



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

Management Alert: Inadequate Ventilation in GSA Headquarters Child Care Center

**Report JE22-001
March 10, 2022**

Summary

During the course of an ongoing inspection, the General Services Administration (GSA) Office of Inspector General (OIG) identified issues with ventilation in the Child Care Center at the GSA Headquarters Building in Washington, D.C., requiring your immediate attention.

The purpose of this alert is to bring to management's attention the deficiencies in GSA's compliance with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standard for ventilation in the Child Care Center. The current lack of ventilation means that the occupants of the Child Care Center are not provided fresh air when the outside air temperature is below 40⁰ F. Even when fresh air is provided, the space lacks ventilation due to the absence of return vents. Furthermore, GSA's ongoing mitigation steps to address the lack of fresh air will not enable the agency to meet the ASHRAE ventilation standard until the air handler unit (AHU) is replaced.

Since July 27, 2020, the Child Care Center has operated at a reduced occupancy due to the Coronavirus-19 (COVID-19) pandemic. As of January 2022, reduced occupancy of 46 includes 5 infants, 17 toddlers, 10 preschoolers, and 14 childcare staff.¹ We are providing this report so that you may take immediate action to ensure the safety of the children and staff at the GSA Headquarters Child Care Center.

We provided a draft of this report to Public Buildings Service (PBS) and Office of Administrative Services leadership. After reviewing PBS's response, we amended some of the report language where appropriate. The amended language does not affect our finding and conclusion.

Background

Guidance issued by the Centers for Disease Control and Prevention (CDC) National Institute for Occupational Safety and Health (NIOSH), states that “[b]uilding ventilation is the circulation of air throughout a building.”² The NIOSH guidance further notes it is essential that ventilation air is distributed properly throughout all occupied spaces, as is an adequate supply of outdoor (fresh) air to dilute pollutants.³

GSA is responsible for basic building operations at the Headquarters Building, and must ensure that the building systems function and GSA-provided building-specific safety and security features remain operational.

GSA publication, P100 *Facilities Standards for the Public Buildings Service*, October 2021, is GSA's mandatory facilities standard. Part 5.2.5 states:

Ventilation is one of the key elements (along with source control and air cleaning) to achieving acceptable indoor air quality.... Hence, ventilation is required in all occupied

¹ The Child Care Center, operating as US Kids Child Development Center, encompasses 4,675 square feet on the first floor of the GSA Headquarters Building.

² [Indoor Environmental Quality: Building Ventilation | NIOSH | CDC.](#)

³ [https://www.cdc.gov/niosh/topics/indoorenv/hvac.html.](https://www.cdc.gov/niosh/topics/indoorenv/hvac.html)

spaces. ASHRAE Standard 62.1 is the consensus standard prescribing ventilation requirements in the United States.

And, “[s]upply air distribution systems must be fully ducted to the spaces that are served.”⁴

ASHRAE standard 62.1 specifies minimum ventilation rates intended to provide indoor air quality (IAQ) that is acceptable to human occupants and minimizes adverse health effects.⁵

World Health Organization guidelines also explain that ventilation is intended to remove or dilute pollutants and to control the thermal environment and humidity in buildings. Ventilation dilutes the concentrations of (or disperses) airborne viruses or bacteria that can cause infectious diseases. Therefore, higher ventilation rates reduce the prevalence of airborne infectious diseases, such as SARS-CoV-2, the virus that causes COVID-19.⁶ The CDC recommends organizations take a layered approach to reduce exposures to COVID-19, which includes ventilation mitigation strategies, such as increasing outside air, to reduce the concentration of viral particles.⁷

Finding: The ventilation in the Child Care Center is inadequate.

Since 2020, PBS has obtained several ventilation and air quality studies and surveys of the Child Care Center, as well as other portions of the unrenovated Wings 0 and 3 of the GSA Headquarters building, in order to determine the appropriate approaches to reduce exposure to COVID-19. These studies and surveys have consistently identified ventilation issues; however, mitigation actions to address the ventilation deficiencies to date will not allow PBS to achieve ASHRAE standard 62.1 in the Child Care Center.

ASHRAE Standard 62.1 is not met in the Child Care Center.

