Protect Students & Faculty with Proper Indoor Air Hygiene
Schools are the Next Battleground for COVID Defense

The New York Times

The Coronavirus Can Be Airborne Indoors, W.H.O. Says

New coronavirus cases are emerging at schools. How much you know depends on where you live.

Coronavirus Update: Multiple provinces report school-linked cases as thousands of students return to class
Indoor Air Hygiene is Critical

- 90% of our lives indoors*
- 70% inside our home
- 33% in our bedroom
- 16% in a classroom**
- 8% outdoors
- 3% in a vehicle

*Reference: LNBL National Human Activity Pattern Study (NHAPS, 2003)
** Estimated time a K-12 student spends in a school
Indoor Air Hygiene is Critical

Evidenced relationship between Health Outcomes & Exposure to poor indoor air quality

<table>
<thead>
<tr>
<th>Condition</th>
<th>2004</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper respiratory tract</td>
<td>Sufficient evidence</td>
<td>Sufficient evidence</td>
<td>Sufficient evidence</td>
</tr>
<tr>
<td>Wheeze</td>
<td>Sufficient evidence</td>
<td>Sufficient evidence</td>
<td>Sufficient evidence</td>
</tr>
<tr>
<td>Cough</td>
<td>Limited or suggestive</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Limited or suggestive</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
</tr>
<tr>
<td>Exacerbation of asthma</td>
<td>Not evaluated</td>
<td>Sufficient evidence</td>
<td>Not evaluated</td>
</tr>
<tr>
<td>Development of asthma</td>
<td>Limited or suggestive</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
</tr>
<tr>
<td>Current Asthma</td>
<td>Not evaluated</td>
<td>Sufficient evidence</td>
<td>Not evaluated</td>
</tr>
<tr>
<td>Ever diagnosed asthma</td>
<td>Not evaluated</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>Not evaluated</td>
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<td>Limited or suggestive</td>
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<tr>
<td>Respiratory infections</td>
<td>Not evaluated</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>Not evaluated</td>
<td>Sufficient evidence</td>
<td>Limited or suggestive</td>
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<tr>
<td>Eczema</td>
<td>Not evaluated</td>
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<td>Limited or suggestive</td>
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<td>Common cold</td>
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<td>Insufficient evidence</td>
<td>Limited or suggestive</td>
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<tr>
<td>Allergy/atopy</td>
<td>Not evaluated</td>
<td>Clinical evidence</td>
<td>Clinical evidence</td>
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<tr>
<td>Hypersensitivity pneumon</td>
<td>Clinical evidence</td>
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</tbody>
</table>

Credit: Sloan, Microbiomes of the Built Environment
The 3 Pillars of Superior Indoor Air Quality

- Ventilation
- Dehumidification
- Filtration

Source: Harvard Chan School of Public Health; American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
Who is Madison – Indoor Air Hygiene

Because every breath matters.
Immediate Steps You Can Take – Drop-in Solutions

1. Add a Portable AirScrubber® to high-trafficked spaces and rooms.
   - Removes 99.99% of aerosols carrying many viruses and bacteria*.

2. Upgrade HVAC filtration to Merv 13 to capture more harmful pathogens.

3. Flush your facility with clean outside air.
   - ASHRAE recommends you review HVAC programming to provide flushing two hours before and post occupancies.
Longer-term Consideration – Augment/Upgrade HVAC

1. Bring in more outside air with Dedicated Outdoor Air Systems.
   By upgrading your HVAC system to bring in fresh, conditioned air, you avoid recirculating airborne contaminants.

2. Control humidity with dehumidification systems.
   Maintain proper humidity levels to prohibit virus, bacteria and mold reproduction and function.
“COVID-19 Is Transmitted Through Aerosols. We Have Enough Evidence, Now It Is Time to Act.”
PuraShield

**Removes 99.99% of aerosols carrying virus**

**PuraShield 500:**
- In-room mobile unit with a one-step filter cartridge change out. 400 CFM

**PuraShield 1000:**
- Versatile application with multiple filter options for antimicrobial, odor or corrosion applications. 600 CFM
**ASHRAE Recommendations**
Introduce portable electric HEPA machines in each classroom.

**K-12**
- PuraShield 500 in every classroom, locker room and teachers lounge
- PuraShield 1000 in cafeteria or other large, shared space

**University**
- Place where social distancing is likely to breakdown: cafeteria lines, dorm room common areas or classroom corridors
- PuraShield 500 or 1000 in the classroom depending on size
Thank you

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Sales@IndoorAirHygiene.com
Appendix
Solving Indoor Air Hygiene Challenges in Schools

To help reduce the risk of spreading infection among the students and staff, changes are often needed to the ventilation and filtration systems to ensure that the indoor environment is maintaining the appropriate level of hygiene.
The residences, bathrooms, elevators, laundry and lounges are high traffic areas and commonly occupied where social distancing cannot always be maintained by students. Improving the air hygiene is critical to prevent the spread of the virus.

- Upgrade existing hvac system to 100% outside air and 6 ACH
- Upgrade efficiency to MERV 13 or higher which will capture more pathogens
- Ensure proper humidity control with Addison units: AK Series, PR Series, M Series
- Install Stand Alone HEPA systems in gathering areas and entrances: Purashield 500/1000
Laboratories and classrooms are designed for collaborative learning which makes social distances difficult. In addition, long-term student occupancy makes security protocols even more difficult. Providing a hygienic environment is essential for their health.

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New safety measures and physical distancing are a huge challenge for dining hall and recreation centers that are gathering high traffic students for a long-term occupancy of space. Additional procedures are essential for their safety.

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- Install Stand Alone HEPA systems in gathering areas and entrances: Purashield 500/1000
- Bring conditioned outside air into your facility with DOAS – Dedicated Outdoor Air Systems (100% outside air supply, to control temp. & humidity and pushing out the bad air).
Staff in administration spend hours every day in their offices. They will feel more at ease knowing that steps have been taken to reduce pathogens from the air for their safety.

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Libraries provide vital services and resources for students but face the physical distancing and long-term occupancy challenges. They must augment the HVAC system to provide a more hygienic environment.

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- Ensure proper humidity control with Addison units: AK Series, PR Series, M Series
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- Augment existing molecular filtration with anti-microbial Purafil solution
- Bring conditioned outside air into your facility with DOAS – Dedicated Outdoor Air Systems (100% outside air supply, to control temp. & humidity and pushing out the bad air).