IAQ GUIDELINES FOR OCCUPIED BUILDINGS UNDER CONSTRUCTION

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SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
www.smacna.org

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SECOND EDITION – NOVEMBER, 2007

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FOREWORD

In an effort to provide SMACNA contractors, architects, engineers, building owners and managers, and the general construction industry with a researched, practical publication to assist in maintaining acceptable indoor air quality during building renovation, SMACNA's Building Services Committee developed the first edition of the *IAQ Guidelines for Occupied Buildings Under Construction*. This manual has its roots in a workshop that took place during the IAQ 1993 Conference that was co-sponsored by SMACNA and other professional organizations. As the conference progressed it became clear that, other than the combined experiences of the presenters and other specialized professionals in attendance, there was little published technical guidance that dealt with the potential health hazards and annoyances related to carrying on construction activity in occupied buildings.

This second edition of the IAQ Guideline has been updated and was passed through an additional review process using a canvass review that meets SMACNA's American National Standards Institute (ANSI) accredited procedures. The ANSI process assures that interested and affected parties have an opportunity to review, comment, and approve publications as an ANSI standard document via a consensus process.

The IAQ Guideline is intended to be an authoritative source for providing project management guidance in maintaining satisfactory indoor air quality (IAQ) of occupied buildings undergoing renovation or construction. The Guideline covers how to manage the source of air pollutants, control measures, quality control and documentation, communication with occupants. It includes example projects, tables, references, resources, and checklists. The previous edition of the IAQ Guideline is referenced by the U.S. Green Building Council's LEED Green Building Rating System for Existing Buildings and New Construction. SMACNA recommends the guide to architects, engineers, construction managers, facility managers and building owners who will be involved in construction activities inside occupied buildings. Additionally, the principles presented here are also applicable to IAQ problems encountered in occupied areas of buildings during the final phases of new construction.

Methods to identify and remediate lead, asbestos, or other materials that are classified as hazardous materials are not intended to be within the scope of this standard.

SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.

TASK FORCE

Michael F. Mamayek, *Chairman*
Illingworth Corporation
Milwaukee, WI

Phil Corbin
J. F. Ahern Co.
Fond Du Lac, WI

Richard Lackey
Lackey Sheet Metal L.L.C.
Saint Louis, MO

Joseph R. Lansdell
Poynter Sheet Metal, Inc.
Bloomington, IN

Peyton Collie, *Staff Liaison*
SMACNA
Chantilly, VA

TECHNICAL AUTHOR

Ed Light, CIH
Building Dynamics, LLC
Ashton, MD

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INTRODUCTION

1.1 OVERVIEW

The purpose of this manual is to guide building managers and contractors on controlling construction contaminants so they do not impact building occupants.

Poor indoor air quality (IAQ) is more likely to impact the health of building occupants when construction and renovation projects occur in an occupied building. Dust and odors or other contaminants of concern migrating out of the work area and into occupied spaces can disrupt normal operation of the facility and, under worst case scenarios, cause injury or illness. While IAQ concerns in most buildings are often comfort issues, environmental changes in occupied buildings undergoing construction can have much more serious consequences. The mere presence of detectable dust or odor from a construction project, even at harmless levels, may trigger occupant concerns based on perceived hazards.

Effective management of IAQ during construction requires designers, contractors, facility managers, building engineers, and the occupants to plan and work together. Conflicts regarding scheduling, budget, and continuing facility operation are best resolved early in the design development phase. Waiting for a mid-project air quality "crisis," either real or perceived, can be costly to all parties. For example, implementing site controls and rescheduling contractors after the project is underway can be highly disruptive.

The expertise of architects, construction managers, heating, ventilation, and airconditioning (HVAC) engineers, and contractors are essential to the solution of most IAQ problems related to construction. Design of interior construction projects should include a detailed assessment of HVAC systems and relative pressurization, including their relationship to the proposed work. Where steps must be taken to protect building occupants from construction emissions, modifying HVAC operation and protecting the HVAC equipment and air conveyance system are often integral parts of the process.

A good construction manager should be trained to recognize activities or conditions which could be detrimental to building occupants. This awareness has become even more critical with the emergence of IAQ-related litigation. While standards for non-occupational air quality are not defined by either OSHA or EPA, specifications in construction contracts or facility leases may address IAQ. In practice, however, IAQ controls are usually based on common sense and good professional judgment. Ongoing documentation of these decisions made to control IAQ and site conditions may be necessary to demonstrate good faith in regard to potential liability. Even where the best IAQ controls are in place, clear communication between all parties and flexibility to adapt to changing conditions are required for successful resolution of problems.

Construction activities potentially impact occupants both in new buildings where work is ongoing after some areas are occupied and in older facilities which are being repaired, modernized, or reconfigured. This manual will focus on those activities that temporarily produce airborne dust, odor, and other contaminants during demolition, construction, and punch list activities. Longer term IAQ concerns, such as proper design and modification of HVAC systems, are beyond the scope of this manual. The reader is referred to other references published by SMACNA, ASHRAE, and EPA for information on other IAQ issues.

1.2 HOW TO USE THIS MANUAL

No two construction projects are exactly alike. This manual, therefore, emphasizes general concepts and approaches from which the reader can select solutions best suited to a given site (combining these control measures with other construction and facility management requirements depends on an understanding of the entire process).

The remainder of this manual is organized to help answer the following questions:

Chapter	
2.0	What are the common sources of airborne contaminants during construction? How do air pollutants move through a building during construction? How may dust and odors or other contaminants of concern from construction sites impact building occupants? What are the relative risks of exposure to construction contaminants?
3.0	What options are available for protecting IAQ during building construction?
4.0	How do the design and operation of HVAC systems affect air quality during construction?