On August 5, 2020, National Capital Region, Office of Facilities Management (OFM) personnel were notified by GSA’s operations and maintenance contractor for the Headquarters Building, Northern Management Services, Incorporated, that:

The childcare center does not have functioning ventilation and is not compliant with the code required ASHRAE 62 ventilation requirements. The current condition of the space and lack of ventilation are likely to cause a “sick building”, especially with the Covid-19 Pandemic fresh air requirements.

Later in August 2020, OFM provided the former PBS National Capital Regional Commissioner, Darren Blue, a July 20, 2020 report from Northern Management Services, Incorporated, along with a GSA-developed fact sheet, which identified issues with the air handler units within the 0 and 3 Wings of the Headquarters building, where the Child Care Center is located.⁸ The report explained that:

⁴ P100 *Facilities Standards for the Public Buildings Service*, October 2021, at 5.3.2.4.

⁵ ASHRAE standard 62.1, *Ventilation for Acceptable Indoor Air Quality*, at pg. 2.

⁶ World Health Organization. (2009). WHO Guidelines for Indoor Air Quality: Dampness and Mould, <https://www.ncbi.nlm.nih.gov/books/NBK143947/>.

⁷ <https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.html>.

⁸ The Child Care Center is located in Wing 0 of the Headquarters.

There are 34 air handlers [air handler units (AHUs)] located in Wings 0 and 3. All the air handlers have failed and abandoned in place pneumatic controls and *have not been providing fresh air (Make-up Air) for over 17 years*. The steam coils are disconnected or isolated due to holes in the coils. The chilled water valves are manually set to wide open all the time and in most cases the actuators have been removed. The air handlers do not have code required smoke detectors. The AHU's [sic] have to be manually turned on and off each day by having a mechanic enable a switch on the existing 25 plus year old timers at the units. The chilled water coils are rusting out and much of the air handler structural casing is rusted beyond repair. The fans have bad bearings.⁹ (Emphasis added.)

The GSA fact sheet concluded, "GSA is not achieving the minimum ventilation guidelines per regulatory and industry standards that we have committed to meeting for all of our tenants."

In April 2021, GSA contractor TTL-Arc Environmental JV, LLC (TTL-Arc) performed a ventilation survey that included the Child Care Center. The survey provided guidance on the recommended number of occupants for the space based on a ventilation calculation. The calculation TTL-Arc used assumed the AHU servicing the Child Care Center provided 20% fresh air volume, and applied a standard of 5 cubic feet per minute (CFM) of fresh air per person, which resulted in a recommended occupancy rate of 59.

However, these factors used in the TTL-Arc calculation were flawed. First, the assumption of 20% fresh air volume was not based on any testing. More recent observations from two other GSA contractors found most of the AHU dampers allowed only approximately 10% fresh air volume.¹⁰ Second, ASHRAE standard 62.1 provides for a minimum of 10 CFM per person in a child care setting, not the 5 CFM per person appropriate for an office setting. As a result of using these inappropriate factors, TTL-Arc's calculation recommended 59 occupants for the Child Care Center. Had TTL-Arc used the child care standard of a minimum 10 CFM per person, and the actual AHU limitations of 10% fresh air volume in their calculation, the recommended result would have been approximately 14 occupants, significantly fewer than the current occupancy of 46.

More concerning, TTL-Arc's airflow measurements taken on December 30, 2020, found 0 CFM of ventilation *supply* per person in a toddler room of the Child Care Center, making the space incapable of meeting ASHRAE standard 62.1 of 10 CFM per person.¹¹ Furthermore, of the five Child Care Center rooms evaluated by TTL-Arc on that date, four of the rooms measured *return* airflow of 0 CFM per person, indicating a complete lack of circulated air.

⁹ Northern Management Services, Incorporated, July 20, 2020, memorandum, *Contract No.:47QSHA19D0009; Order No.: 47PD0120A0002/47PD0120F0035; Operation & Maintenance Services at the GSA Headquarters Building in Washington, D.C. RFI-01 Air Handler Deficiencies, Clarification, & Repairs Wing 0 & 3*. At page 1.

