

# Use this toolkit to improve IAQ at work

## Toolkit Overview

**T**his toolkit offers ways for you and your office co-workers to address workplace indoor air quality (IAQ), in partnership with owners of your business and your building, and with maintenance and cleaning staff. The toolkit will help you:



**You Can Improve IAQ**

## Learn about the causes of IAQ problems.

### **Gather information on IAQ issues.**

Understanding some common causes of problematic IAQ can help you begin to target solutions. Educated co-workers can most effectively work with outside experts when such help is necessary.

This toolkit will give you basic background information on IAQ problems and problem-solving guidance from the U.S. Environmental Protection Agency (EPA) and other sources. More detailed information is available in the [Resources](#) section.

- **Learn about the issues**

- **Team up to address problems**

## Team up to improve IAQ.

### **Start a new Green Team or expand existing activities – such as those of a recycling Green Team – to tackle IAQ.**

Organize to educate co-workers and motivate participation in workplace IAQ improvements.

### **Conduct IAQ research and organize information.**

Green Team IAQ survey results will help track down causes of IAQ complaints.

### **Educate your building's operational or facility managers.**

Valuable resources for technical IAQ improvements are readily available from U.S. EPA and other agencies, including titles listed in this toolkit's [Resources](#) section.

- **Apply resources from the Green Building Industry**

## Use LEED® to understand IAQ issues and options.

### **LEED® green building guidelines set standards for a healthy workplace.**

Most of the indoor air pollution causes identified by the U.S. EPA are addressed by the U.S. Green Building Council's LEED® (Leadership in Energy and Environmental Design) standards.

LEED is used to formally certify green building projects. Even more importantly, LEED standards can be adapted as Best Practices to improve the physical working environment in any building.

### **Become familiar with IAQ criteria defined by LEED.**

These national green building standards promote building performance, occupant comfort, health factors, individual and group productivity, economic savings, protection of natural resources and overall sustainability. LEED incorporates the concerns, interests and expertise of public and private sector business leadership. Recommendations for IAQ improvements based on LEED will have the weight of research by leading building professionals. Let LEED work for you!

## How are you feeling?

Many people are concerned about outdoor air pollution. But are you aware of how IAQ affects the overall quality of our lives?

Have you ever caught a cold from someone on an airplane? Has your child gotten the flu from a classmate? Have you felt light-headed or nauseous when using strong cleaning products? Have you experienced headache or congestion in a freshly painted or carpeted room?

IAQ is a factor in all these situations, where germs or pollutants transmitted through the air cause various kinds of physical distress.

Air pollutants generally affect the respiratory system first, but they may also irritate the eyes or be absorbed through the skin and affect other organs. Some pollutants are even stored in body tissues, creating the potential for adverse health effects over time.

People who work in buildings with poor IAQ frequently experience health problems that the World Health Organization broadly defines as "Sick Building Syndrome."

Symptoms can include:

- Eye, nose or throat irritation
- A sensation of dry mucous membranes
- Dry skin or rashes
- Mental fatigue
- Headaches
- Nausea
- Dizziness
- Coughing
- Hoarseness
- Wheezing
- Itching
- Other hypersensitivity reactions

According to the U.S. EPA, health effects that have clearly been related to building occupancy include:

- Infectious diseases such as measles or flu
- Toxic syndromes resulting from exposure to carbon monoxide, pesticides or microbial toxins
- Hypersensitivity conditions like asthma, in which the body reacts severely to low levels of pollutants
- Specific diseases directly attributed to a building, such as Legionnaire's Disease

## U.S. EPA Reports

- **Americans today spend 90% of their time indoors**
- **Most adults spend a third or more of most days indoors in a workplace**

## As air moves through an office...

Pollutants circulated through heating, cooling and ventilation (HVAC) systems can contaminate working spaces. Contaminants introduced through outdoor air circulation can become a problem when they are concentrated indoors.

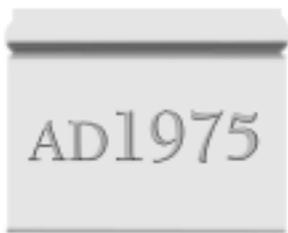
Tenants in leased industrial and retail settings may be able to control ventilation in their workspaces to accommodate safety, operational and utility billing needs, but occupants in multi-tenant office buildings typically have minimal control over centralized HVAC operations, except for regulating some temperature zones.

Likewise, services that heavily impact IAQ in office buildings, such as cleaning,

maintenance and remodeling, are often contracted and overseen by property managers, so they are typically also out of office space occupants' immediate control.

