



# Custodial/Building Maintenance Staff

**A**sthma has become epidemic. It may surprise you, but nearly one in 13 school-aged children has asthma. Because children spend so much of their day in school, it's essential to manage indoor air quality and other environmental factors that affect asthma. By working together, we can help prevent asthma episodes and make sure that children with asthma get the most from their time in school.

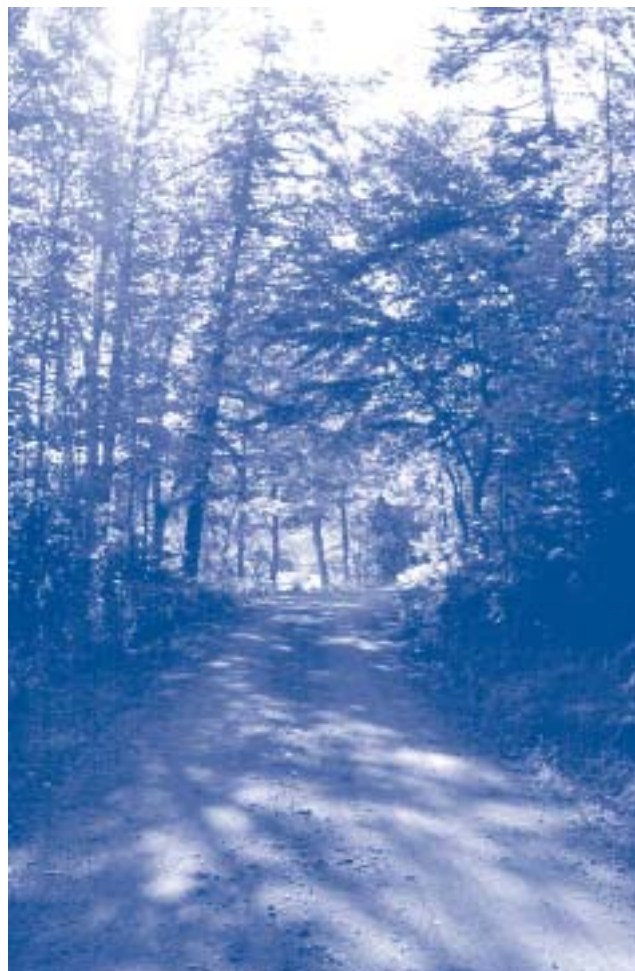
“Poor indoor air quality results from the failure to follow practices that help create and maintain a healthy indoor environment.”



## Why Learning about Asthma is Important to Custodial & Building Maintenance Staff

A healthy school environment leads to healthier, more productive students and staff. There is substantial evidence that indoor environmental exposure to allergens, such as dust mites, other pests, and molds play a role in triggering asthma symptoms. These allergens are found in schools. Studies have shown that poor ventilation or higher levels of indoor air pollution negatively affect student performance and increase student absenteeism.

It is important for custodial and building staff to be aware that environmental factors can cause or trigger an asthma episode and what steps to take to reduce that exposure.





# What You Need to Know

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## What is Asthma?

Asthma is a chronic disease that includes airway constriction (tightening of the muscles around the airways) and swelling of the airways. During normal breathing, air flows freely in and out of the lungs. But, during an asthma episode, linings of the airways (bronchioles) swell, muscles around the airways tighten and mucus clogs the tiny airways, making breathing difficult. The airways become overly responsive (twitchy) to environmental changes, sometimes resulting in wheezing, coughing, breathlessness, or tightness in the chest. During an asthma episode, the child may feel he/she can't inhale enough air, but actually the lungs are having trouble exhaling. The wheezing or whistling sound that is heard is air trying to make its way around the mucus and inflammation in the lungs. Coughing is the body's natural response to rid itself of the mucus. The outcome is a child experiencing an "asthma episode" or a flare up of his/her symptoms.

Asthma symptoms can vary greatly from hour-to-hour and day-to-day. Symptoms are often worse at night and in the early morning hours. The asthma severity varies from child to child and may worsen or lessen depending on the child's symptom control and amount of exposure to triggers or allergens. Some children have occasional symptoms (e.g. after strenuous exercise), while others have symptoms that interfere with their daily life, including concentrating and participating in school.



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## What Causes Asthma Episodes?

Children with asthma have airways that narrow more easily than children who do not have asthma and they may be allergic or sensitive to inhaled (or even some ingested) irritants. A variety of factors can set off an asthma episode including viral infections (cold and flu season is especially difficult) and exposure to allergens or “triggers.”

### THERE ARE SEVERAL ENVIRONMENTAL FACTORS (TRIGGERS) THAT CAN MAKE EXISTING ASTHMA WORSE:

#### **Mold/moisture:**

Molds are found everywhere. And they can grow on almost any substance providing moisture is present.

#### **Pets:**

The most common source of animal allergens is having a pet in the classroom. Even after extensive cleaning, pet allergen levels may stay inside schools for several months after the animal has been removed.

