

Indoor Air Quality Resources: EPA's Tools for Schools

"Nearly 55 million people in the United States—20 percent of the population—spend their days inside K-12 schools. Few realize the air within those walls can adversely affect both their health and their learning potential.

*According to U.S. government reports, almost half of the nation's schools have poor indoor air quality: air contaminated with particulates, fibers, pollen, dust, gases and other pollutants. Without an exchange of this stale air with fresh conditioned outdoor air, the potential for long- and short-term health problems for students and staff increases, attendance decreases and student achievement is jeopardized."*¹

The health risk of poor indoor air quality (IAQ) is confirmed by the U.S. Environmental Protection Agency, its Science Advisory Board and others, who consistently rank indoor air pollution among the top four environmental health risks facing American people.² For children with asthma, indoor air pollution often plays a role in triggering or exacerbating asthma episodes.

Despite the health risks to students and staff caused by poor IAQ, as well as evidence of the link between health and school/job performance, many school leaders are concerned about addressing IAQ in the schools for fear that they will uncover problems that are costly to repair. They may feel it is hard to justify the expense when there are so many other pressing needs in the schools and health issues have a less direct impact on student performance than other issues. However, when IAQ is not addressed, the district increases its liability, the performance of students and staff is diminished, and the loss of revenue from student absences, staff sick time and turnover results in unwelcome costs.

This fact sheet describes one simple yet effective way that districts can address IAQ, through the use of the EPA's *Indoor Air Quality Tools for Schools (TfS) Action Kit*.

The Tools for Schools Action Kit



From www.epa.gov/iaq/schools/actionkit.html

Description of the TfS program

The purpose of the voluntary TfS program is to raise awareness of everyone in the school community about IAQ and simple steps they can take to improve air quality in their schools.

The TfS Action Kit, which may be ordered free of cost from EPA, includes:

- information on factors affecting air quality in schools
- checklists designed to help schools improve IAQ, including separate checklists for school officials, administrative staff, building and grounds maintenance, the teacher's classroom, food service, ventilation, health officer/school nurse, integrated pest management, waste management, and walk-through inspection
- a fact sheet with steps to launch a TfS program in districts of any size

¹ Shaughnessey, R.J. (2008) Correlating indoor air to student academic performance. *The School Administrator*, 1(65), www.aasa.org/publications/content.cfm?ItemNumber=9665

² Rosenblum, S. *Basic Tools for Schools presentation*, http://shellyjeri.net/My_Homepage_Files/Page1.html.

- IAQ coordinator’s guide, including a model IAQ management plan
- IAQ reference guide for prevention, diagnosis and resolution of most indoor air problems with minimal cost and involvement
- information about available awards and eligibility
- a problem solving wheel to help staff identify IAQ emergencies and determine actions to take in an emergency
- several videos, including *Taking Action* which shows how one school successfully implemented the TfS program, *Ventilation Basics* which explains the importance of good IAQ and how school ventilation systems are operated and maintained, and *IAQ Tools for Schools Walkthrough Video: Four Schools Making a Difference* which illustrates the school walk-through process

All of these materials, except the videos and problem solving wheel, also may be downloaded at the EPA’s Web site (see Resources).

Advantages of using this comprehensive resource are its flexible, common-sense approach and that it is not time consuming. Most of the findings are easily addressed, often with staff education alone, and it actually conserves resources by preventing more serious problems. This approach complements work that is already being done by maintenance staff and involves other staff and students in identifying and resolving IAQ issues.

Case studies

The following case studies demonstrate how TfS can be a useful tool in addressing IAQ issues in schools. For additional examples, see the Excellence Award winners on the EPA’s Web site.

Use of walk-through to identify IAQ problems

In a ventilation system, clean air should be coming in from an outside space and circulating it, not the reverse. Interference with clean air coming into the school is a common problem due to lack of knowledge of how the system works or by blocking the vent with plants, debris, furniture, cans, etc.

During a TfS walk-through by EPA at Oakland Technical High School, staff noticed that the custodian’s closet, where chemicals were stored, smelled dank and moldy and had no ventilation. A hole in the wall that was made by the doorknob was discovered, which made the staff question where chemical fumes might be going. A small amount of chemical smoke was squirted into the hole and was sucked right in to the wall space. EPA staff became concerned that the wall space was now part of the ventilation system and wondered where else in the building the chemical fumes were going.

In addition, the staff investigated the ventilation system on the roof and discovered that air was being forcefully blown out of the air intake—the reverse of what should have been happening. They found that one of the two blowers was turned off, causing this reversal. They called the facilities director, who had not been able to attend the walk-through,

Excerpts from the TfS school official’s checklist

Examples of items from the school official’s checklist include:

1. Role as a liaison

- 1a. Obtained approval for addressing IAQ problem from the school board and continuously kept board informed of progress.
- 1d. Communicated IAQ program’s progress to parents, community and media.

2. Verbal and written support

- 2c. Participated in EPA’s mentoring program (i.e., obtained advice from schools and districts with effective IAQ programs and, after implementation, provided advice to other schools and districts initiating an IAQ program)
- 2d. Applied for EPA’s Leadership and Excellence Awards (after implementing the IAQ program)

3. IAQ management plan

- 3a. Obtained authorization from the Superintendent for the development of a districtwide IAQ management plan.
- 3d. Developed management plans for integrated pest management, radon and other relevant issues.

4. Emergency response

- 4a. Developed an emergency plan for IAQ crises.
- 4b. Identified a contact person(s) to communicate IAQ issues to the media.
- 4c. Notified school staff and other officials of emergency procedures and the identity and responsibilities of the contact person(s).

