

Indoor Air Quality Services

Due to the increase in regulatory attention and public awareness, indoor air quality has become a major issue with building occupants, businesses and institutions. Although the long term health affects of poor environmental conditions are currently under study, both OSHA and the EPA have prioritized this issue as the number one health concern for occupancy in buildings.

What is an IAQ Problem?

It is a condition that occurs in buildings when the concentrations of pollutants in the indoor air (particles, chemicals or bioaerosols) increase to the point where they can cause physical discomfort, allergic reactions or illness to the occupants.

Symptoms commonly attributed to IAQ problems include:

- Headache, fatigue and shortness of breath
- Sinus congestion, coughing and sneezing
- Eye, nose, throat and skin irritation
- Dizziness and nausea

Complainants often report that their symptoms subside soon after leaving the building.

How Do IAQ Problems Arise?

IAQ problems arise by three conditions occurring in a building at the same time:

- A new or increasing pollutant source
- Inadequate ventilation
- Susceptible (sensitive) building occupants

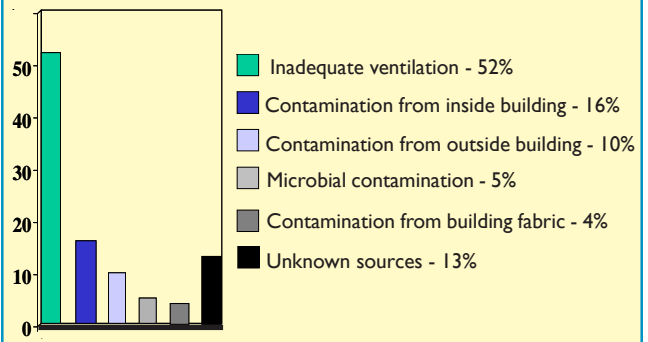
IAQ problems in buildings result from a combination of three fundamental causes:

- Building design errors or omissions
- Construction or equipment defects
- Operations and maintenance issues

Unfortunately many IAQ consultants do not have the technical expertise or training necessary to diagnose all three causes of the problem.

At **Halliwell Engineering Associates (HEA)**, we have combined the expertise of our mechanical engineering group and our industrial hygiene services to become a national leader in IAQ diagnostics and management.

Primary Sources of Indoor Air Quality Problems*



*National Institute for Occupational Safety and Health (NIOSH), Feb., 1989.

HEA's Indoor Air Quality Services include:

Emergency Complaint Response

- Emergency Response Service
- Crisis Control and Stabilization
- On-site Investigations and Recommendations
- Follow-up Evaluation and Remediation

Building Investigation

- Pollutant Source Inventory
- Ventilation System Evaluations
- HVAC Systems Analysis
- Tracer Gas Studies
- Building Envelope Evaluations
- Air Sampling and Analysis
- Infectious Disease Containment (Hospitals)

Remediation Programs

- HVAC Remediation Design and Management
- Ventilation System Cleaning, Supervision and Inspection
- Microbial Decontamination

Building Air Quality Management Services

- IAQ Management Plans
- Pollutant Source Control
- IAQ Engineering Controls for Construction Activities
- Due Diligence HVAC Design Reviews
- HVAC System Commissioning
- Operator Training
- IAQ Maintenance Programs for HVAC Systems

IAQ Litigation Support

- Documentation of Problems, Causes, Resolutions, Costs
- Attorney, Client Conferences
- Case Development and Project Reports
- Depositions and Expert Testimony

Indoor Air Quality Services -continued-

The World Health Organization estimates that approximately 30 percent of all buildings have an IAQ problem. In the past, the importance of IAQ was generally overshadowed by concerns with the outdoor environment. Today our focus is shifting to the indoor environment, where we spend upwards of 90 percent of our time. The quality of our indoor air is now a major health and legal issue for building owners, managers and tenants.

Some Examples of Potential Indoor Air Contaminants

- Tobacco smoke
- VOCs from new carpets
- VOCs from photocopying machines
- Cleaning products
- Insect control pesticides
- Dusts from insulation materials
- Formaldehyde off-gassing from wood paneling
- Mold growth in HVAC systems

Even the act of breathing contaminates the air with carbon dioxide. However, simply increasing the ventilation in a building will not solve every IAQ problem. Many IAQ complaints are resolved more cost effectively by identifying and removing the source of pollution or contamination into the building's air stream.

Some facilities can be modified to make more efficient use of the ventilation they already have, while other IAQ problems can be solved by improving the HVAC system's maintenance procedures.

The main point to remember is that IAQ complaints are on the rise. As concerned and prudent owners and building managers, preemptive steps must be taken to prevent these problems from occurring in the first place.

HEA's goal is to help our clients avoid IAQ problems from occurring by educating them on the benefits of an IAQ proactive management and monitoring program. This ongoing program identifies conditions *before* they become a problem.

Resolving a Current IAQ Problem

HEA's approach focuses on capitalizing and utilizing all of the research that has been performed to date. Our engineers use the following protocol to resolve IAQ problems efficiently and effectively:

- Investigate and evaluate the building and the IAQ performance of the HVAC system
- Investigate and evaluate the sources of any contamination from inside or outside the building
- Recommend and implement engineering changes to the HVAC system and operational changes, as needed, to remediate the IAQ problems in the building.

Experience You Can Rely On

HEA has developed and implemented corporate IAQ programs, policies and procedures for clients who prefer a pro-active approach to IAQ. In addition to these programs, HEA has developed and presented IAQ management training programs for building managers and their engineers which have been presented throughout the country to commercial real estate managers.

In 1998 our Principal, Jack Halliwell was appointed to the American Society of Heating, Refrigerating and Air-Conditioning Engineers' (ASHRAE) Committee (SSPC 62), charged with writing indoor environmental standards that will be offered into law via the National Building Codes.

Subsequently he was appointed and served as Chairman of the ASHRAE subcommittee charged with developing standards for maintaining acceptable indoor air quality through building operations and maintenance practices; and was also appointed Chairman of the subcommittee charged with writing standards to maintain acceptable indoor air quality during and immediately following building renovations.

In addition, HEA has provided technical support to the EPA and OSHA on the development of indoor environmental programs and engineering standards.

At **Halliwell Engineering Associates**, our goal is to provide superior environmental consulting and engineering services to our clients. Please contact our offices for further information on IAQ problems, remediation, or prevention, as well as information on the full range of services that we offer.