

The results of this study can be summarized as follows:

Water quality within existing wet-pipe fire sprinkler systems exceeds the primary standard for lead and cadmium and secondary standards for iron, manganese, total dissolved solids, sulfate, color, and odor. Soluble lead appeared to be originating from check valves that had lead-weighted clappers, leaded fittings, machined leaded brass valve bodies, and other accessories.

Total coliform (an indication of pathogens, that is, disease causing organisms) was predominantly absent in wet-pipe fire sprinkler systems; however, heterotrophic plate count bacteria were detected in a majority of the fire sprinkler systems sampled. Of the eighty-four wet-pipe fire sprinkler systems evaluated, total coliform was found to be present in four (4.8 percent) of the sprinkler systems

Cross-connection control for Class 1 and Class 2 wet-pipe fire sprinkler systems using approved backflow prevention assemblies on new construction is recommended based on the following findings: (1) water quality within the black-steel Class 1 and Class 2 wet-pipe fire sprinkler system exceeds national primary and secondary drinking water standards; (2) for new construction, the pressure loss related to the installation of a backflow prevention assembly can be engineered into the design of the new sprinkler system; and (3) the cost of the backflow prevention assembly when included in new construction is low because the backflow prevention assembly is a minor cost when compared to the cost of the nonresidential structure within which the sprinkler is to be installed. For new sprinkler systems, approved backflow prevention assemblies must be installed to meet the requirements of the model building/plumbing codes (ICBO, BOCA, and SBCCI) and OSHA (1910.141(b)(2)(II)), and to safeguard the potable drinking water from potential contamination under the requirements of the SDWA. The use of approved backflow prevention assemblies on new wet-pipe fire sprinkler systems should be enforced.