# Providing a Healthy School Environment

*This section provides background information and specific, proven activities for providing a healthy school environment to support objectives defined in your Asthma-Friendly Schools Initiative (AFSI) plan. Some should be plotted as multi-year activities, but do not let multi-year activities intimidate your team! Plan carefully to work deliberately through activities.*

## About School Environments & Air Quality

Both indoor and outdoor pollutants can be asthma triggers for students and/or school staff. Environmental factors also can lead to other short-term and long-term health effects. Several aspects of school buildings themselves make them uniquely susceptible to indoor air quality (IAQ) problems. Additionally, secondhand smoke must be eliminated from the school property, school vehicles, and at school-sponsored functions away from school property and facilities if the school system is effectively going to remove this asthma trigger. Both ozone air pollution (smog) and particle pollution can be powerful triggers for students with asthma. Schools must be prepared to manage students' exposure on high outdoor air pollution days.

### Indoor Air Quality (IAQ)

Indoor air pollutants affect everyone's health; furthermore, IAQ is linked to asthma, as many indoor air pollutants are triggers for people with asthma. Managing IAQ must be a critical component in any asthma-friendly schools effort. The Environmental Protection Agency's (EPA) IAQ Tools for Schools can provide the cornerstone of this implementation strategy (see the American Lung Association Fact Sheet: EPA's Easy-To-Use School Environmental Management Tools included with this hand-out).

Keep in mind that many of the school personnel who must adopt IAQ policies and procedures may be virtually unaware of IAQ issues in general, and the link between IAQ and asthma, in particular. Be prepared to present the issues clearly and provide backup documentation if requested. Several aspects of school buildings make them uniquely susceptible to IAQ problems. These include:

- A typical classroom has four times as many occupants as office buildings for the same amount of floor space.
- School systems may not allocate sufficient funds for proper maintenance and renovation.
- Schools include a large variety of potential pollutant sources, including classroom pets, laboratory chemicals, and art supplies. Gyms, locker rooms, and libraries may be sources of dust and mold as well.

Poor environmental conditions, including unhealthy air quality, are widespread. A 2000 report issued by the U.S. Department of Education[1] found that:

- Forty-three percent of the schools surveyed reported that at least one of six environmental factors was in unsatisfactory condition and approximately two-thirds of those schools had more than one environmental condition in unsatisfactory condition. Ventilation was the environmental condition most likely to be perceived as unsatisfactory (26 percent of schools). About a fifth of schools reported they were unsatisfied with heating, indoor air quality, acoustics or noise control, and the physical security of buildings, and 12 percent were unsatisfied with lighting conditions.
- Schools in rural areas and small towns were more likely than schools in urban fringe areas and large towns to report that at least one of their environmental conditions was unsatisfactory (47 percent compared with 37 percent). Schools with the highest concentration of poverty were more likely to report at least one unsatisfactory environmental condition than were schools with the lowest concentration of poverty (55 percent compared with 38 percent).

## Outdoor Air Quality

Particle pollution and ozone air pollution (smog) are triggers for some people with asthma. Both pollutants are also dangerous for people without asthma.

Fine particles in the air are made up of a variety of microscopic substances: acid aerosols such as sulfates and nitrates, organic chemicals, metals, and carbon soot. Fine particles can cause serious health effects at relatively low concentrations and are especially hazardous for people with lung diseases including asthma. They are easily inhaled deep into the lungs where they can remain embedded for long periods of time. Hundreds of community health studies have linked daily increases in fine particle pollution to reduced lung function, greater use of asthma medications, and increased rates of school absenteeism, emergency room visits, hospital admissions, and premature death. EPA's publication *Particle Pollution and Your Health* provides an overview of the health effects of particle pollution; it is available online at www.epa.gov/airnow.