¹⁰ Two separate studies, Rambin Global JV, *General Services Administration (GSA) Headquarters (HQ) Indoor Air Quality (IAQ) and Ventilation Assessment Report*, October 4, 2021, at page 1, and Summer Consultants, Inc., *Ventilation Study at GSA Headquarters Feasibility Study*, December 22, 2021, at page 2-1 determined the air dampers to be set at approximately 10% from a visual inspection.

¹¹ The average temperature for Washington, D.C. on December 30, 2020 was 38.5⁰F. See: [Climate \(weather.gov\)](https://www.weather.gov/).

In September 2021, Northern Management Services, Incorporated, provided National Capital Region, OFM with detailed issues specific to the AHU serving all of the Child Care Center spaces. The report advised: (1) the fresh air intake damper must be opened manually, and if outside air temperatures were near freezing, the dampers were not opened, which cuts off all fresh air supply to the space, (2) there are no return vents in any of the Child Care Center spaces to pull air from the space, and (3) no duct work was installed when a drop ceiling was installed at some point in the infant room, essentially covering the air supply.¹² A PBS industrial hygienist called the lack of return vents “problematic.” As a temporary measure, Northern Management Services, Incorporated, installed grills in the ceiling to help some air get into the infant space.

In October 2021, GSA contractor Rambin Global Joint Venture (Rambin) provided a report on their limited scope assessment of indoor air quality and ventilation. Based on its observation, measurements, and conclusions, Rambin’s recommendation for the Child Care Center stated that “[t]here appears little infection risk from the existing window units....[t]he current operating conditions appears acceptable for the current occupancy levels.”¹³

However, Rambin’s report also cautioned that occupancy rates affect air quality measurements, and largely unoccupied space “... would tend to skew the data towards the “best” performance capabilities versus when the building is fully occupied and the systems performance would be skewed to “worst” performance capability.” The Child Care Center had no occupants when Rambin conducted its assessment in the center.

Rambin also utilized the ASHRAE ventilation standard of 5 CFM of fresh air per person. However, the ASHRAE standard 62.1 for fresh air per person in a child care setting is 10 CFM. While Rambin’s recommendation for the Child Care Center included improving the overall ventilation, care needs to be taken to ensure any calculations include the correct standard for fresh air.

A Summer Consultants, Inc. ventilation study report submitted to GSA in December 2021 addressed the unrenovated portions of the Headquarters Building. It found that the return air path for the AHUs for these areas relies on air vents located in the main corridors coupled with open office doors for air flow. Although limited air may come into the Child Care Center when a door is opened to enter or leave the facility (the doors remain locked for security purposes), the Summer Consultants, Inc. report noted that using corridors as part of a return air path does not comply with the International Code Council International Building Code, which GSA has adopted as its technical requirements.¹⁴

But even corridor air flow is not available to the Child Care Center. The lack of return vents within the space means carbon dioxide or other biological elements could build up.¹⁵ ASHRAE

¹² As of February 8, 2022, the AHU’s controls were operating so the damper could be opened automatically; however, GSA and Northern Management Services, Incorporated confirmed that unless the outside air temperature is over 40^o F, the damper remains closed.

¹³ In December 2021, the Child Care Center experienced a COVID-19 outbreak.

¹⁴ Summer Consultants, Inc., parts 2.1c and 2.2c, at pg. 5/203, and P100 *Facilities Standards for the Public Buildings Service*, October 2021, at 1.4.2.

¹⁵ PBS reported that it has been monitoring carbon dioxide at the existing occupancy level since October 2021.

recommends that building systems be evaluated to confirm that ventilation systems are capable and operating effectively to provide the code required or design levels of fresh air when the building is occupied.¹⁶

Mitigation Actions.

GSA has taken a layered approach to mitigate the COVID-19 infection risk in the Child Care Center. The agency's approach includes requiring occupants to wear masks and maintain social distance, cleaning, sanitizing, decreasing horizontal air flow, and increasing fresh air to the space. However, we identified concerns with these approaches in the Child Care Center. In attempting to increase fresh air in the Child Care Center, PBS relies on staff to run window air conditioner units throughout the day in order to bring in fresh air. We found three issues with this approach.

