



Office of Audits
Office of Inspector General
U.S. General Services Administration

Alert Memorandum: PBS Must Take Immediate Action to Address the Risk of *Legionella* Contamination in GSA-Controlled Buildings

Memorandum Number A230072-1
September 20, 2023



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SUBJECT: Alert Memorandum: PBS Must Take Immediate Action to Address the Risk of
Legionella Contamination in GSA-Controlled Buildings
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PBS must take immediate action to address the risk of *Legionella* contamination in water systems across GSA-controlled (owned and leased) buildings. Since July 11, 2023, elevated levels of *Legionella* bacteria (*Legionella*)—the primary cause of Legionnaires' disease—were detected in water at six GSA-controlled buildings located across four different GSA regions. The current reduced building occupancy levels can lead to water stagnation, which provides ideal conditions for the growth and spread of *Legionella* and increases the likelihood that other buildings may be contaminated.

Background

GSA owns 1,600 federal buildings and leases space in over 6,500 buildings nationwide. As landlord for the federal government, GSA is responsible for operating and maintaining GSA-controlled space to provide for a safe and healthful work environment.¹ In this capacity, GSA is faced with a range of health and safety risks affecting its buildings, including the potential of *Legionella* contamination in water systems.

Legionella is the primary cause of Legionnaires' disease, a potentially fatal type of pneumonia. Legionnaires' disease is the leading cause of reportable waterborne disease outbreaks in the United States, affecting between 52,000 and 70,000 people each year. Legionnaires' disease can be caused when an individual breathes in water droplets containing *Legionella* bacteria or if contaminated water enters their lungs while drinking. People 50 years or older, current or

¹ 40 USC 582, *Management of buildings by Administrator of General Services*; and 41 CFR 102-80.10, *Federal Management Regulation*.

former smokers, and people with a chronic disease or weakened immune systems are at increased risk for Legionnaires' disease. According to the Centers for Disease Control and Prevention (CDC), there is no known safe level of *Legionella* in building water systems. Building water systems consist of potable water which is provided for human consumption and non-potable water which is used for purposes other than human consumption.²

We previously alerted PBS to the need for *Legionella* testing. In September 2022, we notified PBS that it did not effectively test for water contamination, including *Legionella*, prior to reopening GSA child care centers that were closed during the COVID-19 pandemic.³ PBS subsequently tested the water in the child care centers. However, the testing did not include tests for *Legionella* bacteria.

Finding – PBS must take immediate action to address the risk of *Legionella* contamination in water systems across its owned and leased buildings.

PBS must take immediate action to address the risk of *Legionella* contamination in water systems across its owned and leased buildings. In doing so, PBS must address deficiencies in its testing requirements for *Legionella* and strengthen contract and lease oversight. Since July 11, 2023, elevated levels of *Legionella* have been detected in six GSA-controlled buildings across multiple states, ranging from New York to Utah. The elevated levels of *Legionella* have occurred at a time of reduced building occupancy levels. Reduced occupancy can cause water stagnation in buildings and allows *Legionella* to grow and spread, thereby increasing the likelihood of *Legionella* contamination in other GSA-controlled buildings.

Recent Findings of Elevated Levels of *Legionella*

Since July 2023, elevated levels of *Legionella* were found in six GSA-controlled buildings, all of which are open to the public. Test results disclosed elevated levels of *Legionella* in water systems in each of these GSA-controlled buildings. For example, *Legionella* levels in one building's potable water system were 640 times above levels that the CDC considers to be "uncontrolled," which require corrective action. The number of positive results for *Legionella* over a geographically dispersed number of buildings points to the potential for a wide-scale problem.

See *Figure 1* on the next page for details.

² While there is no safe level of *Legionella* in potable water, the CDC classifies *Legionella* levels as well controlled, poorly controlled, and uncontrolled. For example, the CDC provides that *Legionella* concentration levels are uncontrolled when they are greater than or equal to 10 colony-forming units per milliliter (CFU/mL).

³ Alert Memorandum: PBS Did Not Test Water Prior to Reopening GSA Child Care Centers Closed During the COVID-19 Pandemic (Memorandum Number A201018-8, September 6, 2022).

