



COVID-19 GUIDANCE

Ventilation in schools

Quick tips and resources

The basics: Check your system's operations, improve it as needed, and maintain it.

Check that your mechanical systems are operating well

- Have your HVAC system tested/balanced and/or commissioned by a licensed HVAC professional (see the [EPA's website on commissioning in schools](#)).
- Make sure filters are clean and inserted according to the manufacturers' requirements.
- Ensure exhaust fans that draw air out of the building are clean and functioning as designed.
- Avoid having non-maintenance staff adjust vents or ventilation system settings.

Improve ventilation in the building

- Increase outdoor air coming into your building by changing the settings on your mechanical system.
- Use filters in your HVAC systems that have the [highest filtration \(MERV\) levels](#) that your systems can accommodate. Ideally, use a MERV 13 or higher filter.
- Run exhaust fans continually while the building is occupied.
 - Start fan usage at least two hours before the building is occupied by students.
 - Continue fan usage until the building is no longer occupied in the afternoon/evening, preferably for two hours after the building is no longer occupied. Run fans in bathrooms and locker rooms throughout this period, regardless of space's current occupancy.
- Open windows when weather and outdoor air quality allows.
 - Create cross ventilation by: opening windows that are near the ceiling and close to the floor, opening windows on opposite sides of the room, and/or using fans in windows to encourage air movement.
- Invest in supplemental air cleaning systems that are affordable and effective if existing ventilation strategies are inadequate.
 - Portable room filtration systems (e.g. HEPA filters): Make sure that the air turnover per hour is adequate for your space (use a [sizing calculator](#) to assess your space needs) and the noise level of the system will not be distracting to occupants.
 - At this time, it is not recommended that schools use [ultraviolet germicidal irradiation \(UVGI\)](#) except in very specific situations, in consultation with

qualified experts. [Bipolar ionization](#) (sometimes called needlepoint bipolar ionization, or NBPI) is not recommended. These strategies are costly and have not been proven to be effective in school environments; further, some of these systems can have unintended harmful byproducts, such as release of ozone.

Maintain your systems

- Communicate maintenance needs to in-house staff and contractors through a written maintenance plan and accurate logs.
- Change filters every three to four months, or according to manufacturer's recommendations.
- Regularly check that ventilation systems/practices are working.
 - Schedule regular maintenance visits with an HVAC technician (do not wait until something seems "broken").
 - Consider using devices such as [CO₂ sensors](#) to see if your ventilation systems/practices are working.
- Test and balance ducted HVAC systems at least every three to five years, or any time systems are not functioning well (contact a licensed HVAC company for this).
- Re-commission ducted HVAC systems at least every five to ten years, or any time systems are not functioning well (contact a licensed HVAC company for this).

Learn more

YouTube video series by University of California Davis:

- Recorded Webinar "The Path to COVID 19 Recovery: How to Improve Indoor Air Quality when Reopening K-12 Schools" (60 minutes):
<https://www.youtube.com/watch?v=clfE3VI-gMg>
- "The Importance of Ventilation in Schools" (Six minutes):
<https://www.youtube.com/watch?v=F9hB9BgonHs>
- "The Importance of Filtration in Schools" (Eight minutes):
https://www.youtube.com/watch?v=ycgLBUfIM_c

Guidance Documents specific to schools

- CDPHE- Practical Guide for Operationalizing CDC's School Guidance:
<https://covid19.colorado.gov/practical-guide-for-operationalizing-cdc-school-guidance>
- CDC Guidance - Ventilation in Schools and Childcare Programs:
<https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/ventilation.html>
- ASHRAE Guidance for Schools:
<https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-reopening-schools-and-universities-c19-guidance.pdf>

Reach out to the CDPHE COVID Industry team

For questions about ventilation in indoor settings and COVID-19 risk, email us at: cdphe_cdb_covidindustryteam@state.co.us.

Resources linked in text

1. Commissioning HVAC Systems (EPA Webpage):
<https://www.epa.gov/iaq-schools/building-commissioning-part-indoor-air-quality-design-to-ols-schools>
2. Information on HVAC Filters and MERV Ratings:
<https://www.ashrae.org/technical-resources/filtration-and-disinfection-faq>
3. Air Purifier Sizing Calculator: <https://reviewsofairpurifiers.com/cadr-calculator/>
4. Using UVGI Technology in Schools:
<https://www.edweek.org/leadership/should-schools-use-uv-light-to-eliminate-covid-19/2021/03>
5. Bipolar Ionization Information from UC Berkeley:
<https://citiesandschools.berkeley.edu/blog/stick-to-proven-technologies-for-air-cleaning-in-schools-the-case-of-ionization-technologies>
6. Use of CO₂ Sensors and COVID:
<https://ncceh.ca/content/blog/can-co2-sensors-be-used-assess-covid-19-transmission-risk>