NRC·CNRC
Institute for Research in Construction

Bringing quality to the built environment

Fire Performance of Houses

Objectives

To determine the impact of new, innovative residential construction products and systems on fire safety in houses, and to answer two key questions:

1. How long will egress routes from the house remain viable?
2. How long will people take to evacuate from their homes after the smoke alarm sounds, especially during a winter night?

Background

The risk of fire is always present in buildings, including low-rise housing. With the introduction of technological changes and innovations to building materials, design and construction practices, the challenge is to determine the impacts of such changes on the fire safety of low-rise housing. To help meet this challenge, the Canadian Commission on Building and Fire Codes (CCBFC) and the Canadian Commission on Construction Materials Evaluation (CCCME) have asked IRC to conduct basic research that will provide the necessary information.

Statement of Work

IRC has built a new three-level experimental facility representing the typical basement and first and second storeys of a single-family house. The new facility will allow IRC to study structural fire performance, as well as smoke movement and tenability under conditions typical of fires that are likely to occur in different areas of a house. Phase 1 of the project focuses on a basement fire scenario.

Expected Outcomes

- Information to help answer key questions about occupants' evacuation from their houses during fires
- Information to help evaluate the fire performance of innovative construction products and systems and to determine the significance of this performance on the fire safety of occupants
- Methods to measure the fire performance of structural materials
- Validation and refinement of existing models and simulations

Partners

Special Interest Group: Canadian Automatic Sprinkler Association, Canadian Wood Council, Cement Association of Canada, Forintek Canada Corp., North American Insulation Manufacturers Association, Ontario Municipal Affairs and Housing, Wood I-Joist Manufacturers Association

Start/Expected Completion Dates

This project began in June 2004 and will be completed in December 2006.

Research Coordinator

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New facility for testing fire performance of Canadian houses

For more information, see http://irc.nrc-cnrc.gc.ca/fr/fph/index_e.html

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