Ozone exposure results in several possible short-term and long-term health problems, including: respiratory irritation, reduction in lung function, exacerbation of asthma, respiratory infections and inflammation and damage to lung tissue. Elevated ozone levels are clearly correlated with increased numbers of hospital admissions and visits to emergency departments. EPA's publication Smog: *Who Does it Hurt?* provides an overview of the health effects of ozone; it is available online at www.epa.gov/airnow.

# Healthy School Environment Components

The following recommended components to achieve a healthy school environment are detailed in hand-outs, including reference materials.

- ◆ Proactively maintain healthy indoor air quality
- ◆ Assure tobacco-free buildings and grounds
- ◆ Provide smoking cessation services for students and staff

[1] U.S. Department of Education, National Center for Education Statistics. Condition of America's Public School Facilities: 1999. NCES 2000-032.. 2000. p. v.

- ◆ Use Integrated Pest Management (IPM) techniques to control pests
- ◆ Manage students' exposure on high outdoor air pollution days

***A Reminder About Policies***

Several of the components involve policy change. Remember, policy changes are strategies that can make a long-lasting impact on students with asthma, the overall student body, and staff. Establishing policies is only the first step; schools also need to determine how to enforce them.

## ◆ *Recommended Components: Proactively Maintain Healthy Indoor Air Quality*

This component involves four distinct activity areas:

- ■ Assuring healthy indoor air quality
- ■ Assuring tobacco-free buildings and grounds
- ■ Providing smoking cessation services for students and staff
- ■ Using IPM techniques to control pests

### ASSURING HEALTHY INDOOR AIR

This broad category of work includes policy-based activities as well as specific program-based activities and maintenance issues.

***Assuring Healthy Indoor Air Checklist***

- Raise awareness about federal regulations
- Establish district-wide IAQ policies
- Establish emergency management plans for IAQ issues and external hazards
- Establish policy/procedures for field trips
- Treat school buses as indoor environments.
- Purchase asthma-friendly products.
- Complete a school self-assessment
- Adopt and use an IAQ management program

▶ **Raise awareness among school personnel, students, parents, and communities about federal regulations.** Federal statutes such as Section 504 and the Individuals with Disabilities Education Act of 1997 (IDEA) lay the legal groundwork for schools to provide a healthy environment that allows students with disabilities (including asthma) to fully participate in their educational program. These issues may include a wide range of actions on behalf of the district, such as removing a student's known asthma triggers from the classroom, to addressing building-wide ventilation and other air quality/maintenance issues. (See the American Lung Association Backgrounder: Policies & Legislative Issues Affecting Asthma in Schools in the Master Planning section of this Toolkit.)

▶ **Establish district-wide IAQ policies,** which would result in specific IAQ issues' being addressed as part of a school's annual routine. Policies could include: staff training and education; annual inspection; tracking and assessment of IAQ problems and mitigation; a

complaint procedure; adequate staffing for cleaning and maintenance and IAQ oversight; and coordinated implementation of EPA's IAQ Tools for Schools. Policies create a sustained IAQ program, which will have long-term positive impact on students with asthma and the general school population. Be aware that language regarding the policy may need to be included in union contracts; sample language is included with this hand-out.

Policies should consider three distinct IAQ issues:

- IAQ problems may already be present in the school and must be mitigated for the health and safety of all students and staff—particularly those with asthma. These may include flooring; a sample carpet/flooring school policy is included with this hand-out.
- IAQ problems must be averted as new buildings are constructed. While new schools are being constructed, school districts also may be dealing with IAQ issues related to the use of portable classrooms.

▶ **Establish emergency management plans that address IAQ issues and external hazards.** Plans should include hazards such as fires, chemical spills, and ambient particles. A Sample Emergency IAQ Management Plan is included with this handout; the plan details how to investigate a situation, what specific situations would require emergency action and what actions must take place within the facility.

