

Reduction  
in Scale  
Can Reduce  
the Risk of  
Legionella  
Growth

Health agencies including the Centers for Disease Control and Prevention (CDC) and Occupational Safety & Health Administration (OSHA) continually warn of conditions that can increase the proliferation of legionella. They cite the formation of scale – deposits of mineral solids on the interior surfaces of water lines and water storage heaters attached to those systems – as a key factor that can lead to a breeding ground for legionella.<sup>†\*</sup>

Scale deposits containing legionella can re-contaminate a premise plumbing system even after disinfection. Scale traps biofilms, creating a perfect environment in which legionella can grow and thrive. To avoid this type of contamination, facility managers strive to control scale formation in their premise plumbing. Many use disinfectants; however, those chemicals cannot effectively penetrate the scale and biofilm combination, so they are not very effective.

In addition to the negative effects scale has on legionella, it can also be a source of wasted energy and water usage in both hot and cold water systems. When scale grows on equipment such as a heat exchanger, it can reduce efficiency and corrode the equipment and piping. Because descaling a premise water system can be costly, hospitals often look for ways to prevent scale as a way of promoting efficiency and reducing the risk of legionella growth.

### **How scale occurs**

Many factors can influence the development of scale in a premise plumbing system. The hardness of the water, dripping taps, stagnant water and increases in temperature can all promote its growth.

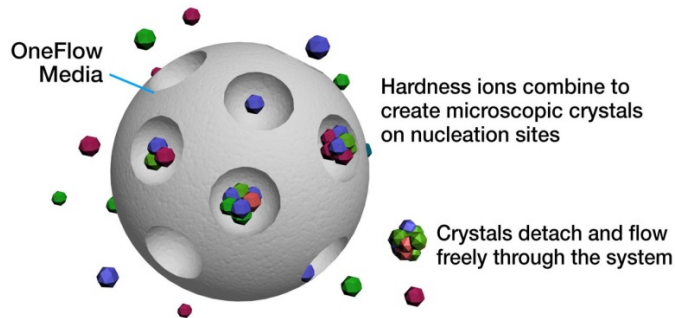
Traditionally, water softeners that regenerate with a salt or brine solution have been used to reduce scale in premise plumbing systems. Although they can reduce scale formation, they increase the amount of sodium in the water, flush considerable amounts of salt and water to drain during regeneration, and can also be cumbersome to maintain. An organization relying on water softeners would have to regularly purchase, transport and store large amounts of salt. This approach can be costly and the storage can take up large and valuable space within a hospital's mechanical room. A hospital would also need to bypass plumbing to provide have a separate untreated water distribution system for plants and irrigation because salt can have negative effects on vegetation.

Because of these drawbacks, many organizations seek alternatives ways to reduce scale. One such technology is template assisted crystallization (TAC). Watts OneFlow® scale prevention solutions employ TAC technology to prevents lime scale formation– the destructive scale that sticks to pipes, valves and other system components.

## Reduction in Scale Can Reduce the Risk of Legionella Growth

Each bead is covered with imperfections called templates nucleation sites that attract those dissolved hardness minerals and transform them into harmless, inactive microscopic crystal particles often referred to as nano-crystals. Once these nano-crystals form on the OneFlow's nucleation sites they break off and stay suspended in the water, flowing freely through the system, unable to stick to plumbing surfaces. Those suspended microscopic crystal particles are significantly less able to react negatively and form scale compared to untreated hard water. From an aesthetic point of view, unlike water spots left over from untreated water, treated water may leave behind water spots that can be easily wiped away without the use of caustic chemicals.

OneFlow media granules provide nucleation sites that cause dissolved calcium, magnesium and bicarbonate to combine into microscopic crystals. Once formed, the crystals detach from the media and flow freely through the system.



*Independent scientific testing has confirmed that TAC technology provides scale reduction of more than 95%. Testing was conducted under protocol based on DVGW W512 test to access control of scale formation.*

In addition to the benefit of not requiring the addition of salt to the premise plumbing system, TAC technology in OneFlow does not decrease the effectiveness of disinfectants that many hospitals add to their water supply. Typically, chlorine is added to the incoming water by the local utility. Hospitals often add chlorine, chloramines or other disinfectants to mitigate legionella and biofilm growth. In contrast to other scale solutions, OneFlow media, by itself, does not remove those additives from water, ensuring that the disinfectants are maintained at sufficient levels for effective treatment as they travel through the plumbing system.

† Centers for Disease Control and Prevention (April 2018). Legionnaires' Disease and Other Infections Associated with Building Water Systems. Retrieved from <https://www.cdc.gov/legionella/wmp/healthcare-facilities/healthcare-wmp-faq.html>

\* United States Department of Labor. Legionellosis (Legionnaires' Disease and Pontiac Fever). Retrieved from [https://www.osha.gov/SLTC/legionnairesdisease/control\\_prevention.html](https://www.osha.gov/SLTC/legionnairesdisease/control_prevention.html)

## About Watts

Watts designs, manufactures, and sells various water safety and flow control products for the water quality, water conservation, water safety, and water flow control markets in the Americas, Europe, the Middle East, Africa, and Asia Pacific. The company offers residential and commercial flow control products, including backflow preventers, water pressure regulators, temperature and pressure relief valves, and thermostatic mixing valves for plumbing and hot water applications. It also provides heating, ventilation, and air conditioning, as well as gas products comprising hydronic and electric heating systems for under-floor radiant applications; hydronic pump groups for boiler manufacturers and alternative energy control packages; and flexible stainless steel connectors for natural and liquid propane gas in food service and residential applications.

The company also offers drains and water re-use products, including drainage products and engineered rain water harvesting solutions for commercial, industrial, marine and residential applications; and water quality products, which include point-of-use and point-of-entry water filtration, conditioning, and scale prevention systems for commercial and residential applications. The company sells to plumbing, heating, and mechanical wholesale distributors, as well as to do-it-yourself (DIY) chains through manufacturers' representatives. Watts also sells to residential construction and home repair and remodeling industries through DIY plumbing retailers, national catalog distribution companies, hardware stores, building material outlets, retail home center chains, and plumbing and heating wholesalers; and directly to wholesalers, original equipment manufacturers, and private label accounts. The company was founded in 1874 and is headquartered in North Andover, Massachusetts.

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