

Indoor Air Quality in Schools

A Primer for Teachers



Plants and other items placed on top and in front of ventilation equipment can contribute to poor indoor air quality

Maintaining a healthy indoor environment in schools supports good learning and health outcomes. Below are some simple steps staff can take to help maintain or improve indoor air quality.

Ventilation

All ventilation systems throughout the building should operate continuously during periods of school occupancy. Ventilation refers to both the supply of fresh air and the removal of stale air from a room. Fresh air is provided mechanically by unit ventilators (univents) or air-handling units (AHUs) that are connected to wall- or ceiling-mounted supply diffusers, or naturally via open windows. Roof top exhaust fans or AHUs connected to wall- or ceiling-mounted exhaust vents mechanically remove stale air from classrooms. Opening windows and classroom doors on opposite sides of a building can also create cross ventilation, which allows fresh air to enter one side of the building and stale air to exit from the other.

Fresh Air Ventilation Tips

- **Do** run ventilation equipment during school hours.
- **Do** allow at least 3 feet of space around and on top of ventilation components to facilitate airflow.
- **Do** talk to the facility staff about temperature and noise concerns before making thermostat adjustments.

- **Don't** place items such as plants, fragrant products, or pencil sharpeners on top of univents or near air diffusers. The airstream can distribute odors and debris from these items throughout a room.
- **Don't** turn off univents or ventilation equipment because the air feels too hot or too cold or the unit is noisy. Turning off the equipment prevents fresh air delivery.

Helpful Hint: Most classrooms have a univent that brings in and filters fresh/outside air. To increase airflow, ensure univent fan is "on" and controls are set to "med" or "high."

Exhaust Ventilation Tips

- **Do** inspect exhaust ventilation for proper function and report concerns to maintenance staff.
- **Do** keep the space in front of exhaust ventilation clear.
- **Do** ask the facility operator to wipe off dust that settles onto the grill/fins of exhaust vents.
- **Don't** place items or furniture in front of exhaust vents, since this blocks airflow.

Helpful Hint: Hold a piece of paper or tissue directly in front of the exhaust vent. It should be drawn towards the vent, which indicates proper exhaust function.

Natural Ventilation Tips

- **Do** open windows when it is nice out, and close them at the end of the day. Open windows supplement fresh air to classrooms.
- **Don't** open windows in rooms when air-conditioning is operating, since humid air entering through the windows can increase the likelihood of mold growth.

Helpful Hint: Ensure windows are properly closed at night and on weekends to avoid freezing pipes and potential flooding during winter months.

Moisture and Microbial Growth

Molds are found naturally in our environment both indoors and outdoors. Inside, mold growth may occur when items, particularly porous products such as paper or gypsum wallboard, are exposed to moisture. Typical water sources include leaks, floods, and condensation. To avoid mold growth, dry all water-damaged items and affected areas within 24-48 hours and reduce indoor humidity. Some people with chronic respiratory conditions, such as asthma, are more likely to experience health symptoms associated with molds, including allergic reactions and respiratory irritation. Controlling moisture is the key to preventing mold growth and potential health symptoms.

Mold and Moisture Prevention Tips

- **Do** report leaks and spills immediately.
- **Do** monitor water stains on ceiling tiles and other building materials, particularly in areas where water leaks were previously observed.
- **Do** keep refrigerators clean to avoid odors and microbial growth.
- **Do** ensure plants are maintained and equipped with drip pans. Examine drip pans periodically for mold growth and disinfect with an appropriate antimicrobial
- **Don't** place porous items, such as paper, or cardboard, in areas prone to moisture or condensation, such as window sills, under sinks, or basements.
- **Don't** place plants on top of univents or below fresh air supply vents, since the airflow can distribute plant pollen, debris, and molds throughout the room.

Helpful Hint: Close the windows when air-conditioning is on to prevent moist air from entering the building. Excess moisture indoors can lead to mold growth.

Source Pollution and Classroom Cleanliness

Sometimes, learning tools and personal items in a classroom can be a source of irritants. For example, a bird or insect nest is a great learning tool for students, but may harbor microbes and allergens. Similarly, food-based projects can attract pests that carry disease or trigger allergies.

Personal products, particularly those with volatile organic compounds (VOCs) including scents, can also be a source of respiratory irritation.

Although janitorial and maintenance staff perform routine cleaning in classrooms, they may not be cleaning as effectively if classroom items aren't picked up or surfaces are cluttered. Dust, a common respiratory and eye irritant, can collect on surfaces and items.

Classroom Cleanliness Tips

- **Do** relocate or reduce the amount of materials stored in classrooms to allow for more thorough cleaning. Sort and discard papers and items regularly.
- **Do** clean and wipe down portable fans to prevent dust settled on fan blades from blowing around a classroom.
- **Do** wipe learning aids, props, and chalk/dry erase marker trays regularly with a wet cloth or sponge to prevent excessive dust build-up.
- **Do** use a vacuum cleaner equipped with a HEPA filter in conjunction with wet wiping of all non-porous surfaces to control dusts.
- **Do** clean up properly after projects using food or soil as these materials can attract pests.
- **Do** ensure safety data sheets (SDSs) are on file at the school in case of emergencies.
- **Do** ensure cleaning products used in classrooms are provided by the school department and stored properly in cabinets.
- **Don't** bring in cleaning products from home. It is important that cleaning products used throughout a school building are consistent to prevent chemical interaction.
- **Don't** place cut tennis balls on chairs. Tennis balls contain latex, which can trigger allergic responses
- **Don't** use air deodorizing products, since these can be respiratory irritants.

Helpful Hints: Use plastic totes to store loose items; Use building provided cleaning products; and Ensure all cleaning supplies are properly labeled and stored.

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