

Superior IAQ: It's All about Teamwork

Owning and operating a commercial building involves a host of challenges. While often complex, these challenges can be boiled down to a simple goal: provide the best mix of amenities and comfort to building occupants while turning a sustainable profit. In this scenario, trade-offs are sometimes necessary. Should you renovate the restrooms or the lobby? Will you defer maintenance on the lighting system or the HVAC system? Do you want to start the process of obtaining LEED certification this year or wait until next year?



One trade-off that most building occupants won't stand for, however, is poor IAQ. In fact, nearly 50 percent of office workers polled in a nationwide survey selected IAQ as the thing they would most or second-most want to improve in their office. Because poor IAQ can be costly to businesses in terms of sick time, medical care, presenteeism and lost productivity, it's an issue in which all commercial building constituents can and should play a role. Open communications among these groups is critical; without it, IAQ problems can become complicated by anxiety, frustration, and distrust and their resolution may be delayed.

Reducing the frequency of IAQ-related tenant complaints can provide up to a 20 percent savings in labor costs associated with HVAC operation and maintenance.

Building Owners/Managers

Building owners/managers should be the driving force behind an IAQ-improvement program. But according to the EPA, many building professionals don't fully understand how to integrate IAQ objectives into the design and operation of their buildings. The economic value of improved health and productivity can be substantial, says the EPA, and can be achieved through integrated building design, commissioning, and operations which may reduce costs or result in only modest cost increases.

With the biggest picture overview of the facility, owners/managers should set policy and assign staff responsibilities. It may be best to designate a facility management professional to act as an IAQ representative – the main contact for all indoor environmental issues – and for that individual to take part in relevant continuing education. Assigning somebody to this role sends a message to everyone that indoor air quality is important.

In addition to making IAQ-related purchasing decisions, building owners/managers can direct space planning strategies to ensure the use and placement of furniture and equipment does



Proper filter maintenance is crucial to keeping HVAC ductwork clean. If dirt accumulates in the ductwork, and if the relative humidity reaches the dewpoint so that condensation occurs, then it can become a breeding ground for bacteria and mold.

filtration strategy can achieve multiple goals: efficient system operation, healthy indoor air, and energy conservation.

It's important for facility and maintenance engineers to understand the potential trade-offs between providing good IAQ and managing energy costs since operational changes intended to save energy can sometimes contribute to IAQ problems (and vice-versa). Engineers should therefore ensure that the air filtration strategy provides the maximum filtration efficiency while also not compromising energy performance. They should also be responsible for making sure that filters are replaced regularly to maintain proper filtration and energy performance. Facility engineers can work closely with HVAC contractors and filter distributors to help accomplish this in an efficient and cost-effective manner.

not negatively affect the delivery of air to an occupied space. Building owners/managers also have control over building maintenance protocols, such as facility cleanliness and house-keeping, giving them the opportunity to reduce or eliminate the source of some indoor air pollutants.

After implementing an IAQ improvement program, owners/managers should use their healthier indoor air, optimized energy expenditures, and compliance with green building initiatives as a way to attract and retain tenants.

If you own or manage a building with superior IAQ, work on raising awareness of the benefits tenants or occupants receive: reduced likelihood of "sick building syndrome" and improvements in worker productivity. Reduced health care costs and sick leave time and increased worker performance can yield big savings for tenants. Be prepared to prove your IAQ claims by using data to compare your environment with average or low-quality competitors.

Facility/Maintenance Engineers

The facility engineer's role in IAQ improvement extends from ventilation system design and operation to equipment maintenance, the control of pollutant pathways, and the amount (and quality of) outside air drawn into the building.

Some engineers may be more concerned with how an air filtration strategy will affect the operation of the facility's HVAC system – for example, the importance of maintaining proper airflow and not increasing fan energy use, or the need to avoid coil fouling, which leads to costly and time-consuming coil cleaning – than with IAQ issues. Fortunately, the right air

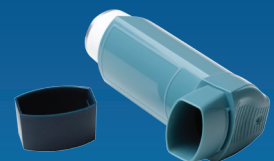
Health & Safety Officers

Health & safety officers should work closely with building management to assess any potential health hazards resulting from the current condition of indoor air and to educate building staff and tenants about their roles in maintaining good IAQ. They should also keep a record of reported health complaints to help in solving IAQ problems.

