PUBLIC COMMENT on PROPOSED BUILDING STANDARDS

For Publication in Title 24, California Code of Regulations

See instructions for completing this form on Page 2.

Commenter Contact Information

Name: Jay West Date: 10/22/2018

Representing: Energy Efficiency Foam Coalition

Mailing Address: Number & Street: 700 Second Street NE

City: Washington State: DC Zip Code: 20002

Telephone #: 202-249-6407 Email: jay_west@americanche

Proposed Building Standard

Title 24 Part #: (*select one*) **Part 2** Section #: **Item 17 (2603.x)**

Proposing State Agency **Office of the State Fire Marshal**

This comment is intended for review during: (*select one*)

- ○ Code Advisory Committee
- ◉ 45-Day Comment Period
- ○ 15-Day Comment Period
- ○ Commission Meeting

Your recommendation based on the criteria of Health and Safety Code Section 18930(a) printed on the back of this form is: (*select one*)

- ○ Approve
- ◉ Disapprove
- ○ Further Study Required
- ○ Approve as Amended

In support of your recommendation above, provide the rationale based on the criteria of Health and Safety Code Section 18930(a) printed on the back of this form. If you recommend anything other than approve, cite the criteria in your comment. If you oppose a proposed building standard, offer a solution or alternative for the state agency to consider. Please use separate pages if your comment does not fit in this space.

The code revision will result in lower fire safety and is inconsistent with the authorizing legislation. Detailed comments are attached.

Attachments?

☒ Check if you have attached additional pages. The number of pages attached is: 9

For CBSC Office Use Only Date Received: _____ Rulemaking Item #: _____

Instructions for completing this form

1. Use of this form is optional. It helps CBSC and other state proposing agencies to correctly administer your comments.
2. For matters to be considered at a public CBSC Code Advisory Committee (CAC) meeting, written comments should be received at least seven days before the scheduled meeting.
3. For matters subject to a 45-Day or 15-Day public comment period announced by a Notice of Proposed Action (NOPA), written comments **must be received** on or before the close of the comment period identified in the NOPA.
4. Separate comment forms are necessary for CAC and public comment periods.
5. Separate comment forms are necessary for each state agency proposal.
6. This form is available in fill-and-print format at the CBSC website, www.bsc.ca.gov, for you to complete and submit electronically. Or print a blank form and type or complete by hand. You may attach additional pages if necessary.
7. Submit comments to CBSC, 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833-2936, or by email to cbsc@dgs.ca.gov. Please do not fax comments.
8. Written and oral comments may also be provided at CBSC public meetings to consider the proposed building standards.

For assistance, call CBSC at (916) 263-0916 or email cbsc@dgs.ca.gov.

Building Standards Nine-Point Criteria. Health and Safety Code Section 18930(a) reads:

(a) Any building standard adopted or proposed by state agencies shall be submitted to, and approved or adopted by, the California Building Standards Commission prior to codification. Prior to submission to the commission, building standards shall be adopted in compliance with the procedures specified in Article 5 (commencing with Section 11346) of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code. Building standards adopted by state agencies and submitted to the commission for approval shall be accompanied by an analysis written by the adopting agency or state agency that proposes the building standards which shall, to the satisfaction of the commission, justify the approval thereof in terms of the following criteria:

(1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.

(2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.

(3) The public interest requires the adoption of the building standards. The public interest includes, but is not limited to, health and safety, resource efficiency, fire safety, seismic safety, building and building system performance, and consistency with environmental, public health, and accessibility statutes and regulations.

(4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.

(5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.

(6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.

(7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.

(A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.

(B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.

(8) The format of the proposed building standards is consistent with that adopted by the commission.

(9) The proposed building standard, if it promotes fire and panic safety, as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.

October 22, 2018

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833-2936

Submitted electronically to cbsc@dgs.ca.gov.

RE: OSFM proposed building standards:

- Item 17 - Title 24, Part 2, proposed new section 2603.2.1, proposed modified section 2603.3, and proposed new section 2603.4.1.15
- Item 4 - Title 24; Part 2.5, proposed section R316.2.1, and proposed modified section R316.3
- Item 1 - Title 24; and Part 12, proposed modified section 12-13-1553

Dear California Building Standards Commission Members:

The American Chemistry Council's Energy Efficient Foam Coalition[1] (EEFC) appreciates the opportunity to submit these written comments regarding three proposed amendments to the California Building Code (CBC) and the California Residential Code (CRC) offered by the Office of the State Fire Marshal (OSFM).

