

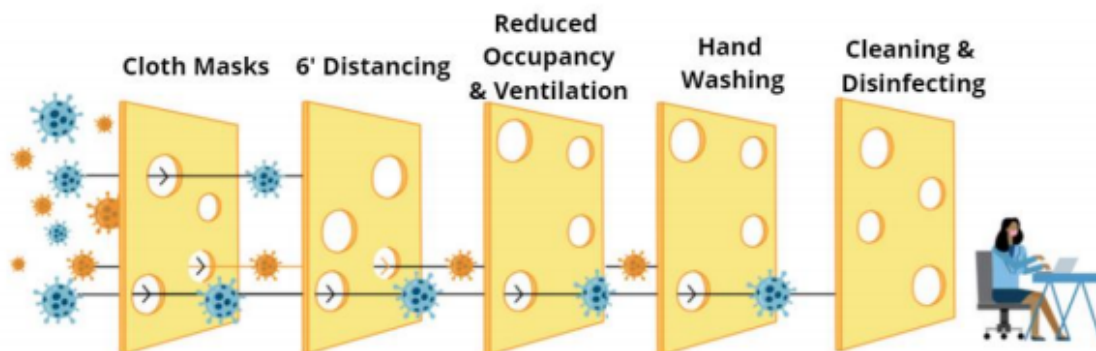
School Ventilation and Cleaning Protocols 2022-23

North Clackamas School District (NCSD) is committed to maintaining clean and efficient facilities for the safety of students, staff, and our community. Among the dozens of recommendations and requirements of the Oregon Department of Education (ODE) and Oregon Health Authority (OHA), NCSD has taken the following steps and precautions to ensure proper ventilation systems and cleaning protocols. It is important to note that ventilation and cleaning are just two key components of effective mitigation of spreading COVID-19 and other viruses. While vaccination is the most effective method to prevent contracting COVID-19, several other mitigation methods should be considered. The “Swiss Cheese” model below illustrates how together, various precautions will make our schools safe learning and working environments.

Ventilation

During the 2020-21 school year, NCSD contracted with Maul Foster Alongi, Inc. (MFA) and Portland Mechanical Contractors (PMC) to evaluate the heating, ventilation, and air-conditioning (HVAC) equipment at each school in the district to provide feasible recommendations for optimizing indoor air quality and minimizing the risk of COVID-19 transmission. Evaluation

The "Swiss Cheese" Model of COVID-19 Mitigation in Schools



PolicyLab adapted this graphic from the Cleveland Clinic's "Swiss Cheese Approach to COVID Mitigation"

criteria were developed from ODE and OHA [Ready Schools. Safe Learners \(RSSL\) guidance for the 2020–2021](#) school year, and applicable state and federal guidance related to optimizing HVAC systems and reducing the risk of COVID-19 transmission in schools. MFA made the following recommendations:

FINDINGS AND RECOMMENDATIONS

PMC observed that the ventilation systems frequently conform with applicable guidance. The following are the recommendations and NCSD's response to each *in bold italics*.

- Select air-handling unit (AHU) filtration levels that are maximized for equipment capabilities. Use filters with a minimum efficiency reporting value (MERV) of 13 if equipment allows (make sure that the pressure drop is less than the fan capacity). PMC noted that most AHUs can currently accommodate a MERV 13 filter, although some of the units require modification to complete the installation. Therefore, NCSD should make modifications to accommodate MERV 13 filters where feasible. ***NCSD installed MERV 13 filters where equipment allows and modified other units to accommodate the MERV 13 filters where possible.***
- Verify that AHU filters are properly sealed. PMC observed that several AHUs should be provided with filter sealant to minimize the amount of air that can bypass the filters. ***NCSD sealed the AHU filters.***
- Maximize outside air. PMC observed that it is feasible to increase the fraction of outside air provided by many of the AHUs. NCSD should consider operating the ventilation system continuously to maximize the ventilation of the building. Consider opening windows in rooms before and after occupancy, when feasible, to maximize ventilation of the space. MFA recognizes that increasing outside air can result in uncomfortable temperatures, particularly in localized portions of the building. Building occupants should be advised to dress appropriately to stay comfortable while this ventilation is maintained. It may be appropriate to rearrange desks to keep them out of the direct path of a ventilation supply duct. ***NCSD adjusts the outside air intake depending on outside air quality and temperature. For example, unless we are being affected by extreme weather or environmental factors such as smoke from wildfires, all air-handling units are started at least two hours each day before occupancy and two hours after to ensure maximum outside airflow. Staff and students should take note to dress appropriately for comfort in colder or hotter weather as the room temperatures will be impacted by whatever air temperature is coming into the school.***
- Implement updated HVAC maintenance schedules. NCSD should develop filter replacement schedules that are appropriate for MERV 13 filters. Due to the higher filtration efficiency of MERV 13 filters relative to typical MERV 8 filters, filters may need more frequent changing. PMC noted that some of the AHUs require cleaning and maintenance. ***NCSD hired additional staff to ensure the routine changing of filters in our schools. It should be noted that the supply chain for these filters continues to be limited, so areas of the schools that are more heavily occupied will have priority in the filter-changing schedule.***

