

CLEAN AIR SPECIAL REPORT

**Protect Against Asthma & Allergies
at Work, School, and Other Shared Spaces.**



EXECUTIVE SUMMARY

For the millions of Americans suffering from asthma and allergies, there are plenty of relief strategies available for the home. But what about in offices, schools and other shared facilities where allergies and asthma triggers are harder to avoid? And why isn't more done to fight them where people spend the majority of their time during the week?

Every day, millions of Americans go through the work or school day hindered by subpar air.

Nearly 50 percent of schools in the U.S. report problems with indoor air quality (IAQ).¹ Adults often deal with similar or worse conditions in the workplace. In these facilities, asthma and allergy triggers reduce productivity and increase absenteeism.

Facility managers have the ability to help provide relief. Air purification is a must-have component of modern facility and employee health management.

"As a society, we need to take more seriously how the environment affects physical and mental health, not only in the home, but also in the buildings in which we work and in which our children learn," said Dr. Cary Sennett, President and CEO of the Asthma and Allergy Foundation of America (AAFA). "Employers and educators need to provide healthier offices and learning facilities – not just for the safety of people with asthma and allergies, but so that everyone can enjoy more productive and healthful work environments."

In this report, you'll learn about the perils of poor indoor air quality (IAQ) in workplaces and schools and how you can help those suffering from asthma and allergy symptoms.

¹ "Your role on the indoor air quality action team," U.S. Environmental Protection Agency, IAQ for Schools. <http://nepis.epa.gov/exe/zyNET.exe/9101Z0N5.TXT>

THE ROI OF CLEAN AIR

People who are extremely sensitive to allergens cannot function effectively in environments that regularly trigger their allergies or asthma. Yet, many organizations neglect to make changes in these environments to accommodate them, despite the value it provides.

The benefits of clean air extend to everyone in a facility. Proactively minimizing airborne contaminants in facilities:



Improves productivity



Reduces common complaints, such as odors



Reduces absenteeism from allergies, asthma



Creates a more positive and health-focused work environment



Improves perceptions of a facility

Cleaner air also provides a significant return on investment. A 2015 study by researchers at Harvard, Syracuse and SUNY Upstate Medical University found that workers in environments with cleaner IAQ scored up to 61 percent higher on cognitive assessments.²

Related research quantified the average value of that improvement at \$6,500 per employee per year.³

The benefits from a human resources perspective are very clear: Effectively removing dust mites, allergens, volatile organic compounds (VOCs) and pollutants from the air creates more comfortable environments for those with chronic respiratory conditions. Clean air may also allow some allergy and asthma sufferers to be less reliant on medication.

For these reasons and more, office workers, parents and consumers are demanding that academic and professional institutions do more to provide clean and healthy facilities by purifying the air. Facility managers and human resource executives have the opportunity to advocate positive change, using strong evidence to support the initial investment.

² "Associations of cognitive function scores with carbon dioxide, ventilation, and volatile organic compound exposures in office workers: A controlled exposure study of green and conventional office environments," Joseph G. Allen, Piers MacNaughton, Usha Satish, Suresh Santanam, Jose Vallarino, and John D. Spengler, October 26, 2015. <http://ehp.niehs.nih.gov/wp-content/uploads/advpub/2015/10/ehp.1510037.acco.pdf>

³ "Economic, environmental and health implications of enhanced ventilation in office buildings," Piers MacNaughton, James Pegues, Usha Satish, Suresh Santanam, John Spengler and Joseph Allen, November 18, 2015. <http://www.mdpi.com/1660-4601/12/11/14709/html>

HOW POOR INDOOR AIR QUALITY AFFECTS US EVERY DAY

In the U.S. alone, asthma affects more than 25 million people,⁴ and nasal allergies affect 50 million.⁵ Let's consider what life can be like for people who suffer from allergies and asthma.

For students, chronic respiratory conditions can be a major detriment to learning. Environments with poor IAQ result in distractions, missed class time and even long-term absenteeism. **Students miss more than 16 million school days each year** due to asthma and allergies being triggered. Research shows that poor IAQ even negatively impacts academic performance.

