



Improving Indoor Air Quality through Ventilation & Filtration

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A guide to cost-effective HVAC

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Building owners are encouraged to consult with a State of Ohio registered mechanical/HVAC professional engineer, HVAC designer with a certification from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), holder of ASHRAE's Operations and Performance Management Professional (OPMP) certification, or a Certified Industrial Hygienist (CIH®) to improve indoor air quality (IAQ) in their facilities.

Strategies to Improve Indoor Air Quality

Most buildings, like schools, offices, and businesses, have heating, ventilation, and air conditioning (HVAC) systems that are maintained by building maintenance or HVAC professionals. These professionals should consult ASHRAE's technical resources and use the resources below

to ensure the HVAC system meets or exceeds the minimum recommended outside air and air exchange rate with the highest possible filtration efficiency, while still managing energy efficiency.

The recommendations below are a stepwise approach for effectively improving IAQ:

- I. **Engineering services:** Use engineering services like recommissioning/retro-commissioning to assess existing HVAC systems to determine feasible options for improving IAQ, ventilation, and filtration.
- II. **HVAC system design:** Ensure levels of outdoor air provided to the room/building match the permit-approved system design documents and ASHRAE 62.1. Review the HVAC system design before increasing mechanical ventilation.
- III. **HVAC system maintenance:** Service the HVAC system to ensure ventilation and outdoor air supply systems are operating as designed.
- IV. **Ventilation improvements:** Modify the HVAC system to meet or exceed the

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ventilation requirements of ASHRAE 62.1. Consider operable windows to enable natural ventilation.

- V. **Filtration improvements:** Install MERV 13 or higher filters for HVAC systems and/or deploy portable in-room HEPA filter units.
- VI. **HVAC system monitoring:** Install temperature, humidity, and carbon dioxide (CO₂) sensors to help identify IAQ issues.

Links and Resources:

- [California Air Resources Board \(CARB\) – List of CARB-certified air cleaning devices](#)
- [HVAC and plumbing industry guidelines for Ohio schools](#)



Definitions:

- **HEPA:** “High efficiency particulate air [filter]”. A type of pleated mechanical air filter that can theoretically remove at least 99.97% of dust, pollen, mold, bacteria, and any airborne particles with a size of 0.3 microns (µm).
- **IAQ:** “Indoor air quality”. IAQ refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of

building occupants. Understanding and controlling common pollutants indoors can help reduce your risk of indoor health concerns.

- **MERV:** “Minimum efficiency reporting value”. A single number filtration efficiency value used to express the ratio of the downstream-to-upstream particle counts across three particle size ranges. For more information, see the [What is a MERV Rating](#) Guide created by the US Environmental Protection Agency.

For general questions, contact:
[BWC’s Safety Services.](#)