- Consider portable air purifiers in some spaces, e.g., portable HEPA filters. Based on the number of portable units available, MFA recommends prioritizing rooms for portable air purifiers based on the following considerations:
 - Occupancy: High-occupancy rooms and high-traffic areas should be prioritized over low-occupancy and low-traffic areas.
 - Outside air supply: Rooms without operable windows and limited outside air supply should be prioritized over rooms with operable windows and outside air provided by the AHU.
 - Filtration: Rooms that AHUs service with filters rated less than MERV 13 should be prioritized over rooms with MERV 13 or higher filtration.

NCS D has purchased both UV air purifiers as well as portable HEPA filters. These have been installed using the above prioritization recommendations. Any classroom with students in them will have a UV air purifier installed. HEPA filters will be added to areas that may need additional filtration. NCS D continues to research new technologies in this area.

Cleaning, Sanitizing, and Disinfecting

Routine cleaning and disinfecting are an important part of reducing the risk of exposure to COVID-19 and the spread of all viruses. Maintaining a safe and healthy environment in our schools will require a collaborative effort between all school and district staff to disinfect daily.

Definitions

Cleaning – cleaning removes dust, debris, and dirt from the surface by scrubbing, washing, and rinsing. Cleaning does not kill germs, but removing germs lowers their numbers and the risk of spreading infection.

Sanitizing – reduces bacteria on surfaces.

Disinfecting – destroys and inactivates bacteria and viruses (e.g., influenzas, rhinoviruses) on hard, nonporous surfaces.

Example – A student has a bloody nose and drips blood on the desk. Cleaning is the initial wiping up of the blood off the desk surface, and disinfecting is the chemical application of destroying and inactivating the bacteria and viruses in the blood.

Types of Viruses

Three types of viruses –

1. Enveloped – are easiest to kill (e.g., Influenza A, SARS-CoV-2)
2. Large – non-enveloped – more difficult to kill (e.g., Rotavirus)
3. Small – non-enveloped – hardest to kill (e.g., Rhinovirus, Norovirus)

* SARS-CoV-2 (COVID-19) is an enveloped virus with a thin membrane, making it one of the easiest to clean and disinfect.

Cleaning and Disinfecting Product Used for COVID-19 in North Clackamas Schools

North Clackamas Schools uses Waxie Solsta 730 HP Disinfectant, a one-step hydrogen peroxide-based product for disinfection, cleaning, and deodorizing.

PurTabs to clean, sanitize, and disinfect all its facilities for COVID-19.

730 HP Disinfectant Cleaner and PurTabs have been tested and proven to kill SARS-CoV2, the virus responsible for COVID-19, 730 in one minute, and PurTabs in 4 minutes at a dilution rate of 1, 3.3g tablet per 1 quart of water.

The 730 HP Disinfectant cleaner will be provided for all staff in spray bottles.