▶ **Establish policy/procedures for field trips.** Be sure a faculty/staff member is designated to administer medications, if needed, and to work with students with asthma to avoid triggers whenever possible during a field trip (i.e., not participate in the petting zoo if the student's asthma is triggered by animal dander). Policies and procedures should detail the staff response to a potential asthma emergency, communications among staff and/or chaperones, and communication to a student's parent/guardian. Planning ahead will help ensure that trips are safer and fun for all. (See the Sample Field Trip Policy included with this hand-out.)

▶ **Treat school buses as indoor environments.** This involves four main issues:

- *Cleaning:* Buses must be cleaned regularly with environmentally friendly products when available.
- *No smoking at any time.*
- *Converting bus fleets to non-diesel fuel:* Diesel-fueled buses, which represent 60% of school buses,[2] present at least two key health issues:
  - Diesel-fueled exhaust is high in particulates, which are increasingly associated with lung diseases, including asthma, and are classified by the EPA as a probable human carcinogen. It is estimated that children who ride in a diesel school bus may be exposed to up to four times more toxic levels than someone traveling in a car directly in front of it.[3]
  - In less-affluent communities, buses that may be 20 years old or older have few or no emissions controls, so students riding those buses may be exposed to greater quantities of harmful emissions.
- *Anti-Idling policies,* which reduce exposure to diesel exhaust. These may include having drivers turn off buses as soon as they arrive at the school yard, limiting idling time of buses during early morning warm-up, and providing a space inside the school where drivers can wait. (See the State of New Hampshire Policy at the end of this section.)

[2] U.S. Department of Energy. EnergySmart Schools Web site. http://www.eren.doe.gov/energysmartschools/bus_health.html.

[3] Natural Resources Defense Council. No Breathing in the Aisles: Diesel Exhaust Inside School Buses. February 2002.

- **Purchase asthma-friendly products.** Strong odors can cause problems for people with asthma. Examples of products that may contribute to IAQ problems and consequently affect individuals with asthma include: caulks, solvents, paints, adhesives, sealants, and cleaning agents. Maintenance supplies may emit air contaminants during use and storage. Products low in emissions are preferable; however, a product that is low in emissions is not necessarily better if it is more hazardous despite the lower emissions, if it has to be used more often, or at a higher strength. Schools should learn about maintenance supplies by reading labels and identifying precautions regarding effects on indoor air or ventilation rates and requirements. Staff should ask vendors and manufacturers to help select the safest products available that can accomplish the job effectively.

- **Complete a school self-assessment** with EPA's free HealthySEAT software (see the American Lung Association Fact Sheet: EPA's Easy-To-Use School Environmental Management Tools included with this hand-out).

- **Adopt and use an IAQ management program,** based on *IAQ Tools for Schools* and American Lung Association's evaluation tools for implementing *IAQ Tools for Schools*. To support implementation, link schools with established IAQ management programs with those who are new to having a coordinated program, or work with the EPA Regional office to link with schools having specific *IAQ Tools for Schools* implementation experience. Work to secure funding to implement and/or expand IAQ management programs, pulling from data related to federal and state laws related to chronic health conditions and/or IAQ issues, local asthma statistics, existing programs and resources, and cooperative community opportunities such as those presented through a local asthma coalition. See the Sample Union/Association Contract Language Supporting IAQ Plans and Sample Carpet/Flooring School Policy included at the end of this section.

***LESSONS LEARNED!***

Partnership between the facilities manager and the AFSI committee will be integral to a successful IAQ Tools for Schools program, based on the experiences of AFSI pilot sites. One site with such a partnership completed the program in the district's 102 school buildings in one year and was awarded the EPA Achievement Award!

