Guidelines for Selecting An Indoor Air Quality Consultant

Preface

This brochure was developed to help you find a professional who can competently investigate and resolve indoor air quality problems. It is targeted to building owners, facility managers, and commercial building tenants, environmental health and safety (EHS) coordinators, and others who are responsible for indoor air quality in the workplace. Although this brochure was written for commercial buildings, some of these concepts can be applied to some residential buildings.

Introduction

Indoor air quality problems have been around for centuries, but our scientific understanding of the indoor environment is just beginning. Because of this, the knowledge and skills of individuals providing indoor environmental quality services vary tremendously. There are no federal regulations covering professional indoor air services (except where it involves asbestos, lead or radon). Some professional organizations, such as the American Board of Industrial Hygiene (ABIH) offer certifications in indoor environmental quality, but these are not required by law. So, if you have a suspected indoor air quality problem that you cannot readily understand and remedy, it can be difficult to decide where to turn. This guide was written to help you:

- Investigate the problem in-house
- Recognize when you need outside help
- Decide what expertise is required to resolve your indoor air problem
- Select a consultant, if necessary
- Fit the scope and approach of indoor air services to your needs
- Solve the problem

Investigating the Problem In-House

Many indoor air quality (IAQ) problems can be detected and corrected by you or your building maintenance personnel. This section was designed to give you an overview of such IAQ problems. For more specific guidance in resolving the problem in-house, please refer to AIHA's Operation Outreach publication entitled Do I Work in a Sick Building? Also, the National Institute for Occupational Safety and Health (NIOSH) and the Environmental Protection Agency (EPA) have developed Building Air Quality, a comprehensive guide for building owners and facility managers (see the additional resources section at the end of this booklet).

A typical IAQ investigation involves the following steps:

- Determine who is affected, and when and where they are affected
- Inventory potential sources of environmental agents that may be related to indoor air quality problems
- Look for locations and sources of moisture intrusion or water damage
- Investigate heating, ventilating and air conditioning (HVAC) system problems and air movement pathways

Determine the Scope of the Problem

One key element in resolving problems is reviewing complaints and obtaining firsthand information from occupants. Occupants' experiences and observations may go a long way toward improving your understanding of the problem. Questions you pose should address symptoms reported, how many people have problems or concerns, where are they located, and when do problems appear, and general occupant observations about the indoor environment. Persons reporting specific medical problems should be encouraged to see a physician. Complaints may reflect individual medical conditions, work stress, office politics or other factors unrelated to air quality, but add to the overall perception of poor air quality and require investigation.

Inventory sources of airborne dusts, chemicals and allergens

Many sources of indoor pollutants are readily observable during an inspection in and around the building and their possible relation to the complaints should be noted. Inspect the general cleanliness of the area. A thorough cleaning of the surfaces, carpets and furnishings may alleviate occupant discomfort related to airborne dusts, fibers and allergens.

Consider the outdoor air as a possible source. Pollen and mold can aggravate allergies and result in air quality complaints. Vehicle traffic near HVAC system air intakes can add carbon monoxide and other contaminants to the indoor air. Workplace activities involving even small amounts of chemicals can lead to occupant discomfort if the area is not properly ventilated. Use your organization's hazard communication program as a starting point to list chemicals occupants use and don't forget to consider outside contractors' activities, such as cleaning crews, roofers and construction contractors.

Examine sources of moisture intrusion or water damage

Moisture intrusion can promote growth of mold (fungi) and bacteria. Bacteria are rarely a problem, unless there is a constant or pooled water source. Unusual types or high concentrations of fungi may be related to a significant portion of occupant symptoms, especially among persons with allergies. Sometimes you may not be able to see the impact of moisture on the building. It can be hidden by floors, walls and ceilings, and may require professional assistance and highly specialized testing to locate the problem.

Look for common HVAC problems

The HVAC system should be reviewed with the personnel responsible for its upkeep. Look for excessive debris or visible mold growth, pooled water and malfunctioning components. HVAC systems may affect air movement between rooms, and can direct air contaminants through various pathways.