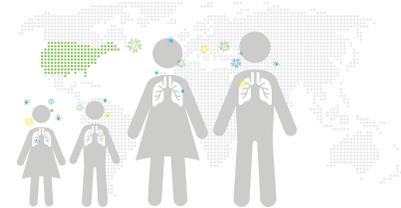
"I have often had students miss anything from several minutes to multiple days related more to asthma than allergies, though both have happened. There are many cases where the school nurse may not have been made aware that a student has a diagnosis of asthma or allergies," said Mary Ellen Conley, BSN, RN, NCSN, and governance chair on the AAFA board of directors. "This is problematic as valuable class time is lost for the student, parents miss work to care for a sick child and there is a missed opportunity to provide assessment and management of the allergy or asthma."

For workers, these conditions can be equally frustrating. Asthma and allergies constitute about **14.2 million missed** days of work in the U.S. each year. Workers only have so much control over allergens and contaminants polluting their work environments, even if they take extra measures to avoid triggers.

From the perspective of an employer or HR manager, poor indoor air quality can negatively impact the bottom line. Organizations often overlook these issues, despite the fact that they take a long-term toll. **Asthma is estimated to be an economic burden of \$20.7 billion annually**, with \$5.1 billion of that total being directly attributed to indirect costs such as sick days and lost productivity.⁶

DID YOU KNOW?

ASTHMA AND ALLERGIES CAUSE
40,000
AMERICANS



TO MISS SCHOOL
OR WORK EVERY
SINGLE DAY.

⁴ "What is asthma?" National Institutes of Health, August 2014. <http://www.nhlbi.nih.gov/health/health-topics/topics/asthma>

⁵ "Allergy facts," American College of Allergy, Asthma & Immunology, retrieved February 2016. <http://acaai.org/news/facts-statistics/allergies>

⁶ "Allergy facts," American College of Allergy, Asthma & Immunology, retrieved February 2016. <http://acaai.org/news/facts-statistics/allergies>

EACH YEAR IN THE U.S., IT'S ESTIMATED THAT AIRBORNE ALLERGENS AND OTHER POLLUTANTS THAT TRIGGER ASTHMA CAUSE:



35
MILLION

upper respiratory
tract symptoms*



16
MILLION

school
absences



14.2
MILLION

lost
work days

Airborne allergens: Something in the air, National Institutes of Health, April 2003. <https://www.tpchd.org/files/library/d9d39f5c1a254654.pdf>

Additionally, research shows that allergens are getting increasingly potent and remaining in season longer. This is due to increasing air pollution and other factors, which could further negatively impact workers' health and well-being in the future.

In short, improving indoor air quality can greatly benefit building occupants and reduce common complaints such as odors and dust.



WHY COMMON AREAS SUFFER

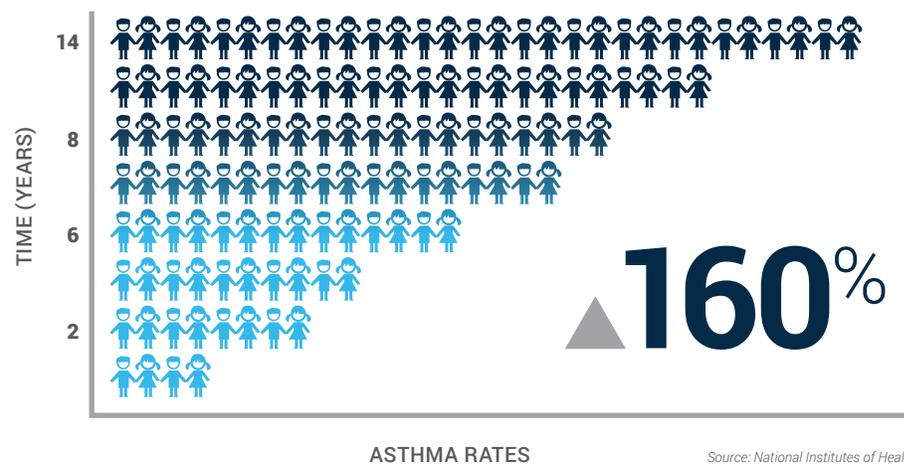
Asthma is the most common illness in childhood and the leading cause of absenteeism among school-aged children. It is often triggered by common airborne contaminants including dust, mold, allergens and viral respiratory infections, such as the flu. Unfortunately, people with asthma are more likely to suffer severe complications from influenza, which frequently spreads through the air in common areas such as classrooms, restrooms and locker rooms.

