

Sick Building Syndrome: Is Your Office Making You Sick?

By Chris Woolston

Poor air quality and the depletion of the ozone layer is a constant focus of news -- and not always good.

Fortunately, the Environmental Protection Agency says we're making progress in reducing the six key pollutants in our air, including carbon monoxide, lead, and ozone. The bad news is that while the outside air is improving, the air we breathe indoors may be getting worse.

Workers have fallen sick in buildings ranging from libraries and hospitals to offices, and some of them say poor indoor air is to blame. Complaints are especially common in newer, energy-efficient buildings where windows are sealed shut and fresh air is scarce. So many cases have been reported that the Environmental Protection Agency estimates that one out of four new or renovated indoor buildings in the U.S. may be classified as "sick buildings." Workers suffering building-related illnesses cost business billions each year in lost productivity, sending many companies on a desperate search for answers.

Indoor air: a chemical stew?

Of course, sometimes indoor air is actually better than outdoor air, depending on pollution levels. But in other cases employees are working in a sort of low-level chemical stew -- an unwelcome byproduct of our industrialized environment.

Employees in high-rises, particularly those over parking garages or loading docks, may breathe in carbon monoxide carried into the building through the fresh-air-intake vents. If smokers are chatting outside next to an air intake vent, workers inside the building may even inhale secondhand smoke through the ventilation system. Printers and fax machines emit ozone, which may combine with other organic chemicals in the workplace. Exterminators spray pesticides that may linger for days in the carpet. Cleaning products sprayed on walls and floors at night add to the mix, as do copy machines, which emit ozone and are frequently unvented. Revolving doors suck in car exhaust and cigarette fumes from people smoking outside; building renovations throw in construction dust, paint fumes, and "off-gassing" fumes from new carpets. If you're like most office workers, you can't crack open a window because you work in a sealed building.

And even if your indoor air isn't polluted, you simply may not be getting enough fresh air. The American Society of Heating, Refrigerating, and Air Conditioning Engineers recommends that ventilation systems pump in 20 cubic feet of fresh air per minute for every person in office spaces. In many cases, however, building operators pump in only 5 cubic feet -- giving the building air the appeal of a long-distance plane flight.

The difference is, a long-distance flight lasts only a few hours, while you may spend up to 10 hours a day at work breathing bad indoor air. The result: headaches, nausea, dizziness, irritability, itchy eyes, and respiratory illnesses, among other problems.

Building-related diseases

As experts began tackling "sick buildings," they soon found two completely different types of problems: building-related diseases and sick building syndrome. Building-related diseases are distinct maladies that can be traced to a specific cause, such as colds that spread through an office, allergies and asthma brought on by dust or mold, or even cancer triggered by pesticides or asbestos.

Perhaps the best-known case of building-related infection occurred in 1976, when 182 cases of a mysterious pneumonia struck members of the American Legion attending a conference in Philadelphia. It took months of investigation and lab work to uncover the culprit: a never-before-seen bacterial organism, *Legionella pneumophila*, which -- if left to its own devices -- likes to grow in the warm water in a building's cooling towers. When mists from that water are conducted into a building via the ventilation system, researchers found, mass illness can result. Another building-related disease caused by *Legionella* is Pontiac fever, marked by fever, chills, headaches, and body aches.

Does that mean if you have fever, chills, headache, and body aches you should assume that *Legionella* is the culprit? Probably not. Most illnesses in the workplace are simple cases of the flu or colds. But if you have recurring symptoms and your doctor can't find the cause, take a look at your environment at work and at home.

If you suspect that something in your work environment may be to blame, ask your human resources representative to talk to the building manager about having the building inspected. If others in your work area are ill as well, document your symptoms, including when and where they occur. Don't be afraid to speak up. Finding the root of the problem is to your employer's benefit, too. Building-related asthma, for example, can cause permanent damage to your health -- and lost productivity and increased health costs for your employer. Investigators should check for water damage and humidifiers contaminated with microbes, which may contribute to work-related asthma and hypersensitivity pneumonitis, according to work-health specialists Mark Cullen and Kathleen Kreiss, who discuss indoor air pollution in the textbook *Occupational Health* (Lippincott, 2000).

Cullen and Kreiss add that researchers should also look into specific toxins as possible causes -- nausea and headaches suggest carbon monoxide may be sneaking into the building through the air-duct system, for example, from trucks idling outside. Mysterious itching may be caused by exposure to fibrous glass from an air-duct lining. And relentless coughing and throat irritation may be the end result of harsh or improperly used carpet cleaners.