Depending on the severity of the IAQ problem, it may be prudent for Health & Safety Officers to enlist the services of appropriate experts such as occupational physicians or industrial hygienists. Together, they can help to identify the type and sources of indoor air pollutants – an important pre-requisite to specifying the appropriate air filter, for example.

Improved IAQ Can:

- Reduce Sick Building Syndrome symptoms 20-50 percent
- Reduce asthma 8-25 percent
- Reduce other respiratory illnesses 23-76 percent



Sustainability Professionals

A healthy indoor environment is a key goal of many green building programs, as is energy conservation. For example, in the USGBC's LEED-Existing Building: Operations & Maintenance program, the proper air filtration strategy can help facilities meet two prerequisites (Energy & Atmosphere Prerequisite 1 & 2) and earn up to 11 credits.



In addition to contributing to the completion of LEED credits and prerequisites, careful selection of the right HVAC filter and filter media can reduce greenhouse gas emissions, raw material use, and waste output, and actually save money in the long run – answering critics' charges that green buildings always have to cost more.

Purchasing Departments

IAQ concerns should be incorporated into overall purchasing decisions for a building – from furnishings and office equipment, to cleaning and pesticide products, to energy expenditures and HVAC-specific purchases.

One of the biggest traps that commercial facilities fall into regarding budgeting for and purchasing air filtration is the NIMB (Not in My Budget) factor. In some cases, one department (and budget) is responsible for purchasing air filters and filter service

Energy use is the largest operating cost involved in air filtration. The cost of energy used to operate filters can be more than 8 times the initial purchase price of the filter.



The small amount of money saved by reducing or eliminating air filter purchases or by purchasing lower-priced (and lower efficiency) filters pales in comparison to the energy and operating costs that can be saved by maintaining a robust air filtration maintenance and upgrade program.



contracts while another is responsible for energy expenditures. The problem inherent in this system is that the filter purchaser can easily and innocently make a costly decision for the enterprise by choosing to buy filters without considering the energy consumption and system operating implications.

HVAC Contractors & Filter Distributors

HVAC contractors may be hired to do periodic preventive HVAC system maintenance. To detect and troubleshoot IAQ problems, it's best for record-keeping requirements to be included in the service contract. The contractor hired should be well-versed in IAQ issues, including the effect of the building's air filtration strategy on providing for healthier indoor air and on energy costs.

Filter distributors can provide needed advice on the filtration and energy performance variables associated with different types of filters, including a filter's Minimum Efficiency Reporting Value (MERV) and fractional particle size efficiencies, which will tell how effective the filter is at capturing submicron particles that can cause health problems.

Building Occupants

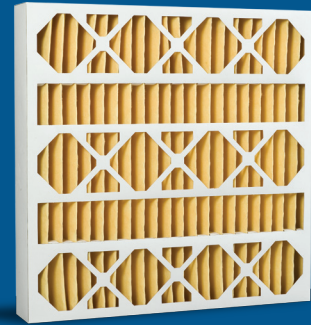
Tenants would be wise to maintain good working relationships with building management on indoor environmental issues, especially when/if responsibility for the design, operation and maintenance of the HVAC system is shared and when remodeling or renovation of individual office spaces is planned.

Occupant behavior should also be part of an IAQ improvement plan. Building managers and employers should stress good IAQ practices to occupants, including:

- Not blocking air vents/grilles.
- Complying with no-smoking policies.
- Storing food properly and disposing of garbage promptly.
- Avoiding the use of products that could release harmful odors or contaminants.
- Notifying facility management immediately if an IAQ problem is suspected.

OSHA recommends that employers/tenants negotiate leases that specify IAQ performance criteria.

The HVAC air filter industry has made significant strides in the last few years, allowing for the integration of nonwoven, synthetic filtration media that has both a performance and in-use cost advantage over traditional media materials for HVAC filters.



Bottom Line for Facility Professionals:

If you are one of the diligent owners/managers who has made IAQ a priority in your building, it can be a real differentiator in the marketplace. The key is cooperation among building constituents, along with education and communication, so tenants and prospects will reward you for your investment and commitment to their well-being.

Bottom Line for HVAC Professionals and Filter Distributors:

Purchasing decisions can be influenced by many individuals who may sometimes operate at cross purposes. Be sure to have a good understanding of how your recommended air filtration strategy meets each individual's or group's needs.