Figure 1 – GSA-Controlled Buildings with Elevated Levels of *Legionella*

GSA-Controlled Building	Type	Location	Date	Positive Test Results
Lewiston Bridge Land Port of Entry	Leased	Lewiston, NY	August 30, 2023	Potable water
North Platte Federal Building	Owned	North Platte, NE	August 10, 2023	Potable water
John C. Kluczynski Federal Building	Owned	Chicago, IL	August 3, 2023	Potable water Non-potable water ⁴
U.S. Post Office, Loop Station	Owned			
Internal Revenue Service Center	Owned	Ogden, UT	July 18, 2023	Potable water
985 Michigan Avenue Federal Building	Owned	Detroit, MI	July 11, 2023	Potable water Non-potable water

See **Attachment 2 – *Legionella* Detection and Remediation Efforts** for additional building and test details.

Reduced Occupancy Levels Can Lead to Water Stagnation, Which Provides Favorable Conditions for *Legionella*

The elevated levels of *Legionella* described above have occurred at a time of reduced building occupancy across the federal government. The U.S. Government Accountability Office recently reported that most of the 24 federal agencies it sampled used an estimated average of 25 percent or less of their headquarters’ capacity during select periods in 2023.⁵

As we reported in our September 2022 alert memorandum, reduced occupancy can lead to water stagnation, which creates favorable conditions for the growth and spread of *Legionella* and other bacteria. During these periods, water is used less frequently, leading to water stagnation that allows the disinfectants used to control bacteria like *Legionella* in public water systems to degrade over time. Additionally, when hot water stagnates for extended periods, its temperature can decrease to a point that enables *Legionella* bacteria to grow. In these conditions, building occupants face an increased risk of exposure to *Legionella* through inhaling mists from water fountains or running faucets. The prevalence of these conditions increases the likelihood that GSA-controlled buildings may be contaminated with *Legionella*.

PBS Must Take Immediate Action to Address *Legionella* in GSA-Controlled Buildings

The detection of elevated *Legionella* levels in GSA-controlled buildings coupled with the increased risk of the growth and spread of the bacteria due to water stagnation demonstrate

⁴ The John C. Kluczynski Federal Building and the U.S. Post Office, Loop Station share the same water system.

⁵ *Preliminary Results Show Federal Buildings Remain Underutilized Due to Longstanding Challenges and Increased Telework* (GAO-23-106200, July 13, 2023).

that *Legionella* presents a significant challenge to PBS. Accordingly, PBS must take immediate action to address the risk of *Legionella* contamination in its owned and leased buildings. In doing so, PBS must address deficiencies in its testing requirements and strengthen oversight of its contractors and lessors.

Deficiencies in PBS's *Legionella* testing requirements. PBS's current approach to *Legionella* testing is not comprehensive or consistent. PBS's policy for maintaining building water systems, GSA Order PBS 1000.7, *PBS Drinking Water Quality Management*, cites PBS's *Preventive Maintenance Guide* (PM Guide) for testing requirements of *Legionella* in certain non-potable water systems in its owned buildings. However, neither the policy nor the guide requires testing for *Legionella* bacteria in buildings' potable water systems. It also does not have any testing requirements for *Legionella* in leased buildings. These deficiencies are described below.

- **Owned Buildings** – GSA Order PBS 1000.7 does not require testing for *Legionella* in potable water in its owned buildings. Instead, GSA Order PBS 1000.7 states that the PM Guide requires bacterial testing following the quarterly, semiannual, and annual cleaning and decontamination of non-potable water systems in cooling towers, decorative fountains, humidification systems, ice makers, evaporative cooling systems, and other water systems. However, the PM Guide does not include all those testing requirements. In fact, it only requires *Legionella* testing in building cooling towers and evaporative cooling water systems.
- **Leased Buildings** – PBS does not have any testing requirements for its leased buildings. PBS incorporates clauses into its lease agreements for lessors to provide a safe work environment. However, PBS officials stated that they rely on lessors for water safety and that they do not require water management plans.

To address the risk of *Legionella*, PBS must develop comprehensive and consistent testing requirements that cover both owned and leased buildings.

Deficiencies in contract and lease oversight. Although PBS is ultimately responsible for operating and maintaining GSA-controlled space in a safe and healthful manner, it relies extensively on contractors and lessors to maintain water quality in its owned and leased buildings. However, as described below, PBS has struggled with oversight of contractors and lessors.

