

# PROPER BUILDING VENTILATION SYSTEMS

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Legionnaire's disease, mold growth, carbon monoxide, pool chemical spills, and other ventilation-related problems have been reported to cause serious illness, injury, property damage – and even death. These issues may possibly be avoided with a properly designed, installed and maintained ventilation and air conditioning (HVAC) system. Hotels, office buildings, and industrial plants are particularly susceptible to air-borne contaminants.

## LEAVE IT TO THE EXPERTS

The design of HVAC systems should be left to qualified experts and licensed contractors who understand the proper application of fans, ducts, compressors, chillers and controllers. In the case of new buildings, architects should work in concert with HVAC professionals. Furthermore, civil and mechanical engineers take into consideration the building's use, location, and physical characteristics.

## ENVIRONMENTAL AND OCCUPANCY CONSIDERATIONS

Environmental conditions, especially those that are weather-related, such as solar loads, humidity, and wind direction, along with occupancy makeup, should be considered when designing ventilation systems. Most workplaces do not require specially designed ventilation systems, but if tenants include medical offices and labs, allowances should be made to accommodate special requirements. Special exhaust systems may have to be designed into the ventilation system so that cross-contamination does not occur.

Computer “clean” rooms, or areas sensitive to the outside environment may require specialized ventilation and filtering systems. Hotels, motels, and convention halls are susceptible to imbalances of airflow and may require a variety of dedicated zones, including kitchens, large ballrooms, and meeting rooms. The balance of clean, comfortable, conditioned air is a challenge that only a trained professional should handle.

## INDOOR AIR QUALITY

A breakdown in this delicate balance may lead to what has generally become known as “Indoor Air Quality” problems or “Sick Building Syndrome.” Complaints usually include headache, eye and throat irritation, or general malaise.

## WHAT ABOUT MOLD?

Recent studies and media reports – not to mention court cases – have focused on interior mold growth. While most mold results from flooding or water leaks, it can also come from faulty construction or defective HVAC systems causing condensation to become trapped behind vinyl wallpaper and other building materials.

## FOR ADDITIONAL INFORMATION

**ASHRAE:** American Society of Heating, Refrigeration and Air-conditioning Engineers. <http://www.ashrae.org>, ASHRAE Book Indoor Air Quality Guide may be found here – [https://www.techstreet.com/ashrae/standards/indoor-air-quality-guide-the-best-practices-for-design-construction-and-commissioning?gateway\\_code=ashrae&product\\_id=1703605](https://www.techstreet.com/ashrae/standards/indoor-air-quality-guide-the-best-practices-for-design-construction-and-commissioning?gateway_code=ashrae&product_id=1703605)

<https://www.ashrae.org/technical-resources/bookstore/indoor-air-quality-resources>

**OSHA:** Occupational Safety and Health Administration, <https://OSHA.gov>

<https://www.osha.gov/SLTC/indoorairquality/>

<https://www.osha.gov/Publications/3430indoor-air-quality-sm.pdf>

**ACGIH:** American Conference of Governmental Industrial Hygienists. <http://www.acgih.org>

Books on heating, ventilation and air conditioning, and indoor air quality can be found at: <https://www.acgih.org/forms/store/ProductFormPublic/air-quality-fifth-edition>, and <https://www.acgih.org/forms/store/ProductFormPublic/indoor-air-quality>

**EPA:** U.S. Environmental Protection Agency. <http://www.epa.gov>, and several publications and clearing houses on indoor air quality at <http://www.epa.gov/iedweb00/iaqinfo.html>

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