

Audit of Comfort System Water-related Utilities

A Northeastern facility had several issues, including odor in the potable water, high rates of corrosion in the cooling water circuit and concern about risk of exposure of facility personnel to *legionella* bacteria.

Our review of the condenser water circuit (Figure 1) indicated that the use of softened water as make-up was causing high rates of carbon steel corrosion, compromising the system reliability.



Figure 1 – Cooling tower

The use of softened water in the potable system also caused high rates of carbon steel corrosion. Our investigation of the potable water quality showed high popula-

tions of iron-related bacteria due to the high concentrations of iron corrosion products.

Our review of the risk of exposure of facility personnel to *legionella* identified basin cleaning activities that generate aerosol particles of cooling water as the event of highest risk. Figure 2 shows the sediment in the basin.



Figure 2 – Sediment in Cooling Tower Basin

Following our audit, facility staff removed all “dead leg” piping and plan to isolate the fire sprinkler circuit from the potable water circuit to eliminate stagnant water. MarTech recommended eliminating the use of softened water for cooling tower make-up and potable supplies. MarTech also recommended modifying the tower maintenance procedures to reduce the risk of exposure of personnel to aerosols that might contain *legionella* bacteria.