WAXIE Solution Station 730 Disinfectant Cleaner – [WAXIE-spec-sheet.pdf](#)

WAXIE Solution Station 730 Disinfectant Cleaner – [Safety data sheet](#)

PurTabs Disinfectant tablets – [Technical & efficacy data sheet](#)

PurTabs Disinfectant tablets – [Safety data sheet](#)

Electrostatic Sprayers & Pump Sprayers

Electrostatic sprayers are not foggers or misters, they are directional and surface-specific, battery-operated, and electrostatically charged sprayers.

Electrostatic sprayers and pump sprayers will be used by custodial staff and some specific, trained bus drivers and Transportation staff to disinfect schools and equipment/instruments. Transportation staff will disinfect buses daily.

Electrostatic & pump sprayers will only be used when students and staff are not present by trained staff who are provided the proper eye protection and gloves. We will also use these after any outbreak.

Personal Protective Equipment and Training

Custodians have been trained to use all cleaning and disinfecting products and equipment. All cleaning and disinfecting products will be labeled with ingredients and directions for use. Staff using pump sprayers will be provided goggles and gloves for use when disinfecting. Goggles will be available as necessary upon request.

Storage of Cleaning and Disinfecting Products

All cleaning and disinfecting products will be stored in concentrated form in custodial closets behind locked doors.

Cleaning and Disinfecting Protocols

Staff will only use approved cleaning products and supplies the district custodial team provides. Staff **will not** purchase or bring their own cleaning or disinfecting products

(bleach, Clorox wipes, etc.) Each classroom in our schools will be provided with approved cleaning products by custodial staff. Students **will not** be allowed to use these products unless part of the curriculum i.e., cosmetology, culinary arts, etc.

Disinfecting of high-touch areas (desks, chairs, tables, door handles, etc.) by custodial staff will take place daily. While the custodial staff will ensure that these areas are disinfected daily, the collaborative effort of all staff helping disinfect will ensure we can keep our schools clean and safe for our students, staff, and community.

Health rooms will be disinfected thoroughly between uses.

Cleaning Protocols After a School-Wide COVID-19 Exposure

In the event of a school-wide COVID-19 exposure, the school district will consult with Clackamas County Public Health experts to determine if the school needs to close and the closure duration.

The district will work with Clackamas County Public Health Authority to determine if additional cleaning and disinfecting protocols are needed after a school-wide exposure incident. When safe to do so, District custodial staff will clean the affected areas of the school with pump sprayers and PurTabs.

The District will consult with Clackamas County Public Health Authority to determine when the school is safe for reopening to students and staff following a school-wide exposure incident.

The following additional cleaning and disinfecting protocols will be implemented in the event of a positive case of COVID-19 in one of our schools or district facilities:

- Notify and consult with the County Public Health department to determine the scope of cleaning and disinfecting needed.
- Assemble the district's trained team with proper PPE
- Assemble the necessary cleaning and disinfecting equipment:
 - o Electrostatic sprayers and pump (directional sprayers)
 - o UV air purifiers

- UV air purifier machines:

The UV air purifier machines are designed to help eliminate odors and destroy bacteria and viruses in the air of enclosed rooms. The UV air purifiers incorporate UV light into occupied areas. No chemicals are involved in the use of the machines, so there is no requirement for a safety data sheet. These will be plugged in in each room being used.

- Using approved cleaners and disinfectants, the cleaning team will manually wipe down all flat surfaces, desks, countertops, doors, door handles, chairs, floors, etc.
- After the manual wipe-down, the team will use the electrostatic or pump sprayer with approved disinfectants to ensure the entire building/facility has been disinfected.
- Once the team completes the disinfection phase, the UV air purifier machines will be used overnight to purify the air.
- The district cleaning team will consult with Clackamas County Public Health officials

to determine if any further cleaning or disinfecting procedures need to be taken and the timeline for allowing staff and students to return to using the building safely.

Cleaning Protocols for Transportation

Transportation staff will clean high-touch surfaces (bus seats, door handles, guard rails, etc.) daily.

Transportation staff will clean and disinfect buses using the approved cleaning and disinfecting products and equipment on which they have been trained.

Additional Resources

CDC Cleaning Guidelines - [CDC Guidelines for Cleaning Schools](#)

How to clean - [How to clean sheet](#)