

Asthma and Indoor Air Quality in Schools

WHY SHOULD WE BE CONCERNED ABOUT INDOOR AIR AND ENVIRONMENTAL QUALITY IN OUR SCHOOLS?

Asthma is a major problem for school-aged children and is the number one cause of school absences due to chronic disease in the U.S. During the time that children are in schools, they are often exposed to poor indoor air quality, which can trigger asthma attacks.

Many schools across the country and in California have been found to have poor indoor air and environmental quality. One study found significant indoor air quality problems, including problems with ventilation, temperature and humidity, air pollutants, floor dust contaminants, moisture, mold, noise, and lighting in California's classrooms.

WHAT ARE THE MAJOR SCHOOL INDOOR AIR QUALITY PROBLEMS FOR CHILDREN WITH ASTHMA?

Research from around the U.S. and other countries has connected poor indoor air quality in schools to health problems, including asthma.

VENTILATION

Studies in California and elsewhere have documented the widespread prevalence of inadequate ventilation in school classrooms. In fact, one report found that one-third of the California classrooms they tested had ventilation rates less than 50% of the level required by state regulations. Another study found that ventilation with outdoor air was inadequate during 40% of classroom hours in California's classrooms. One study documented health benefits from replacing and upgrading ventilation systems. Twelve schools replaced or upgraded their ventilation systems, while 88 schools did not. Before those 12 schools improved their ventilation systems, rates of asthma were comparable in both groups of schools. Two years later, among children completing surveys, the 12 schools with improved ventilation systems had fewer children reporting asthmatic symptoms compared to the other schools.

MOISTURE AND MOLD

Mold, bacteria, and dampness on surfaces or damaged materials have been significantly associated with prevalence of wheezing and/or cough and development of allergy. Moisture-related problems can result from leaks under sinks, in roofs, and under floors or behind walls. In a study of California's schools, 21% of portable and 35% of traditional classrooms had visible water stains on the ceiling. Researchers found three times as many students were diagnosed with asthma over a three-year period after a school suffered serious moisture damage when compared to the three-year period prior to the damage. In one study comparing moisture-damaged schools with a control school from the same area, 89% of children diagnosed with asthma were from the moisture-damaged schools. In another study, schools with higher measured air concentrations of mold or bacteria in classrooms had more students who reported current asthma.

FINISHES, FURNISHINGS, AND CLEANING AND TEACHING PRODUCTS

Volatile organic compounds, or VOCs, are respiratory irritants emitted into the air by building and interior finish materials, furnishings, and cleaning and teaching products. Recent studies throughout California found there were high air concentrations of formaldehyde and volatile organic compounds (VOCs) in some traditional and portable classrooms due to various indoor sources and/or poor ventilation. One study reported there were more students with current asthma in school classrooms with higher concentrations of formaldehyde or other VOCs. Other studies have reported that VOCs in outdoor air were related to the prevalence of asthma symptoms in school children.



A NATIONWIDE SURVEY OF SCHOOL FACILITIES FOUND THAT CALIFORNIA RANKED LAST, HAVING MORE UNSATISFACTORY ENVIRONMENTAL CONDITIONS IN SCHOOLS THAN ANY OTHER STATE.

—U.S. Government
Accountability Office

"Students in my district are hospitalized three times more often than students in other districts in the county. I knew something had to be done, so I chose to focus on policy change. Policies that support children's health are the driving force behind everything that I do. I can't have an asthma program if our students don't have access to health care, if they're not insured, if they can't have access to medications in school, if they don't have trained personnel to recognize asthma emergencies, and if they are going to school in buildings with poor air quality. I can do the best program planning in the world, but without policies in place, there will be nothing left when I leave."

Laurie Bauer, RN, MSPH
District Nurse
Ravenswood City School District

(over)

DUST

Dust in schools has been associated with statistically significant increases in allergic sensitization, incidence of asthma diagnosis, prevalence of asthmatic symptoms, and asthma medication use. In schools dust is found on surfaces like bookcases and smooth flooring, and in carpets, rugs, curtains, and upholstered furniture. Carpets and rugs tend to increase air quality problems; studies have reported allergen levels in dust were higher in carpets and rugs than on smooth floors.

PESTICIDES

To date, few studies have investigated the link between pesticides and children with asthma. However, a growing consensus has developed over the last several years among health and school professionals, public and community health advocates, and even many legislators, that school pesticide use can affect children's health. Given what is known about the health risks of pesticides — for example, exposure can harm the nervous system — and concern about how pesticides may affect asthmatic children, many advocates are promoting the use of less toxic or nontoxic alternatives at schools.

WHAT CAN BE DONE ABOUT ENVIRONMENTAL TRIGGERS IN SCHOOLS?

Community Action to Fight Asthma (CAFA) is a network of asthma coalitions in California working to shape local, regional and state policies to reduce the environmental triggers of asthma for school-aged children where they live, learn, and play. A few examples of local and state policy include efforts to:

- ▶ Create and enforce protocols to prevent and address indoor air quality problems.
- ▶ Increase resources for school facility maintenance and repair.
- ▶ Establish practices and protocols for reducing the presence of environmental triggers in schools by restricting the use of unhealthy cleaning supplies.
- ▶ Adopt and expand policies that notify schools of poor air quality days so that students and staff can reduce exposure to harmful pollution.

Please go to our website at www.calasthma.org to learn more about Community Action to Fight Asthma, connect with local coalitions, locate asthma resources across California, and sign up for our newsletter.

SELECTED REFERENCES (for a complete list of references and detailed footnotes, please visit www.calasthma.org)

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