Fire Safe and Healthy Building Insulation

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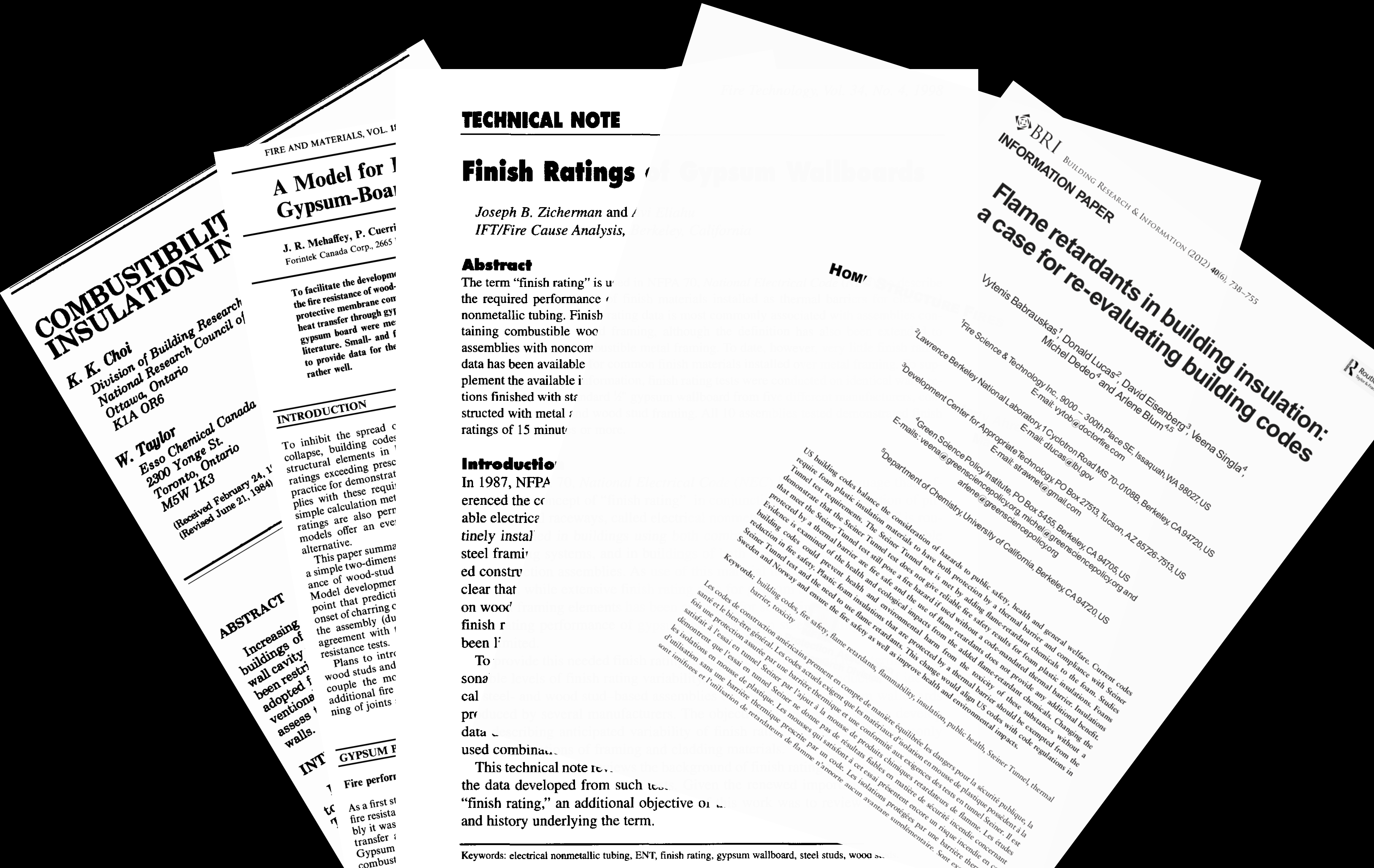
Building Insulation Standards

- All insulation must pass ASTM E84: Steiner tunnel test
- Not appropriate for ”materials that melt, drip, or delaminate”
  - like foamed plastic
- Foam plastics requires flame retardant chemicals to pass

Studies: Flame retardants do not provide a significant fire safety benefit behind a thermal barrier.



