STUDY FINDS THAT HIGHER DISINFECTANT RESIDUAL LEVELS DO NOT REDUCE THE PREVALENCE OF *LEGIONELLA* IN TAP WATER SAMPLES COLLECTED FROM OFFICE BUILDINGS

WHAT DOES IT MEAN?

Some states require public water systems to maintain certain total chlorine or free chlorine residual disinfectant levels throughout their distribution systems – levels such as 0.2 mg/L, 0.5 mg/L, or 0.7 mg/L – to keep harmful bacteria, like *Legionella*, out of treated water. However, higher residual levels can also introduce significant operational challenges and compliance costs for water systems. This is because high disinfectant levels can lead to the formation of harmful disinfection chemical byproducts, potentially corrode pipes, and change the taste and odor of treated water. Water systems must navigate these risks when they increase disinfectant levels.

In 2027 EPA is expected to propose revisions to the federal Microbial and Disinfection Byproducts (MDBP) Rules, including possible mandated minimum numeric disinfection levels with the goal of reducing *Legionella* exposure. In 2025 AMWA and AWWA recommended that EPA establish a minimum numeric level of 0.2 mg/L for chlorine and total chlorine secondary disinfectant residuals to ensure disinfection nationwide, while avoiding the most severe operational and cost impacts associated with higher disinfectant levels.

This new research helps to fill an important data gap on the relationship between minimum disinfection residual levels and *Legionella* occurrence in buildings. The findings from this study suggest that higher mandated disinfection residual minimums cannot be expected to result in reduced *Legionella* exposure. Instead, it is recommended that stakeholders and regulators continue to research the issue and prioritize educating building owners about best practices for discouraging *Legionella* growth in their premise plumbing.

METHODS

The AMWA/AWWA research took advantage of baseline drinking water quality tests performed by the U.S. General Services Administration (GSA) beginning in 2024, covering roughly 1,250 federally-owned building and 6,000 leased facilities. The study reached its conclusion by cross-referencing the *Legionella* sampling results from a subset of GSA-operated buildings with corresponding disinfectant residual data from public water systems serving those facilities.

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OVERVIEW

Legionella bacteria can occur in building water systems and potentially cause serious health risks. A new study commissioned by the Association of Metropolitan Water Agencies (AMWA) and the American Water Works Association (AWWA) examined the relationship between *Legionella* concentrations in water sampled from federal office buildings and disinfectant residual levels in the water supplied by public water systems. To date, there has been very little research done to assess whether different levels of disinfectant residual prevent *Legionella* occurrence in buildings.

FINDINGS

The study found no statistically significant relationship between *Legionella* levels and the residual disinfectant levels in the water supplied to sampled buildings. Additionally, there was no correlation between different state minimum numeric value requirements and the percentage of buildings served by a public water system with total *Legionella* exceedances.

READ THE ENTIRE REPORT

The complete study, "Nationwide Assessment of *Legionella* Occurrence in Building Water Systems: Implications of Disinfectant Type and Residual Concentrations," was published in the May-June 2026 issue of AWWA Water Science. It is available for free online through an Open Access license.