Sick building syndrome

More common than illnesses with a traceable cause, however, are complaints of "sick building syndrome" -- a constellation of symptoms that usually includes fatigue, headache, dry, itchy skin, and irritation of mucous membranes in the eyes, nose, and throat. Unlike building-related diseases, these symptoms tend to disappear once people are out of the suspect building.

People with sick building syndrome usually don't have any disease that a doctor can detect, but their suffering is undeniable, says Richard Lockey, MD, director of the Division of Allergy and Immunology at the University of South Florida and an expert on indoor air quality. In some cases, the symptoms are so severe that a person can no longer work at the building in question.

Sick building syndrome has become more common than all building-related diseases combined, but so far, Lockey says, familiarity hasn't led to understanding. Nobody knows for sure why so many people are getting sick: Is it really the air, or is it something else?

Some researchers have speculated that sick building syndrome is related to the energy crisis of the 1970s, which resulted in highly insulated "tight buildings" and a lowering of ventilation standards to 5 cubic feet of outdoor air per person per minute.

Or perhaps small impurities in the air are adding up to something big. As explained in a 1997 article in *The Lancet*, a British medical journal, tiny amounts of chemicals escaping from paints, carpets, office supplies, photocopiers, and other sources may be combining to make the air hazardous.

Still other experts believe the epidemic of sick building syndrome may be linked to easily fixed factors like poor lighting. John Rekus, a Baltimore-area safety consultant and contributing editor of *Occupational Safety* magazine, says many of the symptoms are really caused by simple problems with heat, humidity, and light. It's only natural to feel miserable when any of these environmental factors is out of whack, he says. As a case in point, Rekus mentions an office he once visited in which almost everyone had headaches --and where almost everyone blamed bad air. Noticing a striking glare on the computer screens, he turned off half of the fluorescent lights buzzing overhead. Within days, the headaches disappeared.

Some reports of sick building syndrome have been linked to another great epidemic of our times -- job stress, according to Cullen and Kreiss. Repetitive tasks, poor work relationships, and feelings of helplessness can all sap workers' health as well as their enthusiasm. Anybody who spends all day doing tedious work and sparring with bosses and coworkers is bound to feel terrible, fumes or no fumes.

Whether the main problem is stress or bad air, employers have to realize their employees are suffering real symptoms -- and sick employees are never good for business, says Rekus. If something is wrong with the building -- if, say, the fresh-air vent really is pumping in carbon monoxide or tar fumes -- companies should do whatever it takes to clear the air, he says. The most common intervention is better ventilation -- both the amount of fresh air allowed to enter and the volume that's being circulated.

Employees can do their part as well. The Environmental Protection Agency has these tips to help keep the air in your workplace as fresh as possible:

- Don't block air vents or grilles.
- If you must smoke, do it outside and far away from the fresh air intake ducts, and comply with your company's smoking policy.

- Take care of your office plants -- dusty, dying plants don't do anything for the air quality in your office, and over-watered plants can develop mold.
- Get rid of garbage promptly to prevent odors and biological contamination.
- Store food properly. Keep perishable food in the refrigerator, and clean the refrigerator out frequently to prevent odors and mold.
- Keep eating areas clean to avoid attracting pests. (Cockroaches have been linked to respiratory problems -- according to the EPA, certain proteins in cockroach droppings and saliva can cause allergic reactions or trigger asthma symptoms.)

If you or your coworkers are having health problems that you think may be related to your office environment, work with your HR representative and building personnel to find the cause of the problem.

Further Resources

The Environmental Protection Agency's Guide to Indoor Air Quality
<http://www.epa.gov/iaq/pubs/insidest.html>

National Institute for Occupational Safety and Health (NIOSH) <http://www.cdc.gov/niosh>
 800-232-4636

Occupational Safety and Health Administration (OSHA) <http://www.osha.gov>
 800-321-6742

References

Environmental Protection Agency. Air Trends. November 2008. <http://www.epa.gov/airtrends>

Environmental Protection Agency. Indoor Air Pollution: An Introduction for Health Professionals. August 2006. <http://www.epa.gov/iaq/pubs/hpguide.html>

Air Quality Continues to Improve: new report and data. Environmental Protection Agency. Sept. 15, 2003. http://www.epa.gov/newsroom/headline_091503.htm

Building Air Quality: A Guide for Building Owners and Facility Managers, Environmental Protection Agency, Department of Health and Human Services, National Institute for Occupational Safety and Health <http://www.cdc.gov/niosh/pdfs/iaq.pdf>

Routine Maintenance, Cleaning Key to Eliminating Deadly Bacteria, Occupational Hazards, May 1, 2001, Vol. 63, No. 5, Pg. 31

An Office Building Occupant's Guide to Indoor Air Quality. Environmental Protection Agency.