WATER DISINFECTION METHODS AND LEGIONELLA MITIGATION

ISSUE: Preferred system designs for water disinfection methods for the mitigation of Legionella in potable water systems.

DISCUSSION: The Plumbing Design Manual for Community Living Centers and Domiciliary (March 2011) and the Plumbing Design Manual for New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, Outpatient Clinics, Animal Research Facilities and Laboratory Buildings (April 2011) state that copper/silver ionization is the preferred water disinfection method for Legionella mitigation. However, CDC guidelines¹ state, “No recommendation can be made about the treatment of water with chlorine dioxide, heavy-metal ions, ozone, or ultraviolet light ” and that “hospitals have reported successful decontamination [of Legionella in hospital water] using each of these methods.” In addition to raising the water-heater temperature and periodic [hyper-]chlorination, OSHA² lists copper or silver ionization, ozonization, and ultraviolet (UV) radiation as alternate means to control Legionella growth in domestic hot-water systems. Veterans Health Administration (VHA) policies directed at Legionella prevention are VHA Directive 2008-0103 (Prevention of Legionella Disease) and VHA Directive 2009-0094 (Domestic Hot Water Temperature Limits for Legionella Prevention and Scald Control). These policies emphasize that maintenance of appropriate water temperatures is the primary mechanism for inhibiting Legionella growth and list various mitigation methods without indication of preference.

REQUIREMENTS: In addition to maintaining appropriate water temperature, when considering the use of supplemental water disinfection methods for the mitigation of Legionella, designers (in collaboration with other facility stakeholders such as infectious diseases and infection prevention and control) should review the merits of various mitigation methods such as copper/silver ionization, thermal eradication, chlorine dioxide, monochloramine, ozone, ultraviolet light, and hyperchlorination prior to final selection of method. The VA discloses no preference to any of these methods since each has advantages and disadvantages to consider.

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- VHA National Infectious Diseases Service (10P4E) in Patient Care Services (10P4)
- VHA Office of Capital Asset Management Engineering and Support (10NA5)
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REFERENCES:
2. OSHA Technical Manual (OTM) Section III: Chapter 7, Legionaries’ Disease, Effective Date: 1/20/1999
4. VHA Directive 2009-009, Domestic Hot Water Temperature Limits for Legionella Prevention and Scald Control; February 25, 2009