Recognizing When You Need Outside Help

After you have done all of the above with no apparent success, it is time to seek outside help. As a general rule, you should seriously consider calling a professional indoor air quality consultant if any of the following statements are true:

- In-house efforts have not solved the problem — If occupant reports of building-related symptoms or discomfort continue, the problem has not been resolved.
- The problem is too serious to delay response — If there is suspected Legion-naires' Disease or known contamination with polychlorinated biphenyls (PCBs), asbestos or lead, you will need outside resources. In addition, if workplace health complaints are widespread and persistent, the situation must be resolved in a rapid and professional manner.
- There is mistrust between occupants and the employer or building management — Indoor air quality concerns can escalate to the point where independent investigation is needed to develop a credible indoor air diagnosis and recommendations.
- Litigation or Workers' Compensation claims are likely — When problems are not addressed and resolved early, minor occupant discomfort may become more serious. Increasing numbers of occupants are willing to file workers' compensation claims or initiate other legal actions if IAQ problems persist. Retain an expert as early as possible if litigation is likely to occur.

- There is a need for specialized equipment or expertise — One example of such a case would be if the initial investigation produced a hypothesis that the cause of discomfort was a potentially harmful chemical agent. Verification might require special air sampling media and equipment as well as people qualified to collect, analyze and interpret such samples correctly.

How Can the Various Professions Help with Indoor Air Problems?

Indoor air quality consultants vary in their training and experience. For example, a consultant may be trained in architecture, heating and ventilation, medicine, engineering, microbiology, toxicology, ergonomics, environmental and occupational health, or industrial hygiene. The ideal consultant has a basic understanding of all of the above, with a specialized knowledge in the particular issues present in your workplace. The following discussion describes several types of professionals and how they can help:

Industrial Hygienists: Most industrial hygienists have college degrees in engineering or the natural sciences, such as biology, chemistry, biochemistry or microbiology. This is supplemented by specialized training in industrial hygiene. The science of industrial hygiene is dedicated to anticipating, recognizing, evaluating and controlling the causes of occupational illness. Since industrial hygienists are trained to evaluate environments for factors that affect health and comfort, qualified industrial hygienists are key members in most indoor air quality investigations. In addition, because industrial hygienists have fundamental training in ventilation engineering, environmental health, toxicology and microbiology, an industrial hygienist (IH) can assist you in determining when the input of other professions would be helpful.

Mechanical Engineers and Contractors: Engineers are invaluable in understanding the intended design parameters of HVAC systems. Their input is essential when it comes to designing retrofits to existing HVAC systems to improve indoor air quality. Many mechanical contractors (nonengineers) are helpful in implementing changes to air-handling equipment, but may not have the mechanical engineering background required to design effective solutions.

Architects: Architects are in a position to understand how building design can affect indoor air quality. They are also responsible for specifying interior building finishes and building components which are part of the total IAQ equation. Look for an architect with formal training or experience in preventing indoor air quality problems.

Medical Professionals: Occupational physicians and occupational health nurses have specific training in aspects of the work environment, and can help IAQ investigators target potential sources of health complaints. An occupational physician should be consulted whenever a specific disease (such as Legionnaires' Disease) is believed to be attributable to indoor air.

Other Professions: Building occupants often report nonspecific symptoms, such as headaches, eye discomfort or muscle aches. Although occupants may identify these symptoms as being related to building air quality, some of these reports may actually be associated with improper lighting, noise or poorly designed work stations. Many industrial hygienists have the expertise to assess and resolve most lighting, noise or ergonomic problems. If such problems require additional expertise, the IH can refer you to illumination engineers, acoustics specialists or professional ergonomists.

The Indoor Air Quality Team Approach: In larger indoor air quality assessments, it is important to form a team of professionals drawn from the appropriate disciplines. Through their professional training and broad practical experience, industrial hygienists are uniquely suited to the team approach. If lack of time or resources prohibits forming a team, an industrial hygienist with sufficient training and experience can provide the skills necessary to investigate and resolve most indoor air problems.

How to Find the Best Indoor Air Quality Consultant for Your Needs

It is far better to be prepared before an indoor air quality problem is reported. Proactive organizations develop an indoor air quality management plan that describes procedures for (1) preventing indoor air

problems and (2) responding to problems as soon as they are recognized. As part of your organization's plan, you may want to include a short list of consultants competent in indoor air quality-related issues.

