



ASTHMA REGIONAL COUNCIL

WHAT'S THAT SMELL?

*Simple Steps to Tackle
School Air Problems*

*ARC is a coalition of governmental and
community agencies dedicated to addressing the
environmental contributors to asthma in
the New England states.*

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ASTHMA REGIONAL COUNCIL

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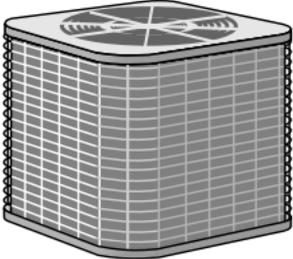
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This is a step-by-step guide to help school administrators and business/facilities managers understand indoor air quality problems in schools, know what help is available, and evaluate what types of professional assistance, if any, may be necessary to address the problem. The guide was conceived in response to a rising wave of schools hiring consultants and conducting air testing as a first response to an air quality problem. *It is important to know that testing for mold or specific pollutants is rarely useful as a first step.* This guide offers steps to take before you test, or hire a consultant.

STEP I. UNDERSTANDING IAQ.

There are 3 major sources of IAQ problems:

- **Heating, ventilation and air-conditioning (HVAC) operations.** Poorly designed or maintained HVAC systems may fail to provide adequate ventilation (enough outside fresh air and sufficient air movement to distribute it) to dilute inside pollutants. HVAC systems need good filtration to prevent outside pollen and particles from entering the building. Blocked or dusty vents in the classroom can also be a problem. 
 - **Mold Growth.** Leaky roofs or plumbing (past or present) can result in water damage that can cause mold. First focus on finding, fixing and maintaining building systems. Fix leaks promptly, before mold appears.
 - **Indoor/outdoor sources of respiratory irritants, pollutants and allergens.** The most common causes include: exhaust from vehicles outside the school, particularly when operated near an air intake; use of power tools or vehicles run on gasoline inside the building; exhausts from cooking
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areas, janitorial supply areas, bathrooms, science labs or technical education shops that may be inadequately vented; cleaning and other maintenance activities; plants; dust tracked in from outside; rodents; personal care products such as perfume; and dust and fumes caused by building renovation.

STEP II. PULL TOGETHER AN INDOOR AIR TEAM, INCLUDING:

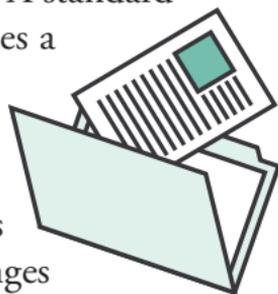
- Facilities manager and/or custodian
- School Nurse
- Teacher
- Parent
- School Administrator



The school principal, the business manager (or other official responsible for financial decisions and contracting) and the superintendent must be involved and informed, whether or not they are team members. Members of the team should ideally be representatives of their peers or their organizations. In addition, Local Boards of Health and State Departments of Health or Environment frequently have investigators who can assist you free of charge (*resources*).

STEP III. DOCUMENT AND COMMUNICATE

- Document the problem(s) in writing. A standard form should be developed that includes a description of the problem, when symptoms started to appear, points at which they increased or decreased in severity, and whether these changes coincided with specific events or changes at the school. Consider doing a staff survey.
- Create a tangible “file” accessible to all members of the air quality team, where all relevant information is kept. Develop a standard procedure for keeping the school community informed of the investigation’s progress.



STEP IV. FOCUS IN ON THE PROBLEM.

- ✓ **Check your ventilation system.** Find out when it was last checked and maintained. Check that the fresh air intakes are not closed or blocked and that there is no source of unwanted contaminate close to the intake. Check that sufficient outside air is being drawn into the system and sufficient air movement is provided to distribute it. Check the filters to ensure that none are missing or clogged, and that no mold is growing on them. Check that nothing is blocking thermostats or univents.
- ✓ **Check for mold.** Look and smell for dampness in the building and evidence of past or current water problems (e.g. stains, musty smells, wet areas, peeling paint, buckling of walls). Examine places that tend to get wet, such as roofs, windows (particularly below the window), doors, basements or below grade spaces, carpeting, and areas around water lines and drains.
- ✓ **Conduct a symptom survey** of staff to help reveal patterns. Since many irritants, pollutants or allergens may be present, responding to a specific problem will involve relating the specific symptoms or complaints and the times of their occurrences to potential sources and areas within the building.
- ✓ **Locate the areas affected.** If the problem comes to your attention first as a single complaint, do not assume the problem is localized. Share the problem description with the indoor air quality team. Ask the school nurse if there have been any similar complaints or patterns developing. If after consulting with the team it appears that the problem is related to a specific area of the building, the team should conduct a visual inspection for evidence of water damage, inadequate housekeeping, sources of respiratory irritants, and problems with the ventilation system.

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- ✓ **Use one of the many available simple tools that link symptoms to potential causes.** EPA's Indoor Air Quality Problem Solving Wheel is very user friendly and offers tips on narrowing in on the source. The University of Minnesota Department of Environmental Health and Safety [Appendix IV Conducting an Investigation](#) summarizes the information in one short page (*resources*).

STEP V. HIRING HELP

No single discipline or professional certification makes someone an Indoor Air Quality professional.