- **Contract Oversight** – Our past audit reports have identified deficiencies in PBS's oversight of contractors. In particular, we have identified deficiencies in the oversight of operations and maintenance (O&M) contractors that play a critical role in the day-to-day operations of PBS's owned buildings. For example, in September 2021, we reported that PBS's Northeast and Caribbean Region did not adequately inspect the work of O&M

contractors to ensure they complied with contract requirements.⁶ Additionally, in September 2022, we reported that PBS did not consistently verify that O&M contractors changed air filters and met preventive maintenance requirements for air handling units.⁷

- **Lease Oversight** – We have identified similar lapses in PBS’s oversight of lessors. For example, in reports issued in September 2021 and February 2023, we found that PBS did not consistently administer its leases to ensure that lessors provided the quality of space and services that the government is paying for.⁸

Given the past issues with contract and lease oversight, it is imperative that PBS strengthens its oversight to ensure water safety requirements are met. Among other things, PBS needs to provide effective contract and lease oversight to ensure compliance with any testing protocols it establishes for the detection of *Legionella* and prompt remediation of any findings. PBS must also ensure that O&M contractors and lessors provide the necessary maintenance of water systems to mitigate the risks arising from *Legionella*.

Conclusion

PBS must take immediate action to address the risk of *Legionella* contamination in water systems across its owned and leased buildings. In addressing this issue, PBS must improve its testing requirements for *Legionella* and strengthen contract and lease oversight.

Compliance Statement

This alert memorandum complies with the Council of Inspectors General on Integrity and Efficiency’s Quality Standards for Federal Offices of Inspector General.

Audit Team

This assignment was managed out of the Heartland Region Audit Office and conducted by the individuals listed below:

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⁶ *PBS’s Northeast and Caribbean Region is Not Effectively Overseeing its Operations and Maintenance Contracts* (Report Number A201046/P/2/R21007, September 24, 2021).

⁷ *COVID-19: PBS Faces Challenges in Its Efforts to Improve Air Filtration in GSA-Controlled Facilities* (Report Number A201018/P/4/R22008, September 30, 2022).

⁸ *Audit of PBS Lease Administration* (Report Number A201011/P/R/R21006, September 21, 2021); and *Audit of PBS’s Oversight of Lease Periodic Services* (Report Number A220026/P/R/R23003, February 16, 2023).

Memorandum Distribution

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Attachment 1 – Guidelines for the Prevention and Control of Legionella

National Standards and Guidelines

Occupational Safety and Health Administration

Section 5(a)(1) of the Occupational Safety and Health Act of 1970, 29 USC 654(a)(1), requires employers to furnish to each worker “employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm.” The Occupational Safety and Health Administration (OSHA) recommends that employers know the hazards and risks associated with having water sources in the workplace and maintain all systems to prevent *Legionella* growth.

OSHA’s *Legionellosis (Legionnaires’ Disease and Pontiac Fever)* webpage discusses general considerations for preventing exposure. This includes water system maintenance to prevent growth and checking for unexpected growth if preventative measures fail. OSHA guidance states that activity records help ensure proper maintenance, including:

- Written procedures for the water system’s proper operation and maintenance;
- Inspection, cleaning, and disinfection dates; and
- If sampling is performed, any test results.⁹

Centers for Disease Control and Prevention

According to the CDC, there is no safe level or type of *Legionella*. The CDC has developed a toolkit, in accordance with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), to help building owners and managers reduce the growth and transmission of *Legionella*. Proactive water management is key to ensuring that building water systems are maintained to reduce the risk of growth and amplification of *Legionella*.

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ASHRAE Standard 188-2021, *Legionellosis: Risk Management for Building Water Systems*, requires the creation of a program team to develop and implement a water management program. The purpose of a water management program is to identify potential hazards, establish mitigation controls, implement monitoring procedures to ensure the effective control of hazardous water conditions, and establish corrective actions if hazardous water conditions exist.

⁹ <https://www.osha.gov/legionnaires-disease/control-prevention>.

GSA Guidance

Federally Owned Buildings

GSA uses O&M contractors to perform preventive maintenance on building equipment and systems in accordance with PBS's PM Guide.

PBS's PM Guide is based on industry building maintenance standards or manufacturers' recommendations. The PM Guide requires *Legionella* testing following the quarterly cleaning and decontamination of non-potable water systems in cooling towers. PBS does not have *Legionella* testing requirements for potable drinking water systems.

On August 4, 2023, PBS's Office of Facilities Management issued Facilities Management Alert (FM-FY23-02) – *Avoiding Water Stagnation*. The purpose of the alert is to implement a continuous monitoring program for each GSA-owned federal building. However, the alert does not require widespread testing for *Legionella*, even though elevated levels of *Legionella* were present in four federal buildings at that time.

Leased Space

The lessor provides maintenance services for the facility. PBS incorporates clauses into its lease agreements for the lessor to provide a safe work environment. For example, lease agreements should include General Services Acquisition Manual 552.270-9, *Inspection—Right of Entry*. This clause gives GSA the right to inspect a leased facility's water systems and maintenance records.

