

LEGIONELLA: WHERE THE USA IS AT



FOR A 30-DAY PERIOD, THE AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE) TOOK COMMENTS ON CHANGES MADE IN THE FIFTH DRAFT OF ITS PENDING STANDARD 188P, LEGIONELLOSIS: RISK MANAGEMENT FOR BUILDING WATER SYSTEMS, WHICH COULD AFFECT CHANGE HERE. MATTHEW FREIJE, A WORLD LEADING LEGIONELLA EXPERT, EXPLAINS.

Should the 188P committee decide the comments received are not substantive enough to warrant a sixth draft, then the standard could be finalised as early as July.

The Legionella risk reduction strategy set forth in 188P is to implement a plan for managing building water systems including cooling towers, evaporative condensers, whirlpool spas, ornamental fountains, misters, atomizers, air washers, humidifiers, and other devices that release water droplets.

A management plan would be required for potable plumbing systems only in buildings that have any of the following: [a] multiple housing units with a centralised hot water system; [b] more than 10 stories; [c] housing for occupants over the age of 65; [d] healthcare for patients staying longer than 24 hours; or [e] an area housing or treating persons at especially high risk of contracting Legionnaires' disease.

The required components of ASHRAE's proposed water management plan are essentially identical to what the World Health Organisation recommended in its 2007 publication Legionella and the Prevention of Legionellosis:

- **A list of the water management plan team members:** Teams typically consist of 10 or fewer individuals who oversee the program and make decisions about it. Many others are needed to implement it.
- **A brief description of the building water systems, with flow diagrams:** Salient information should be included for all of the building water systems, not just the ones prone to Legionella growth and transmission. Simple line diagrams should show where water is received, processed and used. For most facilities, at least two diagrams should be included, one for domestic [potable] water systems and another for utility [non-potable] systems.

Flow diagrams should be simple. Cluttering them with unnecessary details will only hinder their primary purpose.

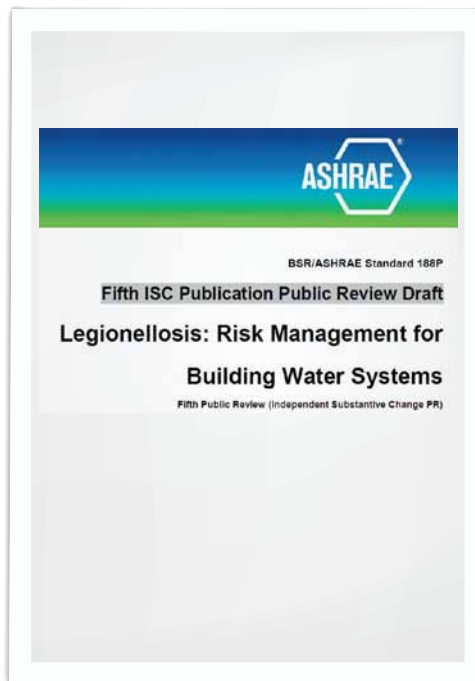
- **Analysis of the building water systems:** Commonly referred to as hazard analysis, this is a brief explanation as to why each water system does or does not present a significant potential for Legionella growth and transmission and, for those that do, whether it is a location at which Legionella control measures can be applied.
- **Control measures:** Only what is actually done to water systems will reduce Legionnaires' disease, so control

measures are the most important part of any Legionella water management plan. The team must come up with a specific list of control measures for each building water system. ASHRAE gives a framework for the team to fill in, stating that procedures must be included, as applicable, for new construction, equipment siting, start-up and shutdown, inspections, maintenance, cleaning, disinfection, monitoring (e.g., temperatures; disinfectant levels) and water treatment. The team must also write out steps for responding to Legionnaires' disease should a case occur despite the prevention efforts.

- **Each control measure must be monitored to determine whether it is performed to the standard – called a control limit – designated in the plan:** If the control limit is

not met, then corrective action must be implemented. The monitoring procedure, monitoring frequency, control limit and corrective action must be listed for each control measure.

- **Documentation and communication procedures:** Draft number five of 188P instructs the team to "establish documentation and communication procedures for all activities of the program."
- **Verification procedures:** The team, or a designated



“verification person,” must review documentation to ensure the plan is being implemented.

- **Validation:** The effectiveness of the plan in controlling Legionella must be validated. Testing water systems for Legionella provides the most direct feedback on Legionella control. Legionella testing is discussed as a validation option in 188P but is not required.

For new construction or renovations, designers and contractors have responsibilities as well. For water systems deemed to require Legionella control measures, designers must provide documentation, diagrams, or instructions as needed for monitoring and control, code compliance, operation and maintenance, control system operation, calibration, installation and start-up, commissioning (including procedures for flushing and disinfection), filling and draining, equipment sizes, piping layout, system materials, pipe sizes, design flow rates, design temperatures, and the impact of heat loss or heat gain.

Designers must also note locations of equipment access (or note inadequate access), filling and draining, flushing, sampling, temperature monitoring, treatment, no flow and low flow areas, possible cross connections between potable

and non-potable systems and outside air intakes.

Plumbing contractors must properly balance the systems. They may also be responsible for disinfecting the system which according to ASHRAE 188P must be performed no more than three weeks before any part of the building is occupied for its intended purpose.

If 188P becomes a standard, it could be adopted as law by government agencies in the United States [e.g., state health departments]. It has already been proposed for adoption into the International Plumbing Code and the International Mechanical Code. Its ultimate impact in Australia is uncertain but we should always look to learn from abroad. ■

Matt Freije has specialised in Legionella prevention since founding HC Info [hcinfo.com] in 1995. He has written two books, developed water management plan templates, taught seminars in five countries, and written and narrated nine e-learning courses including the new course “How to Survey a Building for a Legionella Water Management Plan.” His first book, Legionellae Control in Health Care Facilities: A Guide for Minimizing Risk, has been distributed in more than 30 countries, including Australia.

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