SDUSD VENTILATION - PHASE 2

What do we do to keep our air quality safe?

In the classroom, this is what needs to be done <u>daily</u> to achieve adequate air exchanges and have the best possible air quality:

- **Keep your ventilation running** – AC or heat
- **Bring in the fresh air -** open your doors and windows

Do all of these at the same time!

- **Leave the air purifiers running on auto mode –** set and forget, no need to change the setting or turn them off. The setting for "plasmawave" should remain "off."
- **We want the ventilation running more** – centrally monitored, it will start earlier and run later.
- **Don't run your ceiling fans or wall-mounted fans** – they can induce potentially contaminated airflow directly from one person over another.
- **Wear required facial coverings** – the first line of defense in limiting the number of airborne particles which reduces airborne transmission of COVID-19.
- **Plan ahead** – we are moving a lot of air - It may not be as comfortable in your classroom/office.

What is the District doing to make it safer?

Ventilation is a key component to reduce the spread of COVID-19 in schools. As the district moves to having more people on campus and students in classrooms, ensuring adequate room ventilation is key to reducing the airborne transmission of COVID-19 indoors. **Adequate ventilation is achieved by bringing in more outdoor air, either through open windows and doors or through the HVAC system; And by providing recirculated air that is highly filtered.** These are best practices for diluting or displacing airborne COVID-19 particles if the particles happen to be present in a room.

The District has planned for maximum ventilation, with our goal to maintain five air exchanges per hour in the classroom. This is based on guidance from Harvard and the University of Colorado Boulder and in collaboration with our UCSD expert panel. In order to achieve this, Physical Plant Operations (PPO) has made sure we have the following in place:

- Using **<u>natural ventilation</u>** (opening doors and windows) whenever possible, even when the HVAC is running.

- All existing **<u>HVAC</u>** systems have been serviced and filters have been replaced. The continued review of HVAC systems has helped determine where higher filtration levels (i.e. MERV-13) can be employed. MERV-13 filters are being installed in every viable HVAC system identified. All HVAC filters will continue to be scheduled and replaced on a regular basis. **For the information of the staff, MERV-13 stickers are being placed on door frames at the entry to rooms after MERV-13 installation. WITH THE EXCEPTION OF LOFT BUILDINGS, ROOMS WHERE YOU SEE THE MERV-13 FILTER EQUIPPED STICKER, OPERATING YOUR HVAC ALONE IS ADEQUATE VENTILATION.**

- Using **<u>air purifiers</u>** with HEPA filters (provides a higher level of filtration). The numbers of purifiers in a classroom will vary based on the size, number of windows, type of HVAC system, etc.
  - Air purifiers should be placed at least 18 inches from the wall and should not have anything blocking the airflow above them (shelves, etc.).
  - If multiple air purifiers are used in the room, spread them throughout the room.
  - Do not place the air purifier near the door, rather place the purifier deeper in the classroom, closer to the students. Do not use extension cords

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- Your custodial staff will be maintaining the units, including cleaning and changing filters. Questions or concerns regarding your air purifiers should be directed to your POS/BSS.

In Summary, Classrooms with staff/students should deploy air purifiers (unless they have MERV-13 filters, then air purifier is generally not needed)

- A standard classroom **without MERV-13 filters** should utilize 2 air purifiers.
- Since Loft classrooms "share the air" every occupied classroom in a loft building should deploy 1 air purifier if the HVAC is equipped with MERV-13 filters, otherwise deploy 2 purifiers.
- Classrooms with staff/students without HVAC should deploy 3 purifiers.
- Office areas with more than one person should deploy air purifiers.
- Large spaces (auditoriums, gymnasiums, MPRs, Library, cafeteria) should leave doors open and run HVAC. These spaces hold large volumes of air so any potentially contaminated air is therefore diluted. Large gatherings in these spaces will still not occur during this time.
- When students are seated less than 6 feet apart, add 1 additional air purifier to the room.

Ventilation Monitoring - PPO will be monitoring ventilation effectiveness in our schools to ensure that the air exchanges are happening and that the air is healthy for students and staff. This will be done centrally with sensors that are monitored remotely for air quality.

Indoor particulate sensors will be rotated to various rooms to gather information and inform decisions. This will allow for adjustments to be made as needed to ensure best outcomes. This sensor informs us on how our air filtering, either through the HVAC system or the air purifier, is doing.

Carbon dioxide (CO_2) detectors have also been purchased to test the air to make sure enough outside air is entering the room. This has a different job than the particulate sensor, and will help to determine the amount of fresh air entering the room.

Neither monitor detects COVID-19, but does help us to determine if we are achieving adequate air exchanges. If either sensor records concerning numbers, PPO staff will take measures to correct the issue.