Asthma and allergies can also be triggered by poor building conditions, hazardous building materials or even cleaning supplies. Half the schools in the U.S. have IAQ complaints stemming from these factors. Workplaces often have similar problems, especially in restrooms, conference rooms and break rooms that regularly experience high traffic. In these areas, HVAC adjustments often can't adequately address the problem.

Approximately 1 in 4 buildings, including schools and offices, suffer from sick building syndrome (SBS) because of poor indoor air quality. Buildings with SBS often cause immediate symptoms such as dizziness, focusing difficulties and nausea for many occupants. They also create unsafe environments for those with allergies and asthma.

Similarly, occupational or work-exacerbated asthma often occurs from working in areas with fumes, gases or contaminants in the air, such as laboratories, healthcare facilities, bakeries, mills or factories. In general, work-related asthma is one of the most prevalent occupational lung diseases.⁷ Whereas these conditions can easily be addressed in the home, it is more challenging to develop building-wide initiatives in organizational or educational settings.

Asthma rates in children under the age of 5 have increased 160% over a 14-year period.



⁷ "Work-related asthma: Diagnosis and prognosis of immunological occupational asthma and work-exacerbated asthma," X Munoz, MJ Cruz, V Bustamante, JL Lopez-Campos, E Barreiro. December 13, 2013.

MINIMIZE ASTHMA AND ALLERGY TRIGGERS WITH CLEAN AIR

On average, **Americans spend 90 percent of their time indoors** and nine hours in shared spaces. Millions occupy unhealthy environments every day, but the underlying problem is not addressed in most schools, workplaces and common indoor environments. Cleaning the air is the most effective way to address the airborne pollutants that trigger allergies, asthma and other health problems.



Whether it's allergens and pollution entering from the outdoors, VOCs from building materials and cleaning products or the flu virus contaminating a room by an unexpected sneeze, a wide variety of sources can release triggers into common areas.

To mitigate the volume of triggers, some organizations have banned perfumes and fragrances so that they do not spark breathing problems for other employees.⁸ Others have switched to green cleaning products rather than harsh chemicals and monitor overall usage.

Despite these measures, there's only so much that can be done to control the sources of triggers directly. Continuing research has revealed that **outdoor air pollution** seeps indoors easier than previously imagined.

⁸ "What's that smell?! When workplaces try fragrance bans," National Public Radio, September 22, 2015. <http://www.npr.org/2015/09/22/442189543/what-s-that-smell-when-workplaces-try-fragrance-bans>

Once indoors, airborne contaminants accumulate if proper ventilation and air purification systems aren't in place. For this reason, indoor air is often two to five times more polluted than outdoor air. However, HVAC systems are also an imperfect solution as they can potentially accelerate the spread of germs and other contaminants from room to room.⁹

Targeted air purification is an effective method for eliminating the vast majority of triggers and pollutants in common areas. With the appropriate air purifier, organizations can **remove up to 99.9 percent of airborne pollutants**. Together with source control and improved ventilation rates, air purification creates healthier and cleaner environments for everyone in a building.

“The impact of poor air quality inside schools or the workplace is often overlooked but needs to be considered given the number of hours spent in these environments by most patients. If more attention were placed on improving the air quality in these settings, the impact for people with asthma and allergies would be significant, leading to fewer symptoms, less missed school/work days, and improved quality of life.”