Professionals who may be able to help solve your indoor air quality problem include industrial hygienists, engineers, HVAC contractors, medical professionals (particularly occupational physicians), and architects. Each discipline has its own licensing and certification procedures. Field experience and success in solving similar IAQ problems are the best credentials a consultant can offer.

The core attributes to look for in an IAQ consultant:

- **Experience addressing indoor air quality problems in schools.** Calling the public and non-profit resources in your state and checking with colleagues can give you leads on who is doing this work in your area.
 - **Takes a problem-solving approach.** While testing may be part of the problem-solving sequence, it should not be the core service offered. Companies that simply measure concentrations of specific pollutants and compare them to a numerical standard are unlikely to help you get to a solution. A good consultant will interview you to understand your problem before deciding whether they can help you. Their questions should parallel the questions your team asked in-house based on **Step IV** above. The types of testing they suggest may include visual inspection, temperature, relative humidity, carbon
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dioxide/monoxide, air velocity, and using smoke to trace air flows. These tests are used in helping to identify the source of the problem. A good consultant should explain how the tests they recommend will help diagnose and ultimately solve your problem.

- **Good communication skills and effective team player.** Even before hiring a consultant, have them present their approach to your team as well as to some of the broader constituents. See how they handle questions and interact with parents and teachers. They need to be able to explain their work to lay people who have a high investment in the outcome.

There are three excellent guides (*resources*) for hiring IAQ consultants. The third one listed, Hiring Professional Assistance from the EPA Indoor Air Quality Tools for schools, includes performance specifications that can be included when designing an RFP for work on ventilation systems. If you are considering testing as part of the services you purchase please review the Maine Indoor Air Quality Council's Guidance to Determine the Need for IAQ Testing (*resources*), which can help further refine what testing you need.



STEP VI. FIXING PROBLEMS

If you identify a problem, plan remediation very carefully. In many situations, a low grade problem with a few symptomatic individuals becomes much worse when damaged or contaminated materials are removed or disturbed without care regarding the distribution of dust and debris. Work should take place when the building is not occupied and be done in a manner that minimizes contamination. The area should be thoroughly cleaned before it is reoccupied. (see NYC and EPA guidance on mold remediation, *resources*). Removing asbestos or mold contaminated material may require isolation or barriers between the work zone and the rest of the building to minimize the area that must subsequently be cleaned.

STEP VII. MOVING TO A PREVENTION APPROACH.

While addressing this indoor air issue you have begun to set up the infrastructure for an ongoing prevention-based indoor air program. The IAQ team and the procedures for documenting and communicating problems with the school community should continue after this problem is solved. The team can expand and become an on-going Environmental Health and Safety Committee that conducts routine inspections. The EPA's Tools for Schools package is an excellent and easy to follow road map for setting up such a system. <http://www.epa.gov/iaq/>

Governmental Assistance and Referrals:

New England EPA's Tools For Schools Coordinator,
Eugene Benoit benoit.eugene@epa.gov
Mr. Benoit can refer you to your state contact.

RESOURCES:



MOLD:

Minnesota Department of Health's
Best Practices for Mold Investigations

<http://www.health.state.mn.us/divs/eh/indoorair/schools/mold.html>

California Department of Health's
Mold in My Schools What Do I do?

www.cal-iaq.org/MoldinMySchool.pdf,

New York City Department of Health's Guidelines on
Assessment and Remediation of Fungi in Indoor
Environments,

<http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html>

U.S. Environmental Protection Agency's

Mold Remediation in Schools and Commercial Buildings,

<http://www.epa.gov/iaq/molds/index.html>

TOOLS TO ASSOCIATE SYMPTOMS WITH CAUSES:

The Massachusetts Bureau of Environmental Health
Assessment Indoor Air Quality and the Function of Fresh Air
Supplies and Exhaust Vents in Schools.

<http://www.state.ma.us/dph/beha/iaq/iaqhome.htm>

EPA's Indoor Air Quality Problem Solving Wheel, from the
IAQ INFO Clearing House 1 -800-438-4318.

The University of Minnesota Department of Environmental
Health and Safety Appendix IV Conducting an Investigation

<http://www.dehs.umn.edu/iaq/school/iaqappen4.html>

GUIDES FOR SELECTING INDOOR AIR QUALITY CONSULTANTS

Guidelines For Selecting An Indoor Air Quality Consultant
by the American Industrial Hygiene Association

<http://www.aiha.org/ConsultantsConsumers/html/OOiaq.htm>

A modified version which is shorter and more direct can be
found at The California Health Department web site

http://www.cal-iaq.org/guide_aiaha_9901.htm

Hiring Professional Assistance to Solve an IAQ Problem,
modified from *Building Air Quality: A Guide for Building
Owners and Facility Managers*, NIOSH Publication 91-

114. http://www.cal-iaq.org/guide_baq_9901.htm

Hiring Professional Assistance, modified from *Indoor Air
Quality Tools for Schools: IAQ Coordinator's Guide*, EPA
Publication 402-K-95-001

http://www.cal-iaq.org/guide_ak_9901.htm

Maine Indoor Air Quality Council's

Determining the Need for IAQ Testing.

<http://www.miaqc.org>