IF YOU SEE THE MERV-13 STICKER:

- RUN YOUR HVAC
- OPEN DOORS AND WINDOWS
- LOW ROOM OCCUPANCY? (students space 6 feet or more apart) NO AIR PURIFIERS NEEDED, UNLESS IN A LOFT, THEN USE 1
- HIGHER ROOM OCCUPANCY? (students closer than 6 feet apart) - ADD 1 AIR PURIFIER

IF YOU DON'T SEE THE MERV-13 STICKER:

- RUN YOUR HVAC
- OPEN DOORS AND WINDOWS
- LOW ROOM OCCUPANCY? (students space 6 feet or more apart) AIR PURIFIERS NEEDED
- HIGHER ROOM OCCUPANCY? (students closer than 6 feet apart) - ADD 1 AIR PURIFIER

If you have questions regarding the ventilation in your room, first check with your POS/BSS. If you still have questions, please contact PPO via email at mocrecep@sandi.net or via website/staff portal/PPO at PPO Customer Service.

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Ventilation FAQs

Q: My classroom air conditioning has stopped working. What should I do?

A. Report it to your POS/BSS. If the system cannot be quickly repaired, PPO will provide additional air purifiers to supplement your room until the air conditioning is repaired.

Q: My classroom has MERV-13s and windows, do I still keep my air purifiers running?

B. Classrooms with MERV-13s do not need air purifiers because the MERV-13 filters provide the highest level of filtration. The only time you would need to have air purifiers is if your HVAC is not working properly or if your students are less than 6 feet apart

Q: I don't have any windows in my classroom, what do I do to make sure I have adequate air exchanges?

A. Your room is relying on the other components to get the adequate air exchanges, fresh air from your HVAC system and filtered air from your HVAC system and air purifiers, if needed. If your HVAC system is equipped with MERV-13 filters (identifying sticker on your door jamb) your classroom will have proper ventilation with that alone. If your room is not served by a MERV-13 HVAC system, utilize air purifiers in addition to running the HVAC.

Q: My classroom is in a portable/bungalow, and I have a wall unit Air Conditioner. What am I supposed to do?

A. The types of air conditioning units in these rooms will not accommodate the MERV-13 filters. You should run your AC unit all the time, it helps create the needed air exchanges, along with opening your windows and doors, and running your air purifiers.

Q: Keeping the windows and doors open might make the air exchanges better, but it is too hot and too cold, what do we do? Can we close the windows when it is hot?

A. We suggest you and your students dress in layers so that you can adjust if it is too hot or too cold. It is critical that we maintain the air exchanges to prevent the spread of COVID-19.

Q: I have many questions about the monitoring sensors, like how do I get one in my room, what do I need to do if I have one. Where can I find the answers?

A. At this time the district is only providing one of each sensor per school site, which will be moved around to different rooms to check to see if we are getting the needed air exchanges. We have an FAQ document that has more information about the sensors, you can view it here (link).

Q: How long will the filter in my air purifier last?

A. The air purifier has 3 levels of filters, all of which can be easily changed by your site's custodial staff. First, the purifier has a screen for big particles that should be checked and cleaned about once every two weeks.

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Second, the purifier has a carbon filter that should be changed once every three months. Finally the HEPA filter in the purifier lasts a year.

Q. How is the ventilation requirement of 5 air exchanges per hour calculated?

A. Five air exchanges per hour means an amount of clean air, equivalent to the volume of the room, moves through the room 5 times in an hour, or once every 12 minutes. What counts as clean air? Outside air or air that is highly filtered. Outside air comes from two sources, open doors and windows and, outside air brought in by the HVAC system. Filtered air may also come from two sources, the HVAC system and the room air purifiers. We consider highly filtered air in the HVAC system as air that passes through a MERV-13 filter. (Note that the HVAC system provides a mix of outside air and filtered air, so it is important to keep it running even with a lower level filter.) It is the combination of these sources that gets us the air exchange in the classroom. As an example:

A standard (960 square feet with 10 foot ceilings) classroom has a volume of 9,600 cubic feet.

To make five air exchanges in an hour that means 9,600 X 5 = 48,000 cubic feet of air in an hour, or 800 cubic feet of air every minute.

HVAC system (a "good" system as defined by Harvard, but not MERV-13) and open windows provide 480 + cubic feet per minute of outside air into the room	480 cubic feet per minute
Room air purifiers (The Winix air purifiers we have provides a "clean air delivery rate" of 243 cubic feet per minute). With two in a room = 2 X 243	486 cubic feet per minute
Total - exceeds the 800 cubic feet per minute needed	966 cubic feet per minute
Working it backwards - 966 cubic feet per minute x 60 minutes = 57,960 cubic feet per hour. Divided by the volume of the room (9,600 cubic feet) =	6.04 air exchanges per hour

A room with MERV-13 filter (recently completed air conditioning installed at La Jolla HS. 920 square feet room with a 10 foot ceiling. similar calculation to above, looking for 767 cubic feet of air every minute).

Airflow from the HVAC system, as measured at the completion of construction. High level filtration (MERV-13) filter installed and a minimum of 20% outside air provided	1,933 cubic feet per minute
Room air purifiers (The Winix air purifiers we have provides a "clean air delivery rate" of 243 cubic feet per minute).	Not needed
Total - exceeds the 767 cubic feet per minute needed	1,933 cubic feet per minute
Working it backwards - 1,933 cubic feet per minute x 60 minutes = 115,980 cubic feet per hour. Divided by the volume of the room (9,200 cubic feet) =	12.6 air exchanges per hour