



## Indoor Air Quality Tools for Schools

Indoor Air Quality (IAQ)

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### NEWS AND EVENTS

- **Cut Your School's Energy Bills.** Learn how schools across the country have taken small steps — such as using customized checklists and leaving sticky note reminders on light switches — to decrease their [energy consumption](#) and reduce costs. Read a [New York Times article](#) to learn how these schools changed behavior in their communities.
- **Green School Essentials.** Link IAQ and Energy Efficiency. Learn about the efforts of [Charlotte-Mecklenburg Schools \(CMS\)](#) in North Carolina, a leader in the healthy indoor learning environment movement as well as an ENERGY STAR Leader. CMS is committed to managing its environmental footprint by developing a comprehensive approach to IAQ and energy efficiency. The district is also working on the second version of its [Environmental Stewardship Guide Version 1.0](#).
- **Take a Quiz on Healthy Classroom and Cafeteria Environments.** Access the American Association of School Administrators' [Quiz on Healthy Classroom and Cafeteria Environments](#) to test your knowledge or to engage students to learn more about IAQ.

### THE BASICS OF PROVIDING FRESH AIR: QUALITY HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

Providing [quality HVAC](#) is one aspect of creating a comprehensive school IAQ management program based on the [Framework for Effective School IAQ Management](#). Good HVAC system design, operation and maintenance are critical for providing clean and healthy air in schools. Properly functioning HVAC systems provide adequate air ventilation, control odors and reduce the levels of pollutants that cause most IAQ problems inside school buildings. In addition to improving occupant health and performance, regular HVAC maintenance can also help [save energy](#).

#### Did You Know...

EPA is pleased to announce the release of new voluntary [school siting guidelines](#) to help school districts and communities select environmentally healthy and safe locations for schools. The guidelines were mandated by the Energy Independence and Security Act of 2007 and were developed in consultation with other federal agencies, states, school districts, community organizations, health care professionals and teachers, as well as environmental justice leaders and children's health and environmental groups.

The guidelines provide recommendations on steps to evaluate potential environmental challenges and benefits at candidate sites. By following the recommendations in the guidelines, local education agencies, tribes and states can help provide a safe and healthy environment for children, teachers and staff.

To learn more about the guidelines, visit [www.epa.gov/schools](http://www.epa.gov/schools) and participate in a series of educational webinars, including a live chat, where the school siting guidelines will be featured.

**Date:** October 25, 2011

**Time:** 2 p.m. EST

**Title:** [School Siting – Advancing Environmental Justice and Preservation Through School Siting](#)

**Date:** November 1, 2011

**Time:** 2 p.m. EST

**Title:** [A Live Chat on School Siting and Community-Centered Schools](#)

**Should we have our schools tested for radon? How do we keep mold**

To ensure your school's HVAC system is working properly, follow the tips below:

- Inspect your school's HVAC systems regularly and establish a maintenance plan.
- Change HVAC filters regularly and ensure condensate pans are draining properly.
- Provide outdoor air ventilation according to [ASHRAE Standard 62.1-2010](#) or local codes.
- Clean air supply diffusers, return registers and outside air intakes.
- Keep unit ventilators clear of books, papers and other items.

Use the *IAQ Tools for Schools Ventilation Checklist* to complete a thorough inspection of your HVAC system, including examining air intakes, exhaust systems, air flow and much more. Download the checklist in PDF or MS Word format, which allows you to tailor the document to your school's HVAC system and surroundings.

**Ventilation Checklist**

Name: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Name of School: \_\_\_\_\_  
 Date Completed: \_\_\_\_\_  
 Signature: \_\_\_\_\_

**Instructions**

1. Read the IAQ Background and use the Background information for this checklist.
2. Keep the Background information and make a copy of this checklist for each ventilation unit in your school, as well as a copy for future reference.
3. Complete the Checklist.
  - Check the "yes," "no," or "not applicable" box beside each item. If "not applicable" requires further attention.
  - Make comments in the "Notes" section as necessary.
4. Return the checklist portion of this document to the IAQ Coordinator.

**1. OUTDOOR AIR INTAKES**

1a. Medical conditions of all outdoor air intakes on school floor plan? Yes No N/A  
 1b. Intake: \_\_\_\_\_  
 1c. Checked for the ventilation system fan on and operating in "occupant" mode? \_\_\_\_\_

**ACTIVITY 1: OBSTRUCTIONS**

1d. Checked for obstructions of intakes or clear of obstructions, debris, chips, or cones? \_\_\_\_\_  
 1e. Checked for obstructions on incoming air ducts, air ducts or louvers frequently block or restrict? \_\_\_\_\_

**ACTIVITY 2: POLLUTANT SOURCES**

1f. Checked potential sources for pollutant sources (smoking, heating, ducts, and non-duct areas)? \_\_\_\_\_  
 1g. Checked existing sources for pollutant sources (plumbing, water, toilets, sinks, or laboratory exhaust fans, pollution, and other from air conditioning existing items)? \_\_\_\_\_  
 1h. Restricted any pollutants with pollutant sources to at least outdoor air intake or, if not, restricted ducts or exhaust exhaust pipes? \_\_\_\_\_

**ACTIVITY 3: AIRFLOW**

1i. Checked for air flow on a small piece of tissue paper or light plastic? \_\_\_\_\_  
 1j. Checked for outdoor air entering the intake appropriately? \_\_\_\_\_

**2. SYSTEM CLEANLINESS**

**ACTIVITY 4: AIR FILTERS**

2a. Replaced filter per maintenance schedule? \_\_\_\_\_  
 2b. Date of maintenance system last with replacing filter presented on floor? \_\_\_\_\_  
 2c. Checked for filter size before installing new filter? \_\_\_\_\_  
 2d. Checked paper ID of filter to prevent air flow bypassing (blowing around the filter)? \_\_\_\_\_  
 2e. Confirmed proper installation of filter correct direction the airflow? \_\_\_\_\_

### Interested in learning about the connection between HVAC and school health?

View the *Fresh Air: Optimal HVAC Management for Improved Health* presentation from the 2011 *IAQ Tools for Schools* National Symposium, presented by Ian Hadden from Fanning Howey. Along with highlighting the importance of proper design, commissioning, maintenance and operations of school HVAC equipment, this presentation also describes how health can be impacted by poor HVAC systems. The presentation also showcases innovative tools and technologies available to school facility managers and maintenance staff.

