Research & Development Highlights

93-203 Technical Series

The Clean Air Guide: How to identify and Correct Indoor Air Problems in Your Home

Introduction

Recent statistics indicate that we now spend up to 90 percent of our time indoors. Accordingly, our health is affected by the quality of indoor air in our housing. People affected by indoor air contamination can be broken down into three categories; 1) those who are minimally affected, 2) those who suffer from allergies or respiratory ailments due to indoor air quality, and 3) those who are hypersensitive and react adversely to extremely low levels of contaminant exposure.

indoor air quality is affected by a host of agents ranging from moulds and mildews found in damp areas of the house to chemical vapours emanating from modern building materials.

Description of publication

This document gives information on the effects of contaminants on house occupants, methods of contaminant detection and possible corrective measures.

The guide is broken down into six main sections, following the six steps to a cleaner environment. These steps include:

- assessing of the situation,
- evaluating the house location,
- evaluating the house,
- deciding on a plan of action,
- taking action, and
- assessing the situation after action has been taken.

Step one entails a family health profile and air quality questionnaire to give the reader a better perspective on the situation and the potential impact of air quality on each occupants health.
Step two involves an examination of the area where the house is located. A location audit and house history checklist is included here.

Step three uses a detailed assessment checklist of the house based on chemical and biological contamination, giving the reader a greater knowledge of potential contamination sources and problems. A number of corrective measures are also listed (see Fig. 1).

Step four describes numerous strategies to correct the source problems. These can be categorized as ventilation, elimination, and separation.

Step five gives advice on how to find professionals who will take into account indoor air issues when renovating, building, or remodeling.

Step six examines the importance of evaluating the effects of measures taken to improve indoor air quality. These evaluation techniques assist in finding out which improvements helped.

Further information is given on other issues such as relocating, apartment complexes, and buying and building a home. A list of other organizations in the field of indoor air quality and health is appended.

Implications for the Housing industry

As the correlation between indoor air quality, individual contaminant levels and occupant health becomes clearer, the issues discussed here will play a greater role in housing.

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Figure 1. Excerpt From Section Three: *CHEMICAL CONTAMINANTS*

Sources	Symptoms or Problems	Corrective Measures
urban outdoor air	**chemical pollutants**	• **Make house tight** • **Ventilate house, but filter the Incoming air (and house air) with adsorbent media and particulate filters**
attached garage	exhaust fumes can infiltrate house	• Seal garage front main residence • Do not store chemicals in garage • Park car outside
exposed fiberglass insulation	**particulates, chemical gases**	• **Cover with air barrier**
loose, blown insulation in walls and attic	dust (if there as no air barrier). contaminants	• Seal walls and ceiling
particleboard / indoor plywood in furnishings. shelves, paneling. etc.	formaldehyde and other gases from glues (urea formaldehyde resins)	• Seal all surfaces with approximate sealant • Replace with safer, alternative materials or furnishings
waferboard, exterior plywood in panels, underfloor, etc.	**formaldehyde and other (phenol-formaldehyde resins)**	• **Remove non-structural materials** • **Combine with ventilation strategy**
new paints	chemical smells (decrease wish time)	• Choose low-toxicity paints • Paint only when windows can be opened, in the summer, never when weather is damp or humid • Cover all exposed furnishings in the moons with plastic arid ventilate during and after painting to prevent odors from being absorbed by the furnishings.

• ***Note: Two kinds of resin binders are used in the manufacture of composite wood products: urea-formaldehyde and phenol formaldehyde resins. The former are more soluble in water than the latter and therefore are more likely to be affected by moisture in time air. The free formaldehyde concentration and emission rare are mud, higher grade plywood than front waferboard and exterior-grade plywood.***

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A *full report on this research project is available from the Canadian Housing Information Centre at the address below.*

Housing Research at CMHC
Under Part IX of the National Housing Act, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.
This factsheet is one of a series intended to inform you of the nature and scope of CMHC's technical research program.

The Research and Development Highlights factsheet is one of a wide variety of publications published by CMHC.
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