

Air Quality in Large Buildings

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WHAT IS SICK BUILDING SYNDROME?

The term "sick building syndrome" (SBS) is used to describe situations in which occupants of large buildings experience acute health and comfort effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be widespread throughout the building. In contrast, the term "building related illness" (BRI) is used when symptoms of diagnosable illness are identified and can be attributed directly to airborne building contaminants.

A 1984 World Health Organization Committee report suggested that up to 30 percent of new and remodeled buildings worldwide may be the subject of excessive complaints related to indoor air quality (IAQ). Often this condition is temporary, but some buildings have long-term problems. Frequently, problems result when a building is operated or maintained in a manner that is inconsistent with its original design or prescribed operating procedures. Sometimes indoor air problems are a result of poor building design or occupant activities.

Indicators of SBS include:

- Building occupants complain of symptoms associated with acute discomfort, e.g., headache; eye, nose, or throat irritation; dry cough; dry or itchy skin; dizziness and nausea; difficulty in concentrating; fatigue; and sensitivity to odors.
- The cause of the symptoms is not known.
- Most of the complainants report relief soon after leaving the building.

Indicators of BRI include:

- Building occupants complain of symptoms such as cough; chest tightness; fever, chills; and muscle aches
- The symptoms can be clinically defined and have clearly identifiable causes.
- Complainants may require prolonged recovery times after leaving the building.

It is important to note that complaints may result from other causes. These may include an illness contracted outside the building, acute sensitivity (e.g., allergies), job related stress or dissatisfaction, and other psychosocial factors. Nevertheless, studies show that symptoms may be caused or exacerbated by indoor air quality problems.

WHAT CAN BE DONE ABOUT AIR QUALITY IN LARGE BUILDINGS?

Four basic requirements to maintain good air quality in large buildings:

1. Eliminate Tobacco Smoke

A smoke-free policy is the best way to protect the health of all employees. If that is not currently feasible, smoking should be allowed only in a separately-ventilated area reserved exclusively for that purpose, where no nonsmoker is required to enter or pass through.

Your local American Lung Association can provide materials to help companies develop and implement no-smoking policies. Call 1-800-LUNG-USA (1-800-586-4872).

2. Provide Adequate Ventilation

Guidelines for office buildings set by the American Society of Heating, Refrigerating, and air conditioning engineers (ASHRAE) require circulation of fifteen to sixty cubic feet of outside air per minute per person, depending upon the activities that normally occur in that room. If air circulation in large open spaces is hampered by partitions, raise the partitions approximately six inches off the floor.

To assure adequate ventilation in a modern building, adjustments can be made to the ventilating system. In older buildings, windows can be opened, ceiling fans can be installed to help circulate the outside air, and humidifiers or dehumidifiers can be added. Relative humidity should be kept between thirty and sixty percent.

3. Maintain The Ventilation System

Regularly clean and disinfect every part of a ventilating, heating or cooling device or system, including humidifiers and dehumidifiers, air filters, air circulation pumps and blowers.

4. Remove Sources Of Pollution

It is important to keep up to date with the chemical components and health effects from exposure to equipment, furnishings and supplies in your office. Change or remove sources that cause problems for workers.

Also, ask the building manager or other responsible person to:

- In new or renovated buildings, increase the ventilation rate for the first few weeks of occupancy. This will dilute possible emissions from new polluting sources.
- Alter or remove office equipment, furnishings, and supplies that continue to cause trouble for workers. Some formaldehyde sources, for example, can be eliminated by the use of a coating or sealer.
- Obtain assurances from the seller that new furnishings and equipment are free of irritating gases and can be returned if

- found to cause symptoms among workers.
- If the building contains an attached or underground garage, make sure the ventilating system operates so as to prevent auto exhaust fumes from entering the offices. Also, check air ducts for leaks.
 - Locate loading docks or dumpster areas far from the building's air supply inlet vents.
 - Check cleaning agents for dangerous components. If possible, use non-toxic materials. If not, ventilate offices during and after using cleaning agents.

If, in spite of these measures, workers continue to have symptoms, hire an environmental indoor air quality professional to test the air and identify the problem.

FOR MORE INFORMATION

The US Environmental Protection Agency Indoor Environment's website includes a document, "IAQ in Large Buildings," which can be found at <http://www.epa.gov/iaq/base/index.html>