The following are suggested steps in the IAQ consultant screening process:

First, verify that the consultant has appropriate training and project experience. Ask for references and contact clients to verify that the consultant has helped them solve their IAQ problem. Find out whether the most experienced personnel will be onsite or in direct contact with the site investigation staff. Many qualified IAQ consultants are self-employed or work for small firms.

Nationally recognized certifications or accreditations help to ensure that firms of varying size can produce results of similar quality. Please note that not all accreditations, certifications or professional society memberships are equal. Be wary of contractors who may overstep the bounds of their expertise or who have a financial stake in the outcome of the investigation. For example, a duct cleaning contractor may have seen a lot of IAQ problems, but that doesn't qualify him or her to diagnose and remedy all IAQ problems. Also, you should be aware of applicable state or federal certification requirements if the work involves asbestos, lead or radon. In addition, some states have special requirements for persons involved in ventilation modifications in schools.

Second, define what you expect from the consultant you hire. Ask if the consultant can respond on short notice, if needed. It helps to define the scope of services up front; however, indoor environmental quality is rarely simple or predictable. Your proposed scope may be modified based on question-and-answer sessions with prospective consultants. No two buildings and no two indoor air quality problems are alike; thus the scope of the project may not be definable until more information is obtained through inspection and (if necessary) testing.

Third, solicit proposals and interview candidates if time permits. A telephone interview is usually sufficient. Ask the consultant for his or her general approach to resolving the problem. A general but systematic approach is usually more effective than relying on extensive air testing in the absense of complaints or observations indicating the value of such testing. Proposals should indicate the estimated consulting fees and expenses for the specified initial phase of the project. Pay attention to the project approach and ask questions if some of the scope items don't make sense to you. Find out how decisions for follow-up testing or remediation will be made.

Fourth, draw up a request for proposal (RFP) or contract specifications. This may take time, but it helps avoid surprises. The contract may specify the following:

- The project scope, specifying activities to be included, such as air monitoring, occupant surveys or health assessments.
- The frequency of status reports and meetings
- The work product, such as drawings, reports, tables, back-up data
- Quality control procedures
- Project budget estimates and fee schedules
- A reasonable schedule agreeable to both parties (and consistent with sample analysis turnaround times)

Solving the Problem

Once you have chosen your consultant, it is up to you to make sure the occupants are kept informed of progress on the problem and involved in the process. Occupant involvement enhances credibility and helps to ensure success. It is important to accurately communicate the indoor air survey timetable and status. Commu-nicating the limitations of current knowledge will help establish realistic expectations. Many consultants are experienced in this aspect of the project and can help you develop credible information for distribution.

Once you receive the indoor air quality report from the consultant, read it carefully, especially the conclusions and recommendations. It will often not be feasible to implement all the recommendations at

once, so prioritize the response in a manner that suits the seriousness of your situation and level of resources. You may be called upon by upper management, the occupants or a regulatory agency to justify your actions or inaction. Try to get the support of all parties by informing them, stage-by-stage, of your progress.

Additional Resources

Building Air Quality: A Guide for Building Owners and Facility Managers. NIOSH and EPA. December 1991. NIOSH Publication 91-114. Available from the U.S. Government Printing Office.

Indoor Air Quality Tools for Schools: IAQ Coordinator's Guide. U.S. Environmental Protection Agency. May 1995. EPA Publication 402-K-95-001.

Timothy Ryan, "Contract Specs for Indoor Air Quality Investigations." Professional Safety. American Society of Safety Engineers. July, 1993, pp. 20–23.

"The Bridge is Ours: A Guide to the Procurement of Engineering Services," American Consulting Engineers Council, 1984.

Listings of current AIHA, NIOSH and EPA publications can be found on the World Wide Web. The site addresses are:
http://www.aiha.org
http://www.epa.gov/iaq/iaq-pubs.html
http://www.cdc.gov/niosh/homepage.html

You can also contact AIHA at (703) 849-8888 for a current industrial hygiene Consultants Listing. This listing includes areas of expertise, such as indoor air quality. Additional copies of this brochure are available from AIHA.

Thanks

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