EEFC members have been following the issue of flame retardants in foam insulation since 2013 when AB127 was first introduced in the California legislature, and we participated on the first working group convened by the OSFM (the "Phase I Working Group") to assist in the review of the flammability standards for building insulation materials. The recommendation of the Phase I Working Group was that more testing was needed.[2]

Subsequently, the OSFM funded some testing at Oklahoma State University (OSU) to address the Phase I Working Group's recommendation (the OSU work is described by the OSFM as "Phase II"). EEFC offered to provide fire science, testing, and code experts on the Phase II Working Group that was formed to consult on development of testing criteria and evaluation of test results. However, despite EEFC's expertise, experience and interest in the matter, the Phase II Working Group had just one representative from the foam insulation industry.

[1] The EEFC's mission is to promote the benefits of foam insulation. Foam insulation products are critical tools that architects, contractors and building owners can use to meet the stringent energy code requirements of today and tomorrow. The EEFC's members are in the business of providing energy-efficient foam insulation that satisfies fire safety standards while supporting the health and safety of occupants and workers. The EEFC's member are: Center for the Polyurethanes Industry; EIFS Industry Members Association; Extruded Polystyrene Foam Association; Metal Construction Association's Insulated Metal Panels Group; and Polyisocyanurate Insulation Manufacturers Association.

[2] The working group report is available at http://osfm.fire.ca.gov/codedevelopment/wgfsbim.

We have carefully compared the OSU report[3] and the reasoning statements supporting the proposed code changes to the direction given in the authorizing legislation and the review criteria in Health and Safety Code Section 18930. We find that there is no sufficient technical justification to support these proposed amendments. We firmly believe that, if adopted, these code changes will increase fire risk to building occupants, construction workers and fire fighters. Our concerns are detailed below and are organized against criteria 1-7 of the nine evaluation criteria at Health and Safety Code Section 18930.[4]

CRITERION 1. The proposed building standards do not conflict with, overlap, or duplicate other building standards.

The proposals create a conflict within the code. Currently, the CBC and CRC require quality control of foam insulation products to insure code compliance and state:

> **CBC Section 2603.2 Labeling and identification.** "Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, product listing, product identification and information sufficient to determine that the end use will comply with the code requirements." [Emphasis added.]
>
> **CRC Section R316.2 Labeling and identification. "**Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the requirements." [Emphasis added.]

Compliance with this portion of the code is accomplished by third party follow-up services for manufacturing plant inspection by approval agencies like UL, FM, Intertek, and others to ensure the plant is producing product that conforms to code required fire performance (e.g., surface burning characteristics as required by Section 2603.3, quality control records, formulation ingredients and suppliers, sampling of product for fire testing, etc.), thereby allowing their label to be affixed to the product and packages. Foam insulation manufacturers also typically have evaluation reports from ICC Evaluation Services indicating code compliance information based on Acceptance Criteria 377[5] or evaluation reports from other code-recognized agencies.

The Fire Marshal's proposals would add a new labeling subsection to CBC Section 2603.2.1 and CRC R316.2.1 aimed specifically at polystyrene foam insulation without flame retardants. These proposals state, among other things, that the product is to be labeled on both sides with this statement:

> "Not tested for flame spread or smoke development requirements of the model building codes."

[3] Available at http://osfm.fire.ca.gov/codedevelopment/pdf/CalFire-OSU_Phase_II_Working_Group_Final_Report.pdf.
[4] Criterion 8 concerns formatting, and Criterion 9 concerns written approval of the State Fire Marshal.
[5] International Code Councils Evaluation Services. 2008. Acceptance Criteria for Spray-applied Foam Insulation.

So, the non-flame retarded (non-FR) polystyrene must comply with the third-party labeling of CBC Section 2603.2 and CRC R316.2, yet, there is no fire testing requirement with the new proposed section. What standards are to be applied? How and what will the third party inspection agency test? There will be no UL, FM, or Intertek labels on these products. Will these non-FR products be regulated at all?

CRITERION 2. The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.

The proposed building standards are not consistent with the parameters established by enabling legislation (AB 127, Skinner, 2013), and the associated ISORs do not explain fully the direction provided by the enabling legislation.

The ISORs provided to the Commission and the public note that the enabling legislation, codified in Section 13108.1 of the Health and Safety Code, directs the State Fire Marshal to "review the flammability standards for building insulation materials, including whether the flammability standards for some insulation materials can only be met with the addition of chemical flame retardants." However, the ISORs do not mention that the enabling legislation also calls for the State Fire Marshal to propose for consideration by the California Building Standards Commission "updated insulation flammability standards."