For each item, the respondent checks a box indicating “yes,” “no” or “not applicable.”

and made an appointment to show him what they had found. Upon visiting the school two weeks later, the ventilation mechanic simply turned the blower switch on and the system began functioning properly.

They discussed the situation and turned a corner to look at something else. As they rounded the corner they heard the roof door open and saw the custodian turn the same blower off. He had received a call from people in the office complaining that cold air had started to blow on them. He knew that it meant the second blower was on and believed that enough air came in with just one blower so he turned the other off to make the office staff comfortable.

The intent was good but the result was that the custodian had essentially re-engineered the system. Instead of bringing in air from the best place possible, he was bringing it in from under the foundation, moldy wall interiors, etc. EPA staff took advantage of a teachable moment—the imbalance in the system was adjusted, the vents in the office were adjusted, the custodian was instructed to call maintenance in the future and the blowers remain on in a properly functioning system.

Community partnership to implement TfS

Krista Ward is a community health educator with Breathe California, working with a two-year EPA grant to engage students to improve the health and safety of San Mateo County schools and homes. As part of this project, in fall 2008 Breathe California partnered with Citizen Schools, an after-school program in the Ben Franklin Intermediate School in Daly City where students sign up for apprenticeships with community members. In Breathe California's IAQ apprenticeship, students learned about the indoor environment using their school as an example, based on the TfS program, while strengthening public speaking, group work and computer skills. Ward chose this route because of positive existing relationships at Ben Franklin, support offered by Citizen Schools, experience working with youth who appreciate learning from their peers, and recognizing that middle school students are at an appropriate age for understanding and acting upon environmental and health information.

Using TfS, 15 student apprentices collected information from teachers about their IAQ, performed an environmental walk-through, and documented their findings with pictures and notes. The vast majority of problems they identified were easily remedied (e.g., classroom clutter, dirty vents, food wrappers) and are currently being addressed.

Upon completion of the project, the student apprentices presented to students in grades 3-6. Forty of those

students returned cards listing what they learned from the presentation including increased knowledge about tobacco, green cleaning, asthma and air quality.

In spring 2009, Breathe California continued the work with new student apprentices with Citizen Schools at Pollicita Middle School. Apprentice students not only were empowered to make a difference in their school and community, they shared their knowledge, gained valuable public speaking experience and have helped make their school and community a healthier place.

Involvement of staff and students

Visalia Unified School District has developed an integrated approach for the prevention, identification and remediation of IAQ issues utilizing the guidelines outlined in TfS.

The district's IAQ program is based on the following principles:

- School staff and students can prevent many IAQ problems.
- When IAQ problems do arise, they can often be resolved using the skills of school staff.
- The expense and effort required to prevent most IAQ problems are much less than the expense and effort required to resolve problems after they develop.

VUSD sponsored IAQ symposia and training for students and staff. The symposia were designed to foster student involvement and educate high school students about the importance of IAQ at their schools. Students learned about the important role they can play in developing and maintaining a healthier learning environment.

High school students have assisted the school district in conducting surveys for possible IAQ issues at the school sites and developed action plans to address any concerns.

In 2003, several VUSD students received a national excellence award from the EPA for their work on IAQ.

Interested students have established IAQ clubs at high schools. Lonnie Miller, advanced placement environmental science teacher at Golden West High School, has served as a faculty advisor. His students have conducted IAQ surveys at nearby schools.

Board Considerations

Board members committed to providing and maintaining a safe and healthy environment recognize that IAQ impacts student academic performance as well as staff productivity and attendance. A high priority given to improving IAQ will provide academic, health and cost benefits to school districts. Use of TFS, implemented by a team that includes student representation, is a cost-effective and efficient means of achieving this goal.

Boards should leverage all of their major responsibilities—setting direction, establishing an effective and efficient structure for the district, providing support to staff during implementation, ensuring accountability and acting as community leaders—to help ensure that schools provide good air quality. For further information about actions that boards can take, see CSBA’s policy briefs *Indoor Air Quality: Governing Board Actions for Creating Healthy School Environments* and *Asthma Management in the Schools*.

Resources

CSBA

CSBA provides sample board policies, administrative regulations and policy briefs on IAQ, asthma management and other health issues. See www.csba.org.

EPA

EPA developed the TFS program to reduce exposures to indoor environmental contaminants in schools through the voluntary adoption of sound IAQ management practices.

IAQ TFS Action Kit

www.epa.gov/iaq/schools/actionkit.html

IAQ TFS for School and District Officials

www.epa.gov/iaq/schools/district.html

IAQ and Student Performance Fact Sheet

www.epa.gov/iaq/schools/pdfs/publications/iaq_and_student_performance.pdf

IAQ TFS Awards Program

www.epa.gov/iaq/schools/awards.html

IAQ Design TFS (high performance schools)

www.epa.gov/iaq/schooldesign/highperformance.html

Community Action to Fight Asthma

www.calasthma.org/asthma_in_your_area

Breathe California

Breathe California TFS Partnerships
(Santa Clara-San Benito Counties)

www.lungsrus.org/Programs/Environmental_programs/tools_for_schools.htm

Breathe California TFS Partnerships

(San Mateo, San Francisco, Ravenswood)

www.ggphp.org/tiki-index.php?page=Tools+for+Schools&highlight=schools

Breathe California Jr. Health Inspector Program for 4th Graders

www.ggphp.org/tiki-index.php?page=Jr.+Health+Inspector&highlight=schools

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