



# Spotlight On...

## Water Safety in Reopened School Buildings

Council of the Great City Schools

The coronavirus is not the only illness that district staff, teachers, students, and visitors have to worry about as schools reopen this school year. School districts should be mindful about the risk of *Legionella*<sup>1</sup> which can be directly tied to the prolonged shutdown and the under-use of water systems— including potable and non-potable water systems; cooling towers; and heating, ventilation and air conditioning systems—and the degradation of water quality in thousands of schools buildings over the past several months.

The [Water Quality and Health Council](#) has reported that “when a school’s water system is not in use, stagnant water fills the pipes, tanks, and other water features. Legionella along with other pathogenic microorganisms can thrive in stagnant water, particularly in hot water heaters and pipes that have cooled to temperatures in the Legionella growth range of 77–108°F (25–42°C).”<sup>2</sup> This is because the chlorine or chloramine disinfectant residual, typically provided in treated water from a local drinking water utility, has decayed due to reaction with organic and inorganic compounds or has disappeared entirely.

The extended closures of school facilities may therefore lead to unsafe building water systems conditions. For example, an August 27, 2020 article in the *New York Times*<sup>3</sup> cited reports that Legionella had been found at five schools in an assortment of towns in Ohio and at four schools in a district in Pennsylvania.

There are currently no national regulations or requirements, so Legionella testing and reporting programs are tied to specific school districts and are largely voluntary. Moreover, most school districts do not have the budgets to test for Legionella and often lack the knowledge and authoritative guidance on how to respond.

The *New York Times* article also pointed out that some preventive steps schools may take to limit coronavirus infection risk could inadvertently add to Legionella concerns. For example, many schools are turning off drinking fountains and some bathroom sinks to ensure social distancing. However, that practice can create reservoirs for bacteria and can contribute to lead levels in drinking water fountains.

In the case of the affected Pennsylvania schools, some officials opted for thermal shock and flushing, while at least one Ohio school sent a high level of chlorine solution through their building water system in addition to flushing. Because confirmation of tests for *Legionella* can take weeks, many of those schools in Ohio and Pennsylvania had to rely solely on operational risk-reduction precautions only prior to opening their doors to students.

1 If Legionella grow during low-use periods, students, teachers, staff and visitors have a higher risk of contracting Legionnaires’ disease and Pontiac fever during the shutdown as well as when occupancy occurs.

2 *Legionella Bacteria Concerns Grow As Schools Reopen*, by the Water Quality and Health Council, September 11, 2020

3 *Reopened Schools Find Health Risks in Water After Covid-19 Lockdowns*. *The New York Times*, August 27, 2020



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### Recommendations for Ensuring Safe Water

District officials need to review their reopening protocols to ensure public health protection and address stagnant water in order to protect students, teachers, staff, and visitors when they reopen closed or partially closed school facilities. At the very least, entire building water systems (hot and cold) need to be flushed before opening school buildings after any prolonged shutdown. And, preferably, the CDC’s [Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operations](#) should be followed to minimize Legionella risk and ensure the safety of returning staff, teachers, and students. For example, school districts should—

- Develop a comprehensive water management program (WMP) for school water systems and all devices that use water.
- Ensure water heaters are properly maintained and temperatures are correctly set to at least 140° F.<sup>4</sup>
- Ensure that the risk of Legionella growth is minimized by regularly checking (and measuring) water quality parameters such as temperature, pH, and disinfectant levels.<sup>5</sup>
- Flush hot and cold water to replace all water inside all building piping and points of use, including drinking fountains, showers, sink faucets, and toilets systems.
- Clean all fountains so they are free of slime or biofilm.
- Ensure cooling towers and basins are well-maintained, clean, and free of slime, debris, and biofilm before start-up.
- Regularly flush, clean, and disinfect safety equipment, including fire sprinkler systems, etc.

By thinking through and implementing procedures to address stagnant water conditions now, school officials and building operators can help protect students, teachers, staff, and visitors as formerly closed or partially closed school buildings continue to reopen throughout the 2020-21 school year.

4 Water temperature and hyperchlorination are the significant factors retarding *Legionella* growth. Although the optimal growth range for Legionella is between 77 °F (25 °C) and 108 °F (42 °C), it can survive and grow outside of this range. To reduce bacteria growth, hot water at all distal locations should be kept above 122 °F (50 °C) and cold water below 74 °F (23 °C).

5 Because chlorine disinfectant residual, typically provided in treated water from local drinking water utilities, decays in school water systems that are not used, stagnant water fills pipes, tanks, and other water features creates pathogenic microorganisms that increases the risk of *Legionella* that can cause Legionnaires’ disease for those that have compromised immune systems. The Water Quality and Health Council pointed out in a May 15, 2020 article that “The threat from Legionnaires’ disease may be compounded because its victims tend to share similar symptoms as coronavirus patients, including cough, chills, and fever, making misdiagnosis a possibility.”

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