



IAQ in Large Buildings

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IAQ Building Education and Assessment Model (I-BEAM)

Text Modules: Managing for Indoor Air Quality

The purpose of this module is to help you establish a management program that contains all the appropriate elements needed to manage a building for good IAQ.

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I-BEAM Text Modules

- Fundamentals of IAQ in Buildings
- Heating, Ventilation, and Air-conditioning (HVAC)
- IAQ Maintenance and Housekeeping Programs
- Indoor Air Quality and Energy Efficiency
- Diagnosing and Solving Problems
- Renovation and New Construction
- **Managing for Indoor Air Quality**
- IAQ Budgets and Accounts

- Overview of I-BEAM
- Overview of Text Modules
- Overview of Visual Reference Modules
- IAQ Budgets and Accounts
- I-BEAM Forms

Managing for Indoor Air Quality

(PDF, 14 pp, 79KB)

You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

Indoor Air Quality (IAQ)

Assignments and Training

Assign an IAQ Manager

Determine who is responsible and accountable for IAQ in the building. Assign a senior person and provide him/her with sufficient authority to develop and implement a comprehensive indoor air quality management plan.

Using I-BEAM and other comparable training programs, make sure that the IAQ manager is familiar with the principals of IAQ and the elements of a good IAQ management plan. The IAQ manager could be responsible for:

- Insuring up to date building drawings and records.
- Staff IAQ training.
- Coordinating a building walkthrough and IAQ building profile.
- Developing/reviewing maintenance and housekeeping plans for IAQ.
- Review contracts and negotiations with contractors for IAQ related specifications (e.g., maintenance or housekeeping contracts, renovation contracts, pest control contracts).
- Developing/maintaining an occupant complaint-response system.
- Investigating occupant complaints.
- Communicating with tenants/occupants about building activities, and about occupant/tenant responsibilities for IAQ.

Train Supervisors and Staff

In a well-functioning IAQ program, IAQ program functions are established and key personnel have clearly defined IAQ responsibilities. All personnel understand the fundamentals of IAQ and are trained to incorporate IAQ in their daily work. Key personnel include the:

- Building Manager
- Building Engineer
- HVAC Personnel
- Building Maintenance Personnel
- Housekeeping Personnel
- Pest Control Personnel
- Purchasing
- Contractors of all sorts
- Administrative personnel responsible for record keeping, contract management and related tasks.

Information on additional training resources is available from EPA ([link](#)) and information of regional training resources in the private sector may be obtained from EPA Regional Offices ([link](#)).

Establishing an Adequate IAQ Baseline

Update Building Records Important to an IAQ Management Program

Develop an organized system to obtain and maintain the following building records:

- "As built" blueprints, including modifications to reflect current conditions.
- Up-to-date drawings of all tenants' build outs and interior renovations.
- Records of major space use changes not reflected in original design.
- Drawings of pressure relationships.

- Operating and Maintenance Plans and Schedules.
- Historical Occupant IAQ complaint logs (if available).
- Inventory of products and materials that are sources of pollutants, with MSDS sheets and related information.

I-BEAM provides convenient forms for tracking progress in developing and maintaining some building records. Documents that may be useful in organizing these records include:

- Construction documents
- Commissioning reports
- Operating manuals
- HVAC maintenance records
- Remodeling and Renovation records
- Records of equipment modifications/replacement
- Records of complaints

Conduct a Baseline Building Audit to Determine IAQ Status in the Building

When first starting an IAQ program, conduct a whole building walkthrough to record the status of all IAQ parameters identified in I-BEAM. Take simple measurements of pressure relationships and air flow patterns as may be appropriate, and record where more detailed measurements may be needed at a later date to complete the basic profile. Use I-BEAM forms to assist in recording basic conditions of:

- Occupied spaces
- Mechanical Systems
- Building Exterior

Repeat the baseline audit periodically.

Fix Problems Identified in Building Audit (Special IAQ)

When problems are identified in the baseline audit, they may constitute special IAQ expenses - i.e. not regularly recurring expenses but those designed to upgrade the building to minimal IAQ conditions. For these expenses, appropriate work orders should be entered so that the problems are fixed. Managers should plan and budget for the remediation of major problems requiring significant expenditure. I-BEAM can assist in planning and budgeting.

Establish Written Plans and Protocols

Source Management Protocols

Pollution sources with extremely high potential to cause indoor air quality problems require that specific written protocols be established to manage those sources. These significant sources of pollution include:

- Remodeling and Renovation
- Painting
- Pest Control
- Shipping and Receiving
- Smoking

The IAQ program should include written protocols for managing each of these sources. Protocols for other sources that are dominant in any building should also be developed using the principles contained in I-BEAM.