First, during our recent visit to the Child Care Center, the staff said they only turn on the window air conditioning units for comfort. Upon inspection of the window air conditioner units, we found that only 2 of the 5 units in the Child Care Center were in operation, and that the Child Care Center staff had no practice in place to ensure the units were constantly running during occupancy.

Second, PBS has not tested, nor could they estimate, how much fresh air is actually being supplied to the Child Care Center through the window units.

Furthermore, as Photo 1 shows, this window unit in the Child Care Center is missing the lever to open and close the fresh air vent. Of the five window air conditioning units, three were missing the fresh air lever, and it was indeterminate as to whether the vents were left open or closed.



Photo 1

Third, according to both the GSA Building Management Office and Northern Management Services, Incorporated, when the vent is open, the amount of fresh air able to enter the room is negligible. The limited amount of fresh air from the window units can be attributable to the fact that their primary purpose is not to bring in fresh air, but rather to chill recirculated air. Given the problematic ventilation already at issue, PBS cannot rely on the window air conditioner units to increase fresh air.

¹⁶ ASHRAE Epidemic Task Force. (2021, April 27). *Building Readiness*. Retrieved from [ashrae.org: https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf](https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf) pg. 16/143.

As another mitigating step, PBS added diverters to the window air conditioner units to push air up, instead of horizontally, across the breathable space.



Photo 2

According to a PBS industrial hygienist, by diverting the air vertically, they can reduce the social distancing requirement from 30 feet to 6 feet, if occupants are wearing masks. However, during our recent visit to the Child Care Center, we found that some diverters were not vertically directing air from the entire air vent face (Photo 2) and at least one diverter was broken and no



Photo 3

longer attached to the window air conditioning unit (Photo 3).

Furthermore, while the diverters are intended to change the direction of the air, they cannot address the lack of ventilation in the Child Care Center space. Finally, despite GSA's mitigation step requiring occupants to be masked, we observed unmasked children in the toddler and preschool rooms of the Child Care Center during our recent visit.¹⁷

PBS management stated that as of March 2022, the agency had purchased an AHU to replace the one currently servicing the Child Care Center. PBS stated that the new AHU will address duct smoke detection and shutdown interfaces. At this time, installation is planned for May 2022. Ultimately, PBS anticipates the new AHU will allow GSA to meet ASHRAE standard 62.1. In the interim, children and Child Care Center employees are occupying a space that does not have proper ventilation to meet ASHRAE standard 62.1.

Conclusion

As early as August 2020, PBS leadership was aware of the condition of the AHUs in Wings 0 and 3, and the impact on ventilation. Since August 2020, numerous additional studies and surveys have documented that GSA is not meeting ASHRAE standard 62.1 in the 0 and 3 Wings, which includes the Child Care Center. Furthermore, PBS is aware that the ventilation system is not supplying fresh air during periods when outdoor temperatures are below 40° F, that supply vents in the infant room are essentially covered, and that there are no return vents within any of the Child Care Center spaces. Despite their awareness, PBS leadership has allowed the Child Care Center to be used without adequate ventilation to ensure safe occupancy. With plans for GSA to fully reenter offices by the end of April 2022, and the potential for the eventual occupancy of the Child Care Center to return to pre-COVID levels, we are providing this report

¹⁷ CDC "recommends universal indoor masking in ECE [Early Child and Education] programs for those 2 years and older, regardless of vaccination status." See: [COVID-19 Guidance for Operating Early Care and Education/Child Care Programs \(cdc.gov\)](https://www.cdc.gov/eid/content/vol28/iss10/10-10-20-2022.pdf). The Child Care Center has at least 12 children under the age of two who would not be masked, in accordance with CDC guidance.

so that you may take immediate action to ensure the safety of the children and staff at the GSA Headquarters Child Care Center.

Compliance Statement

This alert report complies with the Council of the Inspectors General on Integrity and Efficiency's Quality Standards for Federal Offices of Inspector General. We intend to continue our review of GSA's management of preventative maintenance of the mechanical system and related safety issues. When completed, our review will comply with Council of the Inspectors General on Integrity and Efficiency's Quality Standards for Inspection and Evaluation.



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