*David Stukus, MD,
Board Certified Allergist/
Immunologist and Assistant
Professor of Pediatrics*

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Columbus, Ohio*

Using these proactive steps to improve IAQ can reduce common work complaints and enhance office well-being. Developing a comfortable and healthy work setting improves employee perception and encourages a more positive workplace culture. Similarly, in schools, improved IAQ is associated with higher productivity and increased academic performance.¹⁰

In educational settings, facility perception also plays an important role. Ninety percent of students agree hygiene is important and 65 percent somewhat or strongly agree that restrooms play a role in the perception of their school's quality.¹¹ Unpleasant odors are one of the most common restroom complaints and directly relate to the room's air quality. Mitigating these problems increases facility satisfaction among students, faculty and visitors.

9 "ASHRAE position statement on airborne infectious diseases," January 19, 2014, <https://www.ashrae.org/about-ashrae/position-documents>

10 "Evidence from scientific literature about improved academic performance," U.S. Environmental Protection Agency, IAQ for Schools, November 5, 2015. <http://www.epa.gov/iaq-schools/evidence-scientific-literature-about-improved-academic-performance>

11 "Are restrooms a litmus test for school quality?" Cascade Tissue Group Poll, October 15, 2015. <http://www.businesswire.com/news/home/20151015005503/en/Restrooms-Litmus-Test-School-Quality>

DEVELOPING HIGHER STANDARDS FOR HEALTHY FACILITIES

People who suffer from allergies and asthma shop carefully, making sure the products they use won't trigger symptoms. That's why programs like the **Asthma and Allergy Friendly™ Certification Program**, run by the Asthma and Allergy Foundation of America (AAFA), are so important. The program certifies products that pass independent scientific testing and are proven more suitable for people with allergies and asthma.



This program is designed to create higher standards for the \$10 billion market for products geared toward people with allergy and asthma. Historically, products such as vacuum cleaners, bedding, toys and personal air cleaners have advertised suitability for people with respiratory conditions without any scientific validation.

Though AAFA has primarily focused on consumer goods, the organization has certified some commercial products due to increasing awareness of the toll asthma and allergy triggers take in public spaces

"AAFA already assists the 60 million Americans with asthma and allergies to make more informed purchasing decisions when looking at allergen-avoidance products for their homes," said Alicia Elkin, brand manager for the **Asthma and Allergy Friendly™ Certification Program**. "But we don't want to stop there. By applying the same strict standards to commercial products, we can help assure asthma and allergy sufferers feel more comfortable in areas that are challenging to control, such as schools and offices."

When it comes to air cleaners, the AAFA has rigorous standards to be certified in this category. Products must meet the following criteria:

- Reduce a majority of allergens in a defined space
- Remove allergens from the air rather than redistribute them
- Maintain healthy levels of ozone in accordance with federal regulations

In the fall of 2015, **AeraMax Professional** became the first commercial-grade air purifier certified **Asthma & Allergy Friendly™** by AAFA. This distinction assures asthma and allergy sufferers, as well as facility managers, that this air purifier is suitable for addressing triggers in areas that need it most.

ONE SIMPLE SOLUTION

AeraMax Professional effectively **removes up to 99.9 percent of allergens and viruses** through a four-stage filtration process that includes carbon filters for odor and VOC removal. The commercial-grade air purifier also uses patented EnviroSmart™ technology to respond to the environment, allowing for efficient and low-maintenance operation, making it ideal for classrooms, conference rooms and offices.



AeraMax Professional III



AeraMax Professional IV

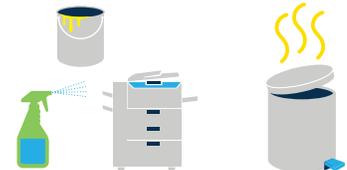
Four-stage filtration



True HEPA filter removes up to 99.9 percent of airborne contaminants, including: Dust, Allergens, and Influenza Virus in common areas up to 1,400 sq. ft.



Carbon filters for odor and VOC removal



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