Written Maintenance and Housekeeping Plans

Written maintenance and housekeeping plans are important for several reasons:

- To train and guide building personnel as part of the IAQ management plan.
- To negotiate contracts for housekeeping and maintenance activities that are conducive to good IAQ.
- To establish an IAQ budget.
- To document key management components of the IAQ program for marketing and for liability purposes.

Content of Plans

Suggested maintenance and housekeeping program principles, detailed tasks and task schedules important to IAQ are available in I-BEAM and can be used as a useful starting point in developing written plans and work schedules.

Establish a Communications Program

Purpose

The purpose of communication protocols is to identify the purposes and objectives of a communication procedure. Specifically:

- To clarify the responsibilities of facility managers, staff, contractors, and occupants in maintaining a safe and comfortable indoor environment.
- To respond effectively to occupant complaints.
- To avoid mistrust and misunderstandings.
- To prevent situations in which distrust between occupants and management result in disruptive, contentious, and costly remedies including legal remedies that could have been avoided.
- To help occupants improve their work environment through positive contributions.

Critical Areas of Responsibility and Communication

Develop an understanding of general responsibilities and communication needs. Provide information to tenants and occupants about what they can do to insure good IAQ in the building. Generic guidance is available in I-BEAM's Resource Menu, or on the [EPA IAQ website](#).

Establish a Procedure for Responding to IAQ Complaints

Principles of Complaint-Response Program

Three general principles of complaint response are:

1. Every complaint should be addressed promptly and tracked until it is resolved.
2. There should be follow-up of the complaint after it is resolved to make sure the resolution is permanent.
3. Records of the complaint, the investigation, and the resolution should be kept on file. Record keeping should be done to facilitate recognition of patterns.

Content of Complaint-Response Program

An IAQ complaint-response procedure would involve the following:

- Log of complaints.
- Method of collecting information from complaining occupant.
- Provisions for confidentiality.
- Assignment of responsibilities of in house staff.
- Provisions for obtaining outside expertise when needed.
- Diagnostic procedures.
- System for implementing solutions.
- Feedback and information as to progress for the complaining occupant.
- Follow-up to insure that remediation is effective.
- Recordkeeping procedures.

Information for Occupants

Building occupants should be informed about the complaint-response procedure. Information should include:

- Management's policy for responding to complaints and commitment to occupant's health and safety.
- Contact persons and telephone numbers to call in complaints.
- How to obtain forms and where to submit forms for written complaints.
- Assurances of confidentiality.
- Procedures for diagnosing problems and resolving complaints.
- Names and phone numbers of persons to call for more detailed information.

For major complaints involving large numbers of individuals, every occupant will have an interest in progress during an investigation. Develop a procedure to keep all occupants informed which includes:

- Description of the problem and definition of the complaint area.
- Progress of investigation.
- Factors that have been evaluated and ruled out as causes or contributors.
- Expected length of investigation.
- When occupants will receive further information.
- What occupants can do to help.

Diagnostic Procedures

Follow the [diagnostic procedure guidance](#) contained in I-BEAM.

Notify Occupants of Major Activities

Develop notification procedures for any renovation, remodeling, pest control, HVAC operational disruptions, painting, or other activities that could cause temporary IAQ problems. Also inform tenants and occupants about activities designed to improve IAQ.

Market and Budget Your IAQ Program

Marketing Your Building's IAQ Program

A good IAQ management program is a negotiating tool to keep existing tenants

or attract new tenants. Develop an IAQ management plan, and use it to maintain tenant satisfaction. Surveys by BOMA and IFMA place HVAC, Thermal Comfort, and IAQ among the top 5 leading complaints and can affect office moves and changes. Use your IAQ program to market and promote your building to prospective tenants. Your responsiveness to IAQ can be the difference between gaining (or retaining) a tenant or losing a tenant to a close competitor.

About half the occupants of commercial office-buildings report reduced productivity due to poor IAQ. This includes individuals who report only minor loss, as well as individuals in buildings whose IAQ is very poor and whose reported loss is substantial. When averaged among all offices, the loss is approximately 3 percent. Tenants may wish to consider the productivity implications of improved IAQ. Landlords may wish to consider the revenue implications of improved occupancy and occupancy satisfaction.

Develop an IAQ Expense Budget

Managing for IAQ and energy efficiency is often more a matter of doing it right within the current budget than increasing expenditures beyond existing budget. Use I-BEAM to identify IAQ activities and develop an IAQ expense budget.