Reducing the risk of *Legionella*

Carole Armstrong, marketing and communications manager, Delabie UK, considers the challenges of reducing the risk of *Legionella* bacteria development in the care sector

Legionnaire's disease is a respiratory infection affecting elderly people who smoke and those with chronic respiratory problems and weakened immune systems. Naturally occurring *Legionella* bacteria can develop where there is stagnant water and a source of nutrients, such as biofilm, in pipes or corroded storage tanks. The bacteria proliferate when water temperatures reach 20-45˚C, becoming potentially harmful when inhaled in aerosol form, such as steam.

The first challenge facing care and residential homes is to ensure that water temperatures are hot enough to discourage bacterial proliferation. Guidelines from the Health and Safety Executive (HSE), HSG274 part 2 recommend that hot water should be stored at or above 60˚C and delivered to points of use at 50˚C (55˚C in healthcare premises).[1] However, this increases the risk of scalding considerably, especially in people with reduced sensitivity or slower reflexes.

Managing the risk

The most serious scalding risk is where the user is fully immersed in either a shower or a bath. Particularly at risk are the very young or elderly, those with sensory loss, those who are infirm or significantly mentally or physically disabled people.

Securitherm TMV3 approved shower

Where the scalding risk is significant, the guidelines state that a type 3 thermostatic mixing valve (TMV), ie with TMV3 approval, with a pre-set safe mixed water temperature and fail-safe should be installed.[1] To fail-safe, the hot water must shut off if the cold water fails and vice versa. At the point of use, the maximum recommended temperature for wash basins and showers is 41˚C and for baths it is 44˚C (for assisted bathing, 46˚C).[2,3,4] Installing mixer taps with a temperature limiter will ensure that hot water is restricted to a safe temperature; however, there must be no possibility of users over-riding the limiter.

The body and mixing chambers of showers and mixers/taps have metallic surfaces that are effective heat conductors. If the mixer body is cool to the touch, the risk of burns from touching or accidentally brushing against the mixer is removed. Various cool touch technologies are available to ensure that external surfaces remain at an ambient temperature.

Products in which the mixing chamber is close to the hot water inlet avoid hot water travelling the length of the mixer body. Similarly, mechanisms and hot water inlets covered with an insulating material reduce heat transfer. Also, circulating the hot water through narrow pipes inside the mechanism with an air gap between the pipes and the brass parts of the mixer prevents heat conduction.

Reducing stagnation

The second challenge is to prevent water stagnating at temperatures that are conducive to bacterial proliferation. Where taps, showers or baths are not used daily, there is a risk that *Legionella* bacteria will develop. Aside from temporary 'dead legs' that are due to infrequent or irregular room occupancy, changes to installations over time may result in dead legs.

Regularly reviewing and updating system schematics will identify and eliminate dead legs and dead ends in the system. Instigating a daily duty flush will also prevent water stagnation. One electronic tap or shower featuring an automatic duty flush and installed at the

Securitherm Securitouch shower with cool touch body

Tempomatic 4 with integrated battery

end of a pipe run avoids the need for a manual flush at every outlet.

Installing electronic water controls in resident accommodation provides a simple solution. Pre-programmed with an automatic duty flush, the tap or shower valve will activate the point of use for 60 seconds every 24 hours after the last use. According to the HSE guidelines, hot water should reach the point of use at 50˚C within 60 seconds, so a 60 second purge will evacuate any water that has been standing at temperatures where bacteria can proliferate.[1]

Moreover, it is possible to install one electronic control at the end of a pipe run without switching to electronic controls throughout the installation. A battery operated tap or shower is easy to install at remote points of use and will flush the pipe work automatically. Since the electronic control, solenoid valve and battery are integrated into the mixer body or shower panel, PEX flexible hoses or copper tails are simply connected to the water supply. Maintenance is also simple, since the solenoid valve and battery can be easily replaced without switching off the water supply.

Conclusion

Reducing the threat of *Legionella* bacteria development in the care sector raises specific challenges in terms of user safety as well for system design. However, by specifying and installing products that have been specifically developed to face these challenges, seemingly conflicting constraints can be readily overcome. TCHE

References

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Tempomatic 4 electronic tap with automatic duty flush

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