Attachment 2 – Legionella Detection and Remediation Efforts

Lewiston Bridge Land Port of Entry – Lewiston, New York

On August 30, 2023, PBS received a water test report that confirmed elevated levels of *Legionella* in the facility. *Legionella* was detected in a break room, restrooms, and locker rooms, including several shower areas in the Lewiston Bridge Land Port of Entry. The water tests were conducted after an employee who works in the facility was diagnosed with Legionnaires' disease. PBS hired an industrial hygiene company to conduct water tests on August 17, 2023, after the lessor refused to conduct any water testing.

In the water test report, the industrial hygiene company stated that it tested the domestic water supply entering the building and did not detect *Legionella*. The report stated that the bacteria likely formed in the building's piping system. The report recommended several mitigation steps, including further testing, to resolve the issue.

North Platte Federal Building – North Platte, Nebraska

On August 14 and 15, 2023, PBS notified building tenants that drinking water test results showed that the water quality failed to meet drinking water standards for *Legionella*. *Legionella* was detected in a staff lounge, multiple breakrooms, and a bathroom. The notification stated that the *Legionella* test, "was conducted as GSA's continual check for water quality. The sampling was conducted in accordance with EPA [U.S. Environmental Protection Agency] guidelines." A subsequent PBS notification on August 18, 2023, also provided tenants with the remediation steps it was taking since the initial notification concerning *Legionella* test results. The notification states that the building's water system would be shocked with disinfectant, flushed numerous times, and then retested.

PBS stated that the testing was conducted through GSA's continual check for water quality. Although we requested prior test results, PBS did not provide us with any documentation that *Legionella* testing of the building's water systems was performed in 2020, 2021, or 2022.

John C. Kluczynski Federal Building and U.S. Post Office, Loop Station – Chicago, Illinois

PBS officials told us that, on August 3, 2023, tests conducted as part of the buildings' preventive maintenance of the cooling towers detected levels of *Legionella* above CDC-recommended thresholds. The *Legionella* was detected in a rooftop cooling tower and two hot water tanks.

On August 21, 2023, PBS notified building tenants of the detection of *Legionella* in the buildings' water systems. On August 24, 2023, PBS provided tenants with an update on remediation steps it was taking since the initial notification concerning *Legionella* test results. PBS officials told us that it received test results on August 31, 2023, with no detectable levels of *Legionella* in the cooling tower or hot water tanks.

Testing documents PBS provided us show that testing of the buildings' water systems was performed multiple times in 2020, 2022, and 2023, and once in 2021. In July 2022, test results detected a form of *Legionella* in one sample taken of a backflow preventer. A subsequent test in August 2022 did not detect *Legionella* in the same location.

Internal Revenue Service Center – Ogden, Utah

On July 26, 2023, PBS notified building tenants of the detection of *Legionella* in two water fountains. The notification stated that, "The sampling is part of a regular preventative maintenance program." Test results returned on July 18, 2023, stated that slightly elevated levels of *Legionella* were found in two water fountains. According to the notification, the two water fountains were closed and sealed and the plumbing system was flushed and re-tested.

In addition, on August 10, 2023, PBS notified building tenants of preliminary test results returned that day. The results identified the potential detection of *Legionella* in the child care center water dispensers, sinks, and one refrigerator water line. The notification letter stated that GSA began addressing the findings promptly by water flushing, retesting the water sources, and verbally notifying the child care center to stop using the water sources and dispensers. PBS officials told us they delivered bottled water for immediate use at the child care center.

PBS stated that the testing was conducted as part of a regular preventive maintenance program. Although we requested prior test results, PBS did not provide us with any documentation that *Legionella* testing of the building's water systems was performed in 2020, 2021, or 2022.

985 Michigan Avenue Federal Building – Detroit, Michigan

On June 2, 2023, PBS notified building tenants that it was closing this building after receiving the results of a water quality test. In an email to tenants, GSA stated that recent tests indicated elevated levels of metal and bacteria in the drinking water. On July 11, 2023, and later revised on August 4, 2023, water test results showed *Legionella* in the roof's cooling tower, the first-floor detention holding facility, a suite, and kitchenettes on two different floors. Samples taken again on July 26 and 27, 2023, continued to detect elevated levels of *Legionella* in the detention holding facility.

Although we requested prior test results, PBS did not provide us with any documentation that *Legionella* testing of the building's water systems was performed in 2020, 2021, or 2022.