#### **Pests:**



Cockroaches, and other pests such as rats and mice, can be found in schools. Allergens from these pests may be asthma triggers for student and staff.

#### **Environmental tobacco smoke:**

This is the smoke from the burning end of a cigarette, pipe or cigar and the smoke breathed out by a smoker. There is strong evidence that environmental tobacco smoke, also known as secondhand smoke, may cause asthma in very young children.

#### **Dust Mites:**

Allergies to dust mites are common. Dust mites live in carpets, fabric-covered furniture, stuffed animals and toys, and pillows.

#### **Cleaning products:**

Some studies suggest that children who have asthma may be affected by chemicals found in common products such as cleaning supplies.

#### **Outdoor air quality especially ozone and particulate matter:**

Outdoor air pollution can trigger asthma attacks. Concerns about levels of ozone and particulate matter in outdoor air have been increasing in both Minnesota and the rest of the US. The idling of buses near school buildings is another source of outdoor air pollution that can affect children, teachers and staff.

#### **Other environmental issues related to asthma include:**

*Flooring* – Floor coverings are one of many products that can affect indoor air quality. Flooring options for schools include carpet, wood, linoleum, sheet vinyl, terrazzo, and vinyl composite tile.

*Air cleaners* – Air cleaners are frequently mentioned as one way to improve indoor air quality.



# What Custodial & Building Maintenance Staff Can Do

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## Work with your district's Indoor Air Quality (IAQ) Coordinator.



Each district's IAQ Coordinator is listed at the MDH web site <http://www.health.state.mn.us/divs/eh/indoorair/schools/progress.htm>.

Make sure your district has developed a district-specific IAQ Management Plan and that the recommended policies and procedures are being implemented. Your district's IAQ Management Plan should be reviewed regularly, perhaps once a year, and updated as needed.

Environmental triggers of asthma are found inside schools. Visit the US Environmental Protection Agency web site to see how managing asthma triggers can become part of your AQ Management Plan <http://www.epa.gov/iaq/schools/asthma/index.html>.

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## Address common environmental triggers of asthma.

### MOLD/MOISTURE:

Controlling moisture is the key to controlling mold. Respond promptly when you see signs of moisture and/or mold, or when leaks or spills occur:

- ✓ Clean and dry any damp or wet building materials and furnishings within 24-48 hours of occurrence to prevent mold growth.
- ✓ Fix the source of the water problem or leak to prevent mold growth.
- ✓ Clean mold off hard surfaces with water and detergent, and dry completely. Absorbent materials such as ceiling tiles, that are moldy, may need to be replaced.
- ✓ Check the mechanical room and roof for unsanitary conditions, leaks, or spills.
- ✓ Reduce the potential for condensation on cold surfaces (i.e., windows, piping, exterior walls, roof, or floors) by adding insulation.

### WHEN CLEANING FLOOR AND CARPETS.

- ✓ Remove spots and stains immediately, using the flooring manufacturer's recommended techniques.
- ✓ Use care to prevent excess moisture and make sure that cleaned areas are dried quickly.
- ✓ In areas where there is a regular moisture problem, do not install carpeting.

Examples include: by drinking fountains, by classroom sinks, or on concrete floors with leaks or frequent condensation.



### PETS:

- ✓ Remove animals from the school, if possible. If removing animals from the school is not possible, then:
- ✓ Keep animals in cages or in localized areas as much as possible; do not let them roam.
- ✓ Clean cages regularly.
- ✓ Locate animals away from ventilation system vents to avoid circulating allergens throughout the room or building.
- ✓ Locate sensitive students as far away from animals and habitats as possible.
- ✓ Keep animals away from upholstered furniture and carpets.



### PESTS:

Integrated Pest Management (IPM) practices are used to avoid exposure to these allergens. There are four key IPM methods for reducing exposure to pests in the school setting:

1. Look for signs of pests.
2. Do not leave food, water, or garbage exposed.
3. Remove pest pathways and shelters.
4. Use pest control products such as poison baits, traps, and pesticide sprays, as needed.

### ENVIRONMENTAL TOBACCO SMOKE:

Tobacco use is prohibited in all Minnesota K-12 public schools. The best way to avoid exposure is to make sure smoking bans are enforced.



### DUST MITES:

Remove dust from hard surfaces often with a damp cloth, and vacuum carpeting and fabric-covered furniture to reduce dust buildup. Allergic people should leave the area being vacuumed. Vacuums with high efficiency filters or central vacuums may be helpful. Choose washable stuffed toys; wash them often in hot water. Cover pillows in dust-proof (allergen-impermeable), zipped covers.