COMBUSTIBILIT
INSULATION IN

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(Received February 24, 1
(Revised June 21, 1984)

ABSTRACT

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FIRE AND MATERIALS, VOL. 1

A Model for I
Gypsum-Boa

J. R. Mehaffey, P. Cuerri
Forintek Canada Corp., 2665

To facilitate the developm
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INTRODUCTION

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TECHNICAL NOTE

Finish Ratings

Joseph B. Zicherman and
IFT/Fire Cause Analysis,

Abstract

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This technical note re
the data developed from such te
"finish rating," an additional objective o
and history underlying the term.

Keywords: electrical nonmetallic tubing, ENT, finish rating, gypsum wallboard, steel studs, wood s

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BRI BUILDING RESEARCH & INFORMATION (2012) **40**(6), 738–755

INFORMATION PAPER

Flame retardants in building insulation: a case for re-evaluating building codes

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US building codes balance the consideration of hazards to public safety, health and general welfare. Current codes require foam plastic insulation materials to have both protection by a thermal barrier and compliance with Steiner Tunnel test requirements. The Steiner Tunnel test is met by adding flame-retardant chemicals to the foam. Studies demonstrate that the Steiner Tunnel test does not give reliable fire safety results for foam plastic insulations. Foams that meet the Steiner Tunnel test still pose a fire hazard if used without a code-mandated thermal barrier. Insulations protected by a thermal barrier are fire safe and the use of flame retardants does not provide any additional benefit. Evidence is examined of the health and ecological impacts from the added flame-retardant chemicals. Changing the building codes could prevent health and environmental harm from the toxicity of these substances without a reduction in fire safety. Plastic foam insulations that are protected by a thermal barrier should be exempted from the Steiner Tunnel test and the need to use flame retardants. This change would align US codes with code regulations in Sweden and Norway and ensure the fire safety as well as improve health and environmental impacts.

Keywords: building codes, fire safety, flame retardants, flammability, insulation, public health, Steiner Tunnel, thermal barrier, toxicity

Les codes de construction américains prennent en compte de manière équilibrée les dangers pour la sécurité publique, la santé et le bien-être général. Les codes actuels exigent que les matériaux d'isolation en mousse de plastique possèdent à la fois une protection assurée par une barrière thermique et une conformité aux exigences des tests en tunnel Steiner. Il est satisfait à l'essai en tunnel Steiner par l'ajout à la mousse de produits chimiques retardateurs de flamme. Les études démontrent que l'essai en tunnel Steiner ne donne pas de résultats fiables en matière de sécurité incendie concernant les isolations en mousse de plastique. Les mousses qui satisfont à cet essai présentent encore un risque incendie en cas d'utilisation sans une barrière thermique prescrite par un code. Les isolations protégées par une barrière ther sont ignifuges et l'utilisation de retardateurs de flamme n'apporte aucun avantage supplémentaire. Sont ex

Building Insulation & Fire Safety

- FR-free EPS/XPS widely used in Europe
- Tons of FR-free foams for food service are produced, shipped, stored and used daily
- Flame retardants produce smokier, more toxic fires which may be harder to escape from