## REFERENCE MATERIALS

- American Lung Association Fact Sheet: EPA'S Easy-To-Use School Environmental Management Tools (HealthySEAT and IAQ Tools for Schools)
- Sample Emergency IAQ Management Plan
- American Lung Association Tip Sheet: Sample Field Trip Policy
- State of New Hampshire Bus Idling Policy/Fact Sheet
- Sample Union/Association Contract Language Supporting IAQ Plans
- Sample Carpet/Flooring School Policy

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# American Lung Association Fact Sheet: EPA'S Easy-To-Use School Environmental Management Tools

**HealthySEAT**

This free, self-audit software is a unique tool helps school districts evaluate their school facilities for key environmental, safety and health issues. The Healthy School Environments Assessment Tool (also called the Healthy Schools Tool) can be downloaded on the Environmental Protection Agency (EPA) web site (www.epa.gov/schools) at no cost to school districts, states and others to help them establish and implement fully integrated and comprehensive self-assessments of each of their school facilities.

HealthySEAT features:

- **database file** to help school districts to manage all aspects of a self-assessment program, including:
  - a customized checklist and detailed guidebook containing detailed information and links on each topic pre- and post- assessment letters and recommendation packages
  - setting priorities for correcting problems found
  - tracking the status of every issue for every school
  - district-wide status reports
- **comprehensive sample checklist** that can be used "as is" to conduct self-assessments of school facilities, or which can be fully customized by states and/or school districts to reflect state and local requirements, policies, and priorities
- **fully integrated source of all EPA school programs**, which encourages states, districts, and schools to participate in voluntary EPA programs to achieve a healthy learning environment as well as providing an effective compliance assistance tool for regulatory requirements
- **information on health, safety and injury prevention programs** of several federal agencies (Occupational Safety and Health Administration, National Institute for Occupational Safety and Health, Centers for Disease Control/Division of Adolescent and School Health, Department of Education, Consumer Product Safety Commission, and Department of Transportation)
- **support by an EPA web page** that issues updates and other useful information on a regular basis.

**IAQ Tools for Schools**

*IAQ Tools for Schools* is designed to give schools the information and skills they need to manage air quality in a low-cost, practical manner. It helps schools prevent potential problems and efficiently manage them should they occur.

**Who uses it?**

The *IAQ Tools for Schools* Action Kit is designed to be used by current school staff—not a separate IAQ specialist with specific technical knowledge. Program training and implementation materials are available for the American Lung Association and other community organizations who work with schools. Staff training resources present IAQ background information, including scientific references, detailed training workshops, promotional guides, and sample documents.

1

**What costs are involved?**
The *IAQ Tools for Schools* Action Kit is free for schools from the EPA. These free materials include hands-on materials schools will need to prevent and/or manage existing air quality problems. The kit includes easy-to-use checklists with a flexible, step-by-step guide; IAQ problem-solving wheel; facts on indoor air pollution sources, symptoms, and solutions; training videos; and sample documents.

**How would schools benefit from this particular program?**
*IAQ Tools for Schools* is based on proven, scientific methods for preventing, understanding and solving indoor air quality problems and can:

- save schools money by preventing IAQ problems from developing into expensive repairs
- help prevent bad publicity and tensions between schools, parents and the community
- decrease the potential for short- and long-term health problems for students and staff
- reduce student and teacher absenteeism and improve student learning environment

See the Resources section of this toolkit for ordering information about IAQ Tools for Schools and other IAQ program resources.

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## Sample Emergency IAQ Management Plan

### For General Complaints (which may indicate an urgent IAQ situation):

- Document specific details of the complaint, including adverse health effects experienced.
- If someone is experiencing physical symptoms, conduct a thorough health evaluation.
- Visually inspect the facility for obvious problems, such as:
  – evidence of water damage (could suggest mold/mildew)
  – inadequate housekeeping
  – use or misuse of chemicals
  – ventilation system problems
- Refer to specific checklists within *IAQ Tools for Schools*

### For emergencies:[1]

*Defined*

In emergencies, time is limited to avert serious health problems or property damage, such as:

- obviously life-threatening situations, such as hazardous materials spills
- symptoms of carbon monoxide poisoning such as headaches, dizziness, drowsiness, nausea, and combustion odors
- widespread breathing difficulties such as shortness of breath, chest tightness, or respiratory irritation
- diagnosed Legionnaire's disease
- flooded/water-damaged carpet and other materials

*Actions*

In an emergency:

- Immediately seek medical or public health assistance (e.g., local or state health department).
- Evacuate affected area, if warranted.
- When appropriate, such as for carbon monoxide poisoning or chemical spills, ventilate the affected area with large amounts of outside air; use temporary fans if needed.
- In the case of flooded water-damaged carpet and other materials, dry the saturated material within 48 hours to avoid mold contamination.
- Inform building occupants and parents of minors of the problem and maintain clear communication.

