems." Kochelek says that only 5% are affected by MIC. We have investigated many hundreds of cases of possible MIC and ALWAYS try to determine whether another corrosion mechanism is responsible and if it is not MIC we refer clients to unbiased/qualified corrosion experts.

It is emphasized that I defined MIC as "any form of corrosion which is influenced by the presence and/or activities of microorganisms". *The "task" for microbes is to find places on the metal where they can form MIC communities and start corrosion which later becomes autocatalytic pitting and not under the control of the microbes and are often, therefore, not recognized as MIC.* Section 3.7.4. Paraphrasing. Just because you find MIC-related bacteria in sprinkler water or corrosion products doesn't mean that you have MIC. Correct, but the presence of large numbers of MIC-related microbes is an indication that MIC may be occurring. FM Global says MIC is a major contributor in up to 20% of cases. Do you want to take a chance when MIC and all other forms of corrosion can be controlled simply and inexpensively with proper treatment. Section 3.7.5. "Chemical treatment to mitigate MIC is not recommended because it can actually accelerate pipe corrosion *if it is not properly done.*" This is true if oxidizing biocides such as chlorine are used, but is not true when the *correct* biocide/oxygen scavenger is used properly.

I have long advocated combining chemical treatment to kill microbes and eliminate ALL oxygen in water and using nitrogen as supervisory gas. However, if nitrogen is *properly used* by *first* filling the system with nitrogen and *then* proportionately filling with *properly* chemically treated water to kill ALL microbes and eliminate oxygen ALL forms of corrosion will be eliminated. This can be done without using expensive nitrogen generators, and contrary to Kochelek's assertion, this protocol would cost his company income.