

Should I Test My Indoor Air?

Homeowners, tenants, office workers, teachers, parents, building managers, and others often wonder whether they should test the indoor air to assure themselves of “good indoor air quality.” In most cases, indoor air testing is not the first step. This fact sheet explains why indoor air testing is not usually necessary, especially for mold, and provides helpful tips to ensure good indoor air quality.

There are several important reasons why experts recommend caution before conducting indoor air testing.

There Are No Standards

- There are no appropriate health-based standards for most indoor air quality (IAQ) pollutants in environments such as schools, office buildings, and residences.
- There are some industrial health-based standards for permissible exposure limits (PELs) for certain chemicals used in manufacturing and other workplace settings, but these standards should not be used in schools, office buildings, or residences. These PELs were established for a healthy adult worker, therefore, they are not appropriate for children, sensitive populations such as pregnant women, the elderly, or people with certain illnesses.
- There are no health-based standards for indoor levels of mold. This is because there is great variability in people’s reaction to mold. Also, there is no scientific support for designating a particular mold concentration as “safe” or “unhealthy”.
- The [most current ventilation guidelines](#) for acceptable indoor air quality are just that—*guidelines*. They are not enforceable unless they are part of the building code. Newer buildings are generally designed according to newer ventilation guidelines, but older ones built to a building code in existence at the time of construction (especially pre-1989) may be outdated.

The Lack of Enforceable Health-based Standards Makes Testing Interpretation Challenging

- Without enforceable standards, it is difficult to interpret the results of and provide recommendations of air testing.
- Testing as a first response does not usually lead to an answer or solution. Very often, air testing is conducted as an immediate reaction to a reported IAQ problem. Such testing done in the absence of a well-planned investigation usually produces results that raise more questions than answers, as there are not clear recommended actions associated with test results.

The Results of Indoor Air Testing Rarely Provide the Information Needed to Solve the Problem

Although indoor air testing might seem to be the logical response to health complaints, the results rarely provide information about possible causes or what is needed to solve the problem. In some cases, indoor air results can be misleading.

- While certain basic measurements such as temperature, relative humidity, and carbon dioxide (CO₂) can provide a useful snapshot of current building conditions, sampling for specific chemicals or mold is usually not required to solve the indoor air problem and can be misleading because test results will almost always find detectable levels (background levels) that may or may not be related to the health complaint.
- Background Exposures — Most indoor pollutants (mold, particles, volatile chemicals) are present in all buildings at “background” levels. These contaminants are present in most buildings without causing adverse health effects. Testing indoor air will likely find chemicals or mold at levels typically found in most buildings that have no significance with respect to reported health complaints.

Therefore, TESTING IS NOT RECOMMENDED:

- if the results cannot be interpreted using health-based standards
- if the results will add no meaningful information
- just because someone wants it done

Tips on How to Create a Space with Good Indoor Air Quality That Do Not Involve Air Testing

- Walk through the building using your eyes, nose, and common sense to identify potential problems.
- Look at general cleanliness (or lack thereof) in each of the areas you inspect.
- See if building services can substitute cleaning agents that have less odor (“low emitters”) than the stronger odor-producing ones that may be in use.
- In addition to bedrooms, bathrooms, classrooms, offices, gymnasiums, locker rooms, auditoriums, music rooms, industrial and fine arts rooms, etc., also look at maintenance areas such as janitor closets, mechanical rooms that house ventilation equipment, chemical storage closets in labs and in custodial areas, etc. Do not store chemicals near ventilation equipment.
- Take note of where carpeting is used. How is it cleaned, and how often? Does it ever get wet from flooding, roof leaks, etc., and if so, how quickly is it dried out?
- Ensure that water problems or leaks are fixed promptly to prevent mold growth.
- Remove and discard all porous materials damaged by water. This includes ceiling tiles, carpets, furnishings, and even wallboard.
- Walk around outside of the building and look for potential pollution sources.