[1] University of Minnesota environmental Health and Safety web site. http://www.desh.umn/edu/iaq/school

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## American Lung Association Tip Sheet: Sample Field Trip Medication Policy

School Nurse should be advised by teacher as soon as a field trip is approved in order that the Nurse may make arrangements for proper dispensing of medication.

School Nurse will prepare a pack of students' medications, spacers and peak flow meters for each teacher. A teacher will carry his/her students' emergency medication with accompanying doctor's orders during the field trip.

A Registered Nurse will accompany field trips, if after consultation with the Principal, the medical/medication requirements of that students cannot be met by delegation.

A student may carry **emergency** medication on his/her person if the student's physician and the school nurse have authorized self-carry, and if the parent/guardian has indicated on the Parent/Guardian Authorization for Prescription Medication Administration form that the student has been fully instructed and is capable of self-administration, if needed.

It is recommended that all students who require emergency medication to be administered by the School Nurse ride on the same bus.

## Reduce School Bus Idling

**Good for Drivers, Good for Students,**
**Good for the Environment!**

Diesel Exhaust and School Bus Idling

Diesel exhaust from idling school buses poses a health risk to both drivers and students. As idling buses wait for students at the schools, they emit exhaust fumes which concentrate at ground level and which can enter both the passenger compartments of the buses and school classrooms through ventilation systems. Numerous scientific studies indicate that exposure to diesel exhaust can cause lung damage, respiratory problems, premature death, and lung cancer. Although everyone can be affected by diesel exhaust, children are more susceptible to these health problems because their respiratory systems are not fully developed.

Benefits of Reducing School Bus Idling

- ✓ Helps protect the health of drivers and students from the harmful effects of diesel exhaust fumes.
- ✓ Reduces air pollutants that contribute to ozone smog, fine airborne particle formation, and global warming.
- ✓ Reduces fuel consumption and saves money. A typical diesel vehicle burns approximately one gallon of fuel for each hour it idles. If each bus reduces its idling time by 30 minutes per day, a company operating 16 buses could save over $2,500 per school year in reduced fuel costs.
- ✓ Reduces wear and tear on the engine – saving on maintenance costs and increasing the life of the engine!

NHSTA

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire School Transportation Association and
New Hampshire Department of Environmental Services –
*Working together to promote healthy breathing for everyone!*

## School Bus Drivers Can Make A Difference!

**Reduce School Bus Idling**

Excessive exposure to diesel exhaust from school buses can pose a health risk for drivers and children. School bus drivers can make a significant impact on protecting the health of their passengers and their own health by limiting engine idling whenever practical. Here are some simple guidelines for school bus drivers to follow:

- ➢ All bus drivers should turn off engines when they reach the school or other destination, unless they will be leaving within a few minutes. **Please do not allow buses to idle while waiting for passengers**.
- ➢ During morning start-up, buses should idle no longer than necessary to bring them to proper operating temperature and to defrost all windows.

Certain exceptions to the policy may be made (consistent with state regulations) under the following conditions:

- ➢ It is necessary to run the engine in order to operate safety equipment.
- ➢ The outside temperature is between 32 degrees and -10 degrees, idling is allowed for up to 15 minutes.
- ➢ The outside temperature is below -10 degrees, idling is allowed with no time restrictions.
- ➢ You need to maintain a safe temperature for students with special needs.