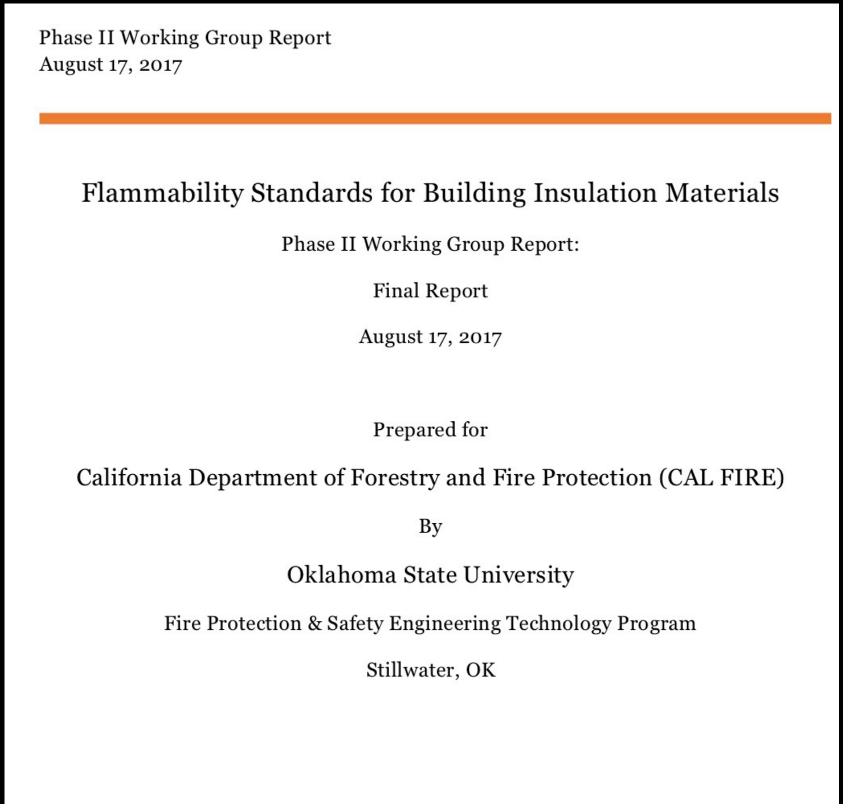
Flame Retardant Harm

- Insulation flame retardants cause:
  - elevated cancer risk
  - developmental/reproductive harm
  - hormone disruption
- Others unstudied for health harm but related to harmful chemicals
- Organohalogen FR combustion by-products: halogenated dioxins and furans
  - associated with types of cancer which disproportionately affect firefighters

State Fire Marshal Study

California State Fire Marshal study on FR-free polystyrene insulation beneath slab:

- No risk of fire spread to the building and or to occupants or first responders.
- FRs in insulation do not significantly reduce its fire intensity.
- Building codes can be safely updated to allow use of this insulation.



Phase II Working Group Report
August 17, 2017

Flammability Standards for Building Insulation Materials

Phase II Working Group Report:

Final Report

August 17, 2017

Prepared for

California Department of Forestry and Fire Protection (CAL FIRE)

By

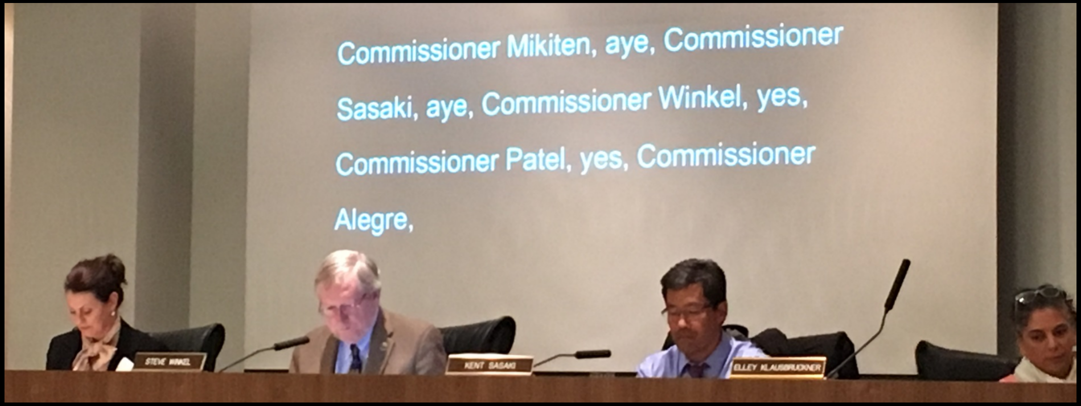
Oklahoma State University

Fire Protection & Safety Engineering Technology Program

Stillwater, OK

California Code Reform

California State Fire Marshal proposes building code reforms that to allowing choice of FR-free insulation beneath slab



Commissioner Mikiten, aye, Commissioner Sasaki, aye, Commissioner Winkel, yes, Commissioner Patel, yes, Commissioner Alegre,

Jan 2019: CBSC unanimously adopts changes CRC and CBC to allow flame retardant-free insulation below a slab

RB131-19

Allows the choice of flame retardant-free EPS and XPS insulation beneath a concrete slab on grade

- ➢ Aligns IRC and CRC

Committee disapproval: marking, potential misuse or inspection burden.

Public Comment RICH-2:

- Marking language simplified and aligned with industry standards
- Red stripes clearly designate material for inspection an proper use

- **CAUTION: Combustible.** Do not expose to flame or ignition sources
- Install only below a minimum 3.5-inch thick concrete slab on grade
- Store and use in accordance with applicable building codes

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RB131-19

- When there is no fire safety benefit, there is no rationale for requiring the use of flame retardants
- Voluntary change: allows builders the choice to use flame retardant-free EPS and XPS insulation
- Clear marking will facilitate inspection and proper use

Supporters:

CBOAC

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CANCER PREVENTION
FOUNDATION

IAFF
ORGANIZED FEB 28 1918
AFL-CIO CLC

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CAL FIRE
SINCE 1885

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For more information

- GreenSciencePolicy.org
- SixClasses.org

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