- Look for locations of fresh air intakes and exhausts. Are they too close together, allowing exhaust air to be sucked back into the building via the intakes? Are the intakes located near dumpsters or where buses, trucks or cars idle?
- Look at how the building is set on the land. Does the land slope downward towards the building, allowing rainwater to pool along the foundation? Is the land near the building marshy? Are gutters filled with debris? Do downspouts direct rainwater runoff close to the building foundation? Is landscaping close to the building? Any of these problems can cause moisture and mold problems inside a building.
- For schools, EPA's [Tools for Schools](#) Action Kit should be instituted as a preventative framework for identifying and addressing problems early on, before they become unmanageable. Many of the basic concepts in EPA's **Tools for Schools** materials can be applied to non-school settings, such as office buildings. The National Center for Healthy Housing's [Principles of Healthy Homes](#) provides a similar framework for residential properties.
- Schools should schedule minor jobs such as painting, floor re-surfacing, carpet installation, etc. during hours when school is not in use. Schools should also use low emitting paint, glues, polyurethane and other building materials whenever possible and limit the use of particleboard, pressed wood and plywood containing formaldehyde.
- Examine building usage by comparing the hours the building is used with any automatic timers that may be set to turn the mechanical ventilation systems on and off and adjust as necessary. Those who schedule building usage for activities must be sure to communicate this to facilities management. Mechanical systems should be turned on early enough in the morning to allow the systems to attain full capacity by the time school or work begins.
- Schools, offices, and apartment buildings often have service contracts to take care of certain parts or all of the physical plant. This is especially true for the ventilation equipment. You can ask questions about how often filters are scheduled to be changed, and about what other components are included in an annual service contract (be sure to ask to see the maintenance log for proof of when this work was completed). If your facility subcontracts for janitorial services, find out what is included in the contract. Ask about the cleaning agents they use, and request "low emitting" chemicals when available.
- Build communication into large renovation projects. Before major renovation projects are scheduled, meet with office workers, the principal, teacher representative, school nurse, facilities director, and local health director in your town or district. Set up a plan for communication relevant information to everyone who may be affected. This includes workers, parents, and students. Plan to do as much work as possible during non-school or non-business hours. Isolate construction areas from non-construction areas using barrier techniques to minimize contamination in areas that will be used for normal school or office activities.

When Is Indoor Environmental Testing Useful?

Once a problem has been identified, the solution may be thought of as a puzzle. There are many pieces and air sampling may be one of them. Other important pieces of the puzzle will include: a building walk through, taking a history of the physical plant and any past and present maintenance problems, history of building usage and land usage on the property and surrounding neighborhoods, review of architectural and mechanical blueprints, interviewing maintenance staff, and anything else that would add information about the physical structure of the building, and the activities that go on in and around the building.

It may also be useful to interview the building occupants. Ask for their help in identifying problem areas. Set up good lines of communication between management, staff, and parents. This is crucial and cannot be over emphasized! Ask the school or company nurse if they have observed or documented an increased incidence of health complaints. Are there specific types of complaints or are they more generalized in nature? It may be desirable to do a symptom survey if many people are affected. Your local health director can help coordinate these activities.

When all the practical steps and investigations described above have been conducted, there *may* be a place for air testing. Air testing may be used to confirm or refute a highly suspected source that is uncovered during the walk through inspection.

Air testing is most useful when a specific contaminant or contamination source has already been identified as a likely culprit, and quantitative data are needed to:

- Document the degree or extent of the hazard, or
- Document different locations of a building where elevated levels or severe conditions exist.

Air testing may also be useful in a qualitative manner when trying to differentiate between several suspect chemicals or sources. Although air testing is sometimes useful in tracking down chemical sources, air testing for mold is an entirely different story. A complicating factor in interpreting air results from mold testing is that a variety of molds are present in our everyday environment. Most of the time, you will find that molds normally found outdoors are also present indoors. This is because they are carried in on our clothing and shoes, and enter buildings via open windows, doors, and fresh air intakes.

To review, indoor air testing may be useful when:

- **It is part of an overall evaluation**
- **When the data can be interpreted using a health-based standard**
- **When the data have a descriptive component that help to illustrate a place in the overall evaluation**
- **It is not done as the sole evaluation measure**

Tips for When You Decide You Need to Call in a Consultant

Remember that the problems identified with testing may require more than one type of specialist for correction or remediation. For example, you may need a ventilation engineer, or a moisture specialist, or an architect, or an industrial hygienist, or an environmental/geology consultant. Below are some tips to follow when hiring a consultant.

- Discuss the problem with your local health director and enlist their help with risk communication to all stakeholders. They may also be able to help you select the right type of consultant for the job at hand.
- Review information about [how to select an indoor air quality consultant](#) on the American Industrial Hygiene Association (AIHA) website.
- Have a clear understanding of the problem, so that you can direct the consultant properly.
- Make sure the consultant explains the scope of the project upfront — what they can and cannot do. Communicate this to all stakeholders so they will have realistic expectations about the process.

An Important Note about Carbon Monoxide Detectors, Smoke Detectors, and Radon

There are specific contaminants for which testing, or monitoring, is extremely important. Carbon Monoxide (CO) is a colorless, odorless, and deadly gas produced by any fuel burning appliance. CO detectors alert occupants when CO levels reach levels that could be life threatening. Smoke detectors save lives by sensing when smoke is present in the air at levels that could indicate a fire and emit an alarm to warn occupants. Radon is a cancer-causing, radioactive gas that is naturally occurring. Unlike most indoor air contaminants, there is a health-based guideline for radon in indoor air, so a radon test result can easily be interpreted.

For more information, contact:

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