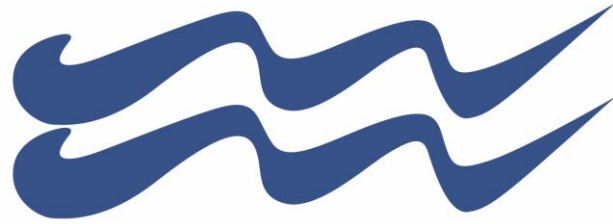


AHSCA



Association of Hydraulic Services Consultants Australia
QUEENSLAND CHAPTER INC.

LEGIONELLA CONFERENCE 2017 AHSCA UPDATE

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President Queensland Chapter

What is the AHSCA

The Association of Hydraulic Services Consultants Australia is committed to the development and enhancement of hydraulic services engineering through our members and their technical and professional capabilities.

In Queensland, the AHSCA has been operating for over 35 years. We recently formed the AHSCA Research Foundation, a collaboration of all our State Chapters. This has provided an opportunity, in conjunction with the University of the Sunshine Coast, to carry out research into roof drainage systems outside the requirements of AS 3500.3.

The members of the AHSCA see themselves as the experts when it comes to the design of hydraulic services. It was certainly in our interest to be a part of the LMAG and provide our knowledge and experience into the design component of the Group's investigations.

Design Considerations

Through many different avenues we have started to build up a list of numerous design issues that need to be considered in the control of legionella bacteria within water services. These issues can be generally condensed to the following:

- Water temperature.
- Water flow
- Water velocity.
- Pipe materials.
- Disinfection levels within the water.

So, how are the above issues get considered in the design of water services.

Water Temperature

Hot Water Systems

Our original focus when considering legionella bacteria control was with hot water systems. However, in reality, we should have been more concerned with cold water services.

Generally speaking, health care facilities incorporate centralised hot water plant. The plant heats the water to around 70°C and then circulates it around the building returning to the plant at a minimum of 60°C. Therefore, if designed properly, the legionella bacteria within the water has been killed. The design consideration here is to select hot water plant that not just meets the demands of the building but also retains the water within the heating plant for a period of time that ensures the bacteria is killed.

Cold Water Systems

Cold water services are now seen to be more of the area of concern. The design of these systems must take into account any opportunities for the water warm up. So the location of pipework and associated plant are now paramount when designing these services. We also need to consider the service when it is mixed with hot water, for example, downstream of thermostatic mixing valves.

These considerations are not just associated with potable water services. These issues, to some degree, are also related to fire services, non-potable and other types of water supplies.

Water Flow

We are now aware of the importance of water flow in pipework. Stagnant water can provide an ideal breeding ground for legionella bacteria. Constant flowing water reduces the opportunity for biofilms to be established within the pipelines. However, the best water service designs cannot overcome areas of a building that may be underused allowing water to sit still within the pipes for long periods of time.

From a design point of view we know the importance of keeping dead legs to an absolute minimum. Do we also need to circulate the cold water services as we do the hot water service. Do we need to design flush points that can be controlled through the BMS. Do we need to design the water service so that sections can be shut down and drained.

Water Velocities

The velocity of the water within the pipework is important to assist with the removal of established biofilms. However, there is a fine line between these velocities and those recommended by the manufacturer of the pipe material. There are also limitations that need to be considered to ensure issues such as water hammer do not become prevalent.

Pipe Materials

We are now more aware of the properties of certain pipe materials and their affect on biofilms.

Preliminary investigations are suggesting that copper may be a more appropriate pipe material in dealing with the prevention of biofilm accumulation. However, more research is required in this regard.

When considering pipe materials, we also have to consider issues such as disinfection (chlorine) levels within the water service as well as the future use of high temperature water flushing.

Disinfection Levels Within The Water Supply

Chlorine within the water supply can quickly reduce to levels below recommended guidelines. We know that authorities only guarantee the minimum required chlorine in the water supply up to the property connection. From that point, the responsibility rests with the property owner.

Chlorine injection and monitoring need to be considered.

Commissioning of Water Systems

When designing water services, we also need to consider the commissioning procedures.

Water services are filled with water and pressure tested. Once complete, the water can remain in the service and quickly stagnate. Biofilms can become established.

We need to incorporate within our specifications procedures for the proper flushing and sterilisation of the water supplies prior to them being handed over to the building owner. These procedures may also require the design of the water services to be modified to facilitate these procedures.

Categorising Buildings and Facilities

Aged care and health care facilities would be considered the most important when dealing with legionella control. Residential developments would generally be at the other end of the spectrum.

While the incorporation of all legionella control measures in every building and facility may be ideal, it would be hard to justify from both a capital and recurrent cost perspective. However, there are particular inclusions that would be appropriate depending on the building use.

We are therefore looking at all types of facilities and giving them a rating with recommended legionella control measures.

AHSCA LWG SUB-COMMITTEE

When invited to be a part of the LMAG, an expression of interest was sent out to all members for inclusion on a Legionella Working Group Sub-Committee.

We were inundated with members volunteering, a obvious recognition of the importance of this issue and the impact it was going to have on the design of water services.

Our Sub-Committee is made up of the following members:

Barry Hage	Warren Keep	Grizzly Blair	Colin Wheat
Greg Beavis	Anthony Freeman	Ken Crase	Justin Sweet
Nathan Morgan	Phil Turner	Tony Samorowski	Stuart Lloyd
Dave Dickson	Karl Paton	Stephen O'Keefe	Chris Tritton

These gents collectively bring to the table around around 600 years of experience !

Thank you !