### from returning once it has been removed?

Have these and other questions answered on the Schools IAQ Connector Email Discussion List. **Join today** by sending a blank email message to [schools\\_iaq\\_connector-subscribe@lists.epa.gov](mailto:schools_iaq_connector-subscribe@lists.epa.gov). Then check your email inbox for your confirmation and membership details.

### Access Past E-Newsletters Online

Can't find a past *IAQ Tools for Schools* Connector e-newsletter in your email inbox? No problem! Wish you could read past editions? You can! Visit the [e-newsletter archive](#) to access printable versions (PDF) of all past editions on the *IAQ Tools for Schools* website.



## Q&A WITH A FRESH AIR CHAMPION AND SCHOOL HVAC EXPERT

Hear firsthand from Dave Hill, Executive Director of Facilities and Operations at [Blue Valley School District](#) in Overland Park, Kansas, on tips and guidance for integrating energy efficiency and IAQ management, and how a properly running HVAC system can promote a healthy learning environment.

### Q: What is the most efficient way to run our school's heating and cooling system?

**A:** There are a **variety of options** available to schools to efficiently run a school's HVAC system — ultra-high efficiency boiler systems, geothermal, ground source heat pumps, in-duct strip or coil heat, central plants, or combinations of these and other options. As there are specific costs and benefits for each system, the decision on which to have in a school is a personal one; it should fit the goals of the individual school. A good mechanical engineer can provide guidance to schools making these important decisions.

### Q: What should I know about having my HVAC equipment serviced?

**A:** When it comes to properly servicing HVAC equipment, consider developing a quality preventative maintenance



(PM) program — and involving a mechanical engineer in the development of this program. The first step is then to assess your inventory so you know what you have; keep track of the equipment's age, capacity and service records. Follow the manufacturer's recommendations for servicing your equipment. Be diligent about regularly changing filters on the equipment, and inspect and clean your air delivery system (ducts) as necessary. Also, consider investing in [building commissioning](#) following the installation of a new HVAC system or piece of equipment.

**Q: Why should I perform preventive HVAC maintenance?**

**A:** Ignoring or not performing timely [preventative maintenance](#) can lead to increased equipment down-time or failure down the road. This can equate to increased occupant discomfort levels — or worse — lost instruction time for students. Investing in regular PM for your HVAC equipment will ensure that it is operating at its peak performance level and will usually extend the life of the equipment, too, thereby saving money.

**Q: What basic steps can I take to cut energy costs in my building while protecting indoor air quality?**

**A:** Having a successful energy management program does not mean having to compromise the success of your IAQ management program. Our school district [strategically integrated the two programs](#) so that they are aligned and both focus on providing exceptional learning environments for our students. Practices that promote energy efficiency and protecting IAQ include properly maintaining HVAC equipment at peak performance levels; regularly changing equipment filters; improved monitoring of service doors; better control of operable classroom windows; and improving maintenance of the building envelope, including roof and masonry repairs, crack sealing, and window and door replacements.

**Q: When is the best time to consider replacing old or inefficient HVAC equipment and upgrading to newer equipment?**

**A:** Before it fails. It is important to know the expected life of your HVAC equipment and have a plan for its replacement, as old or inefficient HVAC equipment may not meet [ventilation codes and standards](#). Operating HVAC equipment beyond its useful life is asking for trouble. Older HVAC equipment is also usually less energy-efficient, as even well-maintained equipment tends to operate less efficiently over time. Even worse, if a piece of major equipment fails under unplanned circumstances, you'll pay far more for emergency replacement than you would if the work were planned. This can have a negative impact on your learning environment through lost instructional time and eroded confidence and trust among parents and the community.

**Q: What are you most excited about for the start of the new school year?**

**A:** I'm very excited to continue our efforts in creating and maintaining exceptional [learning environments](#) for our students. Our community continues to demonstrate strong support for quality facilities, as it understands how IAQ contributes to student success. We have been successful in cultivating an atmosphere within the school district of program ownership and building stewardship among all of the employees responsible for maintaining excellent IAQ and energy management programs. To be a part of these efforts has been very satisfying and extremely rewarding.

Read more about [Blue Valley School District's IAQ management program](#).

## HAVE YOUR QUESTIONS ANSWERED!

Is there a topic you want to see covered in an *IAQ Tools for Schools* Connector e-newsletter? Need more information or have a quick question? Do you have suggestions for a webinar, an e-newsletter feature, or are you simply curious about an IAQ topic and would like more information? If so, send us an email at [IAQtSConnector@cadmusgroup.com](mailto:IAQtSConnector@cadmusgroup.com).

Share YOUR news and events! Send us information to share with the school IAQ community. It could be featured in the next e-newsletter. Email your news to [IAQtSConnector@cadmusgroup.com](mailto:IAQtSConnector@cadmusgroup.com).

The *IAQ Tools for Schools* guidance is designed to help schools maintain a healthy environment in school buildings by identifying, correcting and preventing IAQ problems. Learn more about the *IAQ Tools for Schools* guidance at [www.epa.gov/iaq/schools](http://www.epa.gov/iaq/schools).