



IAQ in Large Buildings

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IAQ Building Education and Assessment Model (I-BEAM)

Overview

I-BEAM Text Modules and Visual Reference Modules

The Indoor Air Quality Building Education and Assessment Model (I-BEAM) is a guidance tool designed for use by building professionals and others interested in indoor air quality in commercial buildings. I-BEAM updates and expands EPA's Building Air Quality guidance and was designed to be a comprehensive state-of-the-art guidance for managing IAQ in commercial buildings. I-BEAM contains text, animation/visual, and interactive/calculation components that can be used to perform several tasks including:

- conducting an indoor air quality (IAQ) building audit;
- diagnosing and resolving IAQ related health problems;
- establishing an IAQ management and maintenance program to reduce IAQ risks;
- planning IAQ compatible energy projects;
- protecting occupants from exposures to construction/renovation contaminants; and
- calculating the cost, revenue, and productivity impacts of planned IAQ activities.

This material integrates information from a variety of sources, with a style that is crisp, to the point, and action oriented.

- [I-BEAM Text Modules](#)
- [IAQ Budgets and Accounts](#)
- [Visual Reference Modules](#)

I-BEAM also includes [Forms](#), [Glossary of IAQ Terms](#), and [Related sites](#), as well as other resources.

I-BEAM Text Modules

- [Overview](#)

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Note: This guidance was designed to be a web-only resource. However, PDF versions of each of the text modules are being made available. Please note that these PDF files represent the version of I-BEAM on the date the files were created. A version of this Overview is available now. Check back in a couple of weeks for the remaining files.

Overview (PDF, 3 pp, 37KB, About PDF)

Indoor Air Quality (IAQ)

- **Fundamentals of IAQ in Buildings**: What are the fundamentals to understanding indoor air quality? In this section, we provide a rudimentary framework for understanding how indoor and outdoor sources of pollution, heat and humidity, together with the ventilation and air conditioning systems affect the indoor air quality in buildings. We also begin to address methods of controlling those factors in order that the quality of the air which occupants experience provides for their health, comfort and performance.
- **Heating, Ventilation, and Air-conditioning (HVAC)**: What are the elements of the heating, ventilating, and air conditioning (HVAC) system that are important to IAQ? What information is important to developing protocols for the operating set points and schedules consistent with good IAQ performance?
- **IAQ Maintenance and Housekeeping Programs**: Good preventive maintenance and housekeeping practices are at the core of establishing and maintaining good indoor air quality in buildings. In this module, we describe the essential elements of preventive maintenance and housekeeping programs and describe their relationship to IAQ. The interactive modules relating to PM or Housekeeping contain detailed maintenance and housekeeping schedules which the user can modify to satisfy individual building requirements, or to establish an IAQ maintenance and housekeeping budget.
- **Indoor Air Quality and Energy Efficiency**: This section examines the relationship between IAQ and energy efficiency. Because many attempts to save energy in the 1970s and 1980s resulted in sick building syndrome and gave rise to minimum ventilation standards to protect IAQ, there has been a growing but erroneous conception that IAQ and energy efficiency are incompatible goals. Recent studies demonstrate that the two goals are compatible and that the true trade-off is either minimal or manageable.
- **Diagnosing and Solving Problems**: How does the knowledge obtained by working with I-BEAM help dedicated building personnel to develop sufficient expertise to solve most IAQ complaints? In this section, we describe two approaches to the indoor air quality diagnostic process for buildings - one for industrial facilities and one for commercial facilities.
- **Renovation and New Construction**: What actions are important to protect and improve IAQ during each phase of the design and construction process?
- **Managing for Indoor Air Quality**: How can I establish a management program that contains all the appropriate elements needed to manage a building for good IAQ?

IAQ Budgets and Accounts

Catalogue all of your IAQ activities and IAQ expenses, and assess the impact of those activities on your bottom line. Further, you can use this module to document your IAQ actions and expenses, and to develop a marketing plan. By marketing IAQ, you take advantage of the evidence that IAQ affects employee moral and performance, and the evidence that an IAQ program can be an attractive feature for existing and prospective tenants.

Visual Reference Module Index

The Visual Reference module contains pictures and animations of IAQ problems and solutions. Learn about the IAQ issues contained in each picture. You may find explanations in text, or in other visual guides which show air movement flows, or pollutant flows as various elements in the building are changed.

Please note: The animated series modules use animated GIF files which are about 2MB in file size. If you have dial-up access to the internet, it may be a moment before the graphics load.

Picture Series

1. [Controlling Common Outdoor Sources](#)
2. [Controlling Common Indoor Sources](#)
3. [Controlling Pollution Pathways](#)
4. [Control Moisture and Mold](#)
5. [Special Issues In Construction and Renovation](#)
6. [Preventive Maintenance Sustains Good IAQ](#)
7. [Be Responsive to Occupant Needs](#)

Animation Series

1. [Controlling Ventilation Air Flows](#)
2. [Pressure Relationships](#)
3. [Containing Construction Contaminants](#)
4. [Pollution Flows in Underground Garage](#)