**CLEAN AIR DRIVER**

*School Bus Drivers – Doing Our Share for Clean Air!*

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## Language Supporting District IAQ Plan

A District Indoor Air Quality (IAQ) plan will be developed as a subcommittee of the District Safety Committee. The subcommittee will be composed of five representatives appointed by the Association and five representatives appointed by the District. The subcommittee will be established by August 31, 1997 and will meet monthly beginning with the 1997-98 school year. Minutes of committee meetings will be shared with Association members. In the event meetings are scheduled during the school day, substitute coverage will be provided by the District. **Employees shall be compensated at the hourly rate for meetings held beyond the work day.**

When developed, the IAQ plan will be incorporated into the functions of building safety committees and will include:

1. Strategies and standards for facilitation, research, recommendation and implementation of procedures to identify and resolve IAQ concerns.

2. In-service training for safety committee members and district employees regarding IAQ.

3. Written procedures, timelines and support services for the collection of data, reporting of incidents and the communication and processing of information relevant to indoor air quality, which will be included as Appendix "N" of the negotiated agreement.

4. Procedures to ensure appropriate and timely communication to staff of district policy and procedures related to air quality.

5. Monitoring procedures for buildings to ensure compliance with District Safety Committee air quality plan.

SOURCE: Washington Education Association

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# Recommended District Policy for Carpeting in Schools

## General

1. Recognize the potential problematic health implications of carpeting in schools, particularly in basements and on bare concrete, where moisture and mold are potential problems.
2. Consider carpeting those areas of schools where teachers and administrators are likely to bring in their own area-rugs, mats, and carpets (e.g., places where students sit on the floor, noisy areas where carpeting is needed to buffer the echo of sound.)

## When carpeting areas of a school:

1. Clean old carpet before removal and clean the area thoroughly prior to installation of new carpet. (Otherwise the dust and dirt of the old carpet is emitted into the air system and collects onto the new carpet).
2. Assure that only approved carpets with specific properties be allowed into the school district. The following properties (and in this order of importance) are recommended: low pile density in loop carpet, low height, fluorocarbon coating of fibers, high denier per filament, and a fiber shape with a low surface area. These properties are associated with increased release and recovery of common allergens when vacuumed.
3. Area rugs and children's mats need to meet the same health standards as wall-to-wall carpeting in schools (#2 above).
4. For large renovation projects, request that the manufacturer specify the adhesive, offer a warranty for volatile organic compound (VOC) emissions, and test beyond federal standards for a total VOC emission level that is less than 100 mcg/m2/hour (measured after 24 hours).
5. Use new, available non-adhesive fastening systems. If adhesive is absolutely necessary, utilize solvent-free, low VOC products.
6. Pre-ventilate carpets elsewhere for several days, when there are VOCs present.
7. Maximize ventilation during installation and isolate the area from the rest of the school (including air circulation).
8. Clean the new carpet prior to opening area to students and staff. Use HEPA filtration vacuum (to remove any loose fibers and particles resulting from the installation process).
9. Keep students and staff away from the newly installed carpets as long as possible.
10. Keep carpet away from entrances where toxins track in from the outside and water sources.

## General Maintenance of Carpets

1. Area-rugs and students' mats need to be included with wall-to-wall carpeting as part of the district's maintenance responsibilities.
2. Provide deep, extensive vacuuming at least every other day with High-Efficiency vacuums and HEPA-style filters in order to control contaminant levels in carpets.
3. Ensure adequate, continuous ventilation throughout the carpeted space.
4. Replace wet carpets, rather than try to dry them and preserve (because of mold and mildew residues that cannot be removed).
5. Provide steam-cleaning to carpets regularly.
6. Do not use the acaricide "Benzyl Benzoate" or denaturing agent "Tannic Acid" at this time.
7. Replace carpeting frequently.

SOURCE: Howard Taras, MD, "School Health USA" at University of California, San Diego; Jack Campana, Director Health Services, San Diego City Schools. Accepted for publication, *Journal of School Health,* 2002.