

# A Primer on Indoor Air Quality

Concern about non-industrial indoor air quality (IAQ) has manifested itself, and grown, largely within the last quarter-century. Many authors link this phenomenon to a number of factors and conditions, including:

- Building design focused on energy conservation, sometimes at the sacrifice of fresh air intake
- Introduction of many new building materials and products into the workplace, resulting in some, albeit small, chemical emissions
- Public interest and the popular press focused on the environment and wellness
- Stress in the workplace
- Societal norms which seek to avoid personal responsibility and assign blame to others

## Manifestations of IAQ Problems

From a scientific perspective, indoor air quality problems can manifest themselves in a number of specific ways. Common terms related to indoor air quality concerns include:

### Building Related Illness

A Building Related Illness (BRI) relates to a specific disease entity that is causally linked to one or more provocative agents found in the indoor environment. Hypersensitivity pneumonitis and Legionnaire's disease are examples of Building Related Illnesses.

### Sick Building Syndrome

There are a number of definitions for Sick Building Syndrome (SBS), including those of the World Health Organization, the Commission of European Communities, the American Thoracic Society, the U.S. Environmental Protection Agency, and others. In general, these definitions identify a group of symptoms (often general health problems, irritation phenomena, and non-specific hypersensitivity reactions); however, *there is no discernible cause for the reported symptoms*. The linkage that suggests SBS is the relationship of a specific working environment to the onset of symptoms, and, conversely, the alleviation of symptoms upon leaving the work environment. As a 'diagnosis of exclusion,' SBS is controversial and can easily be confounded by other issues, including workplace stress.

## Sources of Indoor Air Quality Problems

Every indoor workplace is a unique environment whose air quality is influenced by internal and external factors. Moreover, many other factors that are sometimes perceived as indoor air quality issues are really issues

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of ergonomics, comfort, or stress. It is generally recognized that five major ‘stressors’ are possible in these circumstances.

### **Chemical**

Chemical stressors can include air contaminants generated from indoor operations, chemical off-gassing of materials, entrained outdoor contaminants, pesticides, and others. Inadequate fresh air make-up can result in an accumulation and concentration of other contaminants.

### **Biological**

Biological stressors can include fungi and bacteria that are brought into the building from the outdoor environment, or that grow in hospitable circumstances in the building. Many are allergens for sensitive persons, and a small number are directly pathogenic (causing disease) or toxigenic (releasing substances that injure).

### **Physical**

While rarely health hazards unto themselves, the physical stressors of temperature, humidity, lighting, and noise profoundly impact an individual’s comfort, and may be *perceived* as indicators of poor air quality.

### **Ergonomic**

Discomfort from a workstation poorly configured to the physical characteristics of the employee results in strain and physical injury. Again, comfort and strain may be inaccurately interpreted as an environmental problem; for example, eye strain headaches caused by VDT use may be blamed on poor air quality.

### **Psychological**

Every indoor air quality situation has a psychological component. In some circumstances (perhaps the majority of those in which a true cause is never found), psychological stressors may be or contribute to the actual cause. While difficult to distinguish, psychological stressors can often be avoided or mitigated by good communication and through effective, visible action taken by the employer or building owner.

## **Important First Steps**

For an employer or building owner, the productivity and comfort of the occupants of the building are important concerns. Experience shows that when an IAQ complaint is

voiced, the degree of promptitude in response and remedial action is a critical factor in how severe the episode may be. Consequently, ***it is important to take all complaints seriously, investigate each complaint, and keep employees informed*** as to what is happening. Avoid the urge to “keep it under wraps;” regardless of your actions, rumors will spread and will likely be worse than that which you are attempting to contain.

In the event of an indoor air quality complaint, follow these steps:

1. Interview each complainant, as well as a sampling of occupants who are *not* complaining. Use a structured interview to identify the symptoms, the timing of the symptoms, what actions alleviate symptoms, the location of the occupant when symptoms occur, and any thoughts the occupant might have about the cause of his or her symptoms.
2. Start a log. Give each complainant a structured log that collects date, time, and occurrence. Collect logs frequently (depending on the frequency of complaints) and compare for similarities and trends.
3. If you are not the building owner, notify the owner and solicit his or her support in investigating the complaint(s). You’ll need access to blueprints and mechanical systems to proceed further.
4. Communicate with your employees. Depending on the size of the group and the number of complaints, you might use various means of communication, but always provide a forum where they can express their concerns.
5. Involve the experts. Start with your (or the building owner’s) heating, ventilating, and air conditioning (HVAC) contractor to verify the function of the ventilation system. If that cannot resolve the issue, consider an outside consultant. Contact your Hartford Loss Control Consultant to discuss a scientifically valid investigation of the complaints.
6. Resolve the issue. Take the remedial action recommended, and remember to keep your employees informed.

For more information, contact your local Hartford agent or your Hartford Loss Control Consultant. Visit The Hartford’s Loss Control web site at [www.thehartford.com/losscontrol](http://www.thehartford.com/losscontrol)

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