### CLEANING PRODUCTS:

Cleaning products may be a source of air pollutants. Keep the dirt out of buildings. The less dirt in the building, the less cleaning product needed. Other suggestions include:

- ✓ Use only as much cleaning product as is needed;
- ✓ Avoid products that contain irritants or chemicals that may affect sensitive students and staff;
- ✓ Store products in areas not accessible to children;
- ✓ Don't mix cleaning products;
- ✓ Don't use products with strong fragrances or odors.

## OUTDOOR AIR QUALITY (OZONE, PARTICULATE MATTER & SCHOOL BUSES).

A school's staff has little control over outdoor pollutants such as ozone and particulate matter. However, you can find out when poor outdoor air quality is expected. Sign up for the Air Quality Index alert through the Minnesota Pollution Control Agency at <http://www.pca.state.mn.us/air/aqi-subscribe.html>. You will receive email notices when there is an outdoor air quality alert in any of the areas monitored by the Pollution Control Agency.

To avoid exposure to harmful diesel emissions, post "no idling" signs and alert bus drivers, parents, and administrators that engines should be turned off when a bus (or any vehicle) is waiting or parked. Buses generally do not need to idle, except in cold weather. Redesign bus parking zones. Move bus parking areas away from school air intake vents and park buses diagonally to avoid front-to-back passing of emissions from bus to bus. Your school can reduce students' exposure to diesel emissions by good maintenance of your current bus fleet and investment in cleaner fuels and technologies, such as exhaust pipe retrofits for current buses, use of biodiesel, and the purchase of newer, cleaner buses over the long term.

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### Other environmental issues related to asthma include:

#### FLOORING

There is no one floor covering that will work in every situation. To keep the dirt out of the building, use walk-off mats at all entrances. Select floor coverings that are best for the activities of each school area. Regular vacuuming is important to reducing dust mites, pet dander and other allergens that collect in carpets. A vacuum with a high efficiency filter will provide better results. Your district may want to purchase a vacuum cleaner that has the Carpet and Rug Institute's "Green Label." Vacuum cleaners must do the following three tasks:

- Remove soil
- Keep the dust in the filtration bag and out of the air, and
- Clean without damaging the carpet.

#### AIR CLEANERS

Schools are sometimes advised to use air cleaners. Although properly used and maintained air cleaners may be effective for reducing air pollution, they should only be considered as an addition to other control methods. It is also important to carefully review information on the type of air cleaner used to make sure it is suitably sized and has high particle removal efficiency. In addition, some air-cleaning devices marketed as air purifiers emit ozone, which may be harmful to people who have asthma.

## Relevant Legislation



### MINNESOTA HAS SEVERAL LAWS REGARDING THE INDOOR ENVIRONMENT OF SCHOOLS.

School districts must develop an Indoor Air Quality (IAQ) Management Plan. To meet Minnesota Department of Education requirements, the IAQ Management Plan must include:

- A certified (trained) IAQ Coordinator;
- An overall evaluation (walk through) performed on all school district buildings;
- The evaluation of specific building systems (classrooms, ventilation system, maintenance operations), using checklists or a comparable method;
- A written set of policies and schedules that describes ways to correct the identified IAQ problems, prevent future problems from happening, and respond to emergencies and concerns;
- School board approval.

The Department of Education will not approve the use of Health and Safety funds unless a district has an approved IAQ Management Plan.

Minnesota adopted legislation to protect the health and safety of children from harmful diesel bus emissions. This law calls for schools to reduce the unnecessary idling of school buses in front of schools, and reroute bus parking zones away from air-intake vents or if necessary, relocate the air-intake vents.

The Parents Right to Know Act requires public and non-public K-12 schools to notify parents and employees when they plan to apply pesticides specified in the law. This law also required the Minnesota Department of Health (MDH) to develop and make available model notices that schools may use.




## Resources

The Minnesota Department of Health (MDH) web site has additional information about Indoor Air Quality Management Plans including the status of specific districts and the Indoor Air Quality Coordinator for each district.

Here is the link to learn more about IAQ Management Plans  
<http://www.health.state.mn.us/divs/eh/indoorair/schools/index.html>.

To find out about your district, go to  
<http://www.health.state.mn.us/divs/eh/indoorair/schools/progress.htm>.

The Minnesota Office of Environmental Assistance has additional information about the school bus idling law at <http://www.moea.state.mn.us/ee/noidle.cfm>.

MDH has more information about pesticides and the Parents Right to Know Act, at <http://www.health.state.mn.us/divs/eh/pesticide/notices/index.html>. 

Here is the link to the MDH model pesticide notices  
<http://www.health.state.mn.us/divs/eh/pesticide/notices/index.html#memorandum>.

The US Environmental Protection Agency web site for information on managing asthma triggers <http://www.epa.gov/iaq/schools/asthma/index.html>.

The Carpet and Rug Institute provides information on carpets and vacuum cleaners at <http://www.carpet-rug.com/>.

EPA-Indoor Environments Division Fact Sheet "Mold in Schools"  
<http://www.epa.gov/iaq/school/index.html>