Facility managers can accomplish a great deal to improve IAQ problems, but even skilled individuals may not have specialized training needed to address IAQ. In situations where an IAQ issue is persistent and aggravating, occupants may ultimately need to request that their building owner or property management firm hire a qualified environmental or HVAC consultant to evaluate and monitor IAQ complaint conditions, or deal with remediation.

## What's in the air where you work?



How old is the building you work in? The energy crunch of the early 1970s prompted widespread changes in building design and construction. For example, levels of air exchange were reduced from 20 to 5 cubic feet per minute per person.

Tighter structures began to make better use of energy for heating and cooling. However, they also trapped indoors many pollutants associated with building materials, furnishings, cleaning products and everyday work.

This happens in buildings we live in, too. A study conducted by the Walter Reed Army Institute of Research in Washington, D.C., found up to 50 percent higher incidence of upper-respiratory problems in recruits housed in newer, more energy-efficient buildings, compared with soldiers living in older, less air-tight structures. Details were reported in the *Journal of the American Medical Association* in 1988.

Air moves through a building from areas of higher pressure to lower pressure through any available openings. A building's HVAC system is generally the main pathway and driving force for movement of air through interior spaces. Airborne pollutants get around the same way! All of a building's components – including walls, ceilings, floors, doors and windows, HVAC equipment and even occupants – interact to affect the distribution of air, and airborne contaminants.

The U.S. EPA's excellent resource ***Building Air Quality – A Guide for Building Owners and Facility Managers*** (1991) defines many pollutants that commonly enter working environments as outdoor air is circulated. EPA also lists substances that can contaminate indoor air from inside.

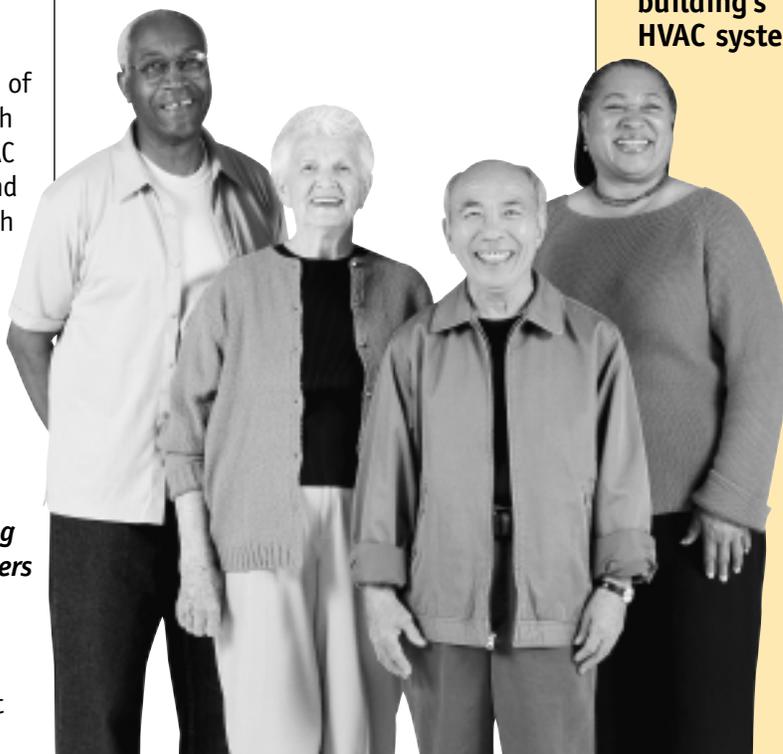
If inside and outside pollution sources are not controlled, IAQ problems can result even if your building's HVAC systems are properly designed and maintained.

Visit the ***Tox Town*** website (see **Resources**, page 41) where interactive graphics show where pollutants can occur in an office building, as well as other settings.

Indoor air can contain multiple types of contaminants at concentrations that are far below any standards or guidelines for occupational exposure. With so many variables possible in a situation of poor IAQ, it's often difficult to relate specific health complaints to a specific pollutant, since such exposures may be to low levels of a pollutant or to pollutant mixtures.

Continual exposure to combined-pollutant problems can be detrimental even to very healthy people. Workplace IAQ problems can be especially hazardous for individuals with compromised respiratory health or chemical sensitivity.

You'll find a listing of ***Sources of Indoor Air Pollutants*** on page 43. Which ones could be affecting your workplace?



*Air pollution affects us all: hourly, salaried, service and professional workers.*

### Maintain Healthy Indoor Air Quality

- Identify and remove obstructions to office airflow, such as boxes or desks placed over vents or in front of air return grilles
- Insist on professional maintenance of your building's HVAC system!