

U.S. Fire Administration / National Fire Academy

*Coffee Break Training***Topic: Sprinklers in Corrosive Environments**

Learning objective: The student shall be able to identify environments where corrosion may affect sprinkler performance.

Some harsh environments and chemicals may cause sprinkler operating elements or parts to corrode, potentially affecting the sprinklers' performance or resulting in leaks.

According to the National Fire Protection Agency (NFPA) 13, *Standard for the Installation of Sprinkler Systems*, listed corrosion-resistant sprinklers must be installed in locations where chemicals, moisture, or other corrosive vapors sufficient to cause corrosion may occur.

Typical locations where corrosive conditions can exist include bleaching operations, dye houses, metal plating processes, animal pens, chemical plants, and salt air environments such as beneath piers and wharves. A not-so-obvious location is this indoor swimming pool where airborne vapors from water treatment chemicals may have a corrosive effect on the Belleville seal that holds back the water as well as the pipe where the sprinkler is connected.

Sprinkler component corrosion resistance may be achieved at the sprinkler manufacturing plant by dipping the sprinkler in beeswax, lead, wax over lead, enamel, or coating it in a corrosion-resistant product such as Teflon®. The corrosion resistant process must be done by the manufacturer, and any damage to the protective coating occurring installation must be repaired using only the coating material that the manufacturer specifies.

On the pipe, a good quality acid resistant paint—applied in accordance with manufacturer's specifications—may prevent corrosion where the sprinkler connects to the tee.

The technician performing sprinkler system service in accordance with NFPA 25, *Inspection, Testing and Maintenance of Water-Based Extinguishing Systems* should be alert to potential corrosive environments, and report problems to the property owner for prompt correction.



This sprinkler above a public swimming pool shows signs of corrosion.