OSFM's code change proposals do not describe updated insulation flammability standards. They propose *exceptions* to the fire test standards that allow the use of non-FR foam insulation products that are prohibited in other parts of the CBC and CRC, and they are therefore inconsistent with the enabling legislation.

The enabling legislation also requires that any proposed updated insulation flammability standards "maintain overall fire safety." The proposed code changes create an increased fire risk that reduces overall building fire safety by allowing the use of foam insulation in specific applications ***without requiring any fire testing*** by current code-required consensus fire tests (ASTM E84 and ASTM D2863).

The enabling legislation also requires that any proposed updated insulation flammability standards provide "adequate protection from fires that travel between walls and into confined areas, including crawl spaces and attics, for occupants of the building and any firefighters who may be in the building during a fire." The code change proposals do not meet this important requirement. The OSU report clearly demonstrates that a small candle-like flame will ignite non-FR polystyrene, whereas the commercially available flame retarded (FR) expanded polystyrene (EPS) requires a 6"x6"x 2" wood brand. This fact alone causes concern about an increased fire hazard with the transport and storage of non-FR polystyrene. Jobsite storage of non-FR foam insulation presents a potential hazard in the all too common construction site fires that endanger construction workers and fire fighters.

Allowing the use of insulation not tested for fire safety on the same job site presents creates very real potential for the misuse of the non-fire tested foam insulation and ignores the likelihood of misapplication of the non-FR product on other highly code-regulated vertical areas or within attics and crawl spaces, thereby endangering building occupants.

CRITERION 3. The public interest requires the adoption of the building standards. The public interest includes, but is not limited to, health and safety, resource efficiency, fire safety, seismic safety, building and building system performance, and consistency with environmental, public health, and accessibility statutes and regulations.

The EEFC believes that the proposals fail on this criterion. The OSU report upon which the OSFM bases these proposals clearly shows the hazards associated with the use of non-FR foam insulation. We base our conclusion on the following:

A. Only one set of *ad hoc* experiments at one lab, not repeated anywhere else, was used to justify these significant code change proposals.

Much more data using consensus flammability standards at code accredited labs should be required before considering adoption of proposals into the CRC and CBC. Furthermore, many of the experiments were considered to be small-scale fire tests. For foam insulation, it has been shown repeatedly that small scale fire test performance does not always reflect large scale fire test performance.

B. Only one type of specially produced non-FR EPS foam was tested.

To our knowledge, there is no commercially available non-FR foam insulation in California or anywhere else in the United States. The tested non-FR EPS was specially produced for the OSU testing exercise with no proof or assurance that it would meet the current product standard (ASTM C578) for durability and thermal and other physical properties. The code change proposals appear to also apply to extruded polystyrene (XPS), yet the fire testing performed on XPS was limited to XPS manufactured *with* flame retardants. While XPS and EPS are both polystyrene, there are significant manufacturing process and formulation differences between XPS and EPS foam insulation.

C. The non-FR EPS ignited more easily than the FR EPS.

Page 19 and Figure 9 on page 58 of the OSU report states “the FR EPS vs non-FR EPS ASTM D2859 demonstrates that the non-FR EPS readily ignited and burned to completion. Whereas, the FR EPS melted away from the ignition source and stayed within the required radius.” OSU used ASTM D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials, assuming that this test is a

"logical proxy for foamed insulation."[6] The pill ignition source is a flame similar to the flame of a small candle and is a pass/fail test. In other words, even with this small ignition source, the non-FR EPS easily ignited and failed.

Additional foam insulation fire testing was performed using ASTM E108 Standard Test Method for Fire Test of Roof Coverings. The ASTM E108 test is performed correctly on a sloped roof assembly with wind; OSU did not use those test conditions.

Although neither of the ASTM D2859 nor the ASTM E108 tests was reflective of the actual intended use of the non-FR EPS, in each case, the non-FR EPS ignited more easily. Intermediate or large scale fire tests would likely have documented a more dramatic difference in ignitability.

D. In the below grade application fire test experiment, the non-FR EPS, once ignited, burned faster and farther than the FR foam.

Figure 4 on page 53 of the OSU Report shows the significantly different burning characteristics of FR EPS vs non-FR EPS, even though two different ignition sources were used. The ignition source for the non-FR EPS was the small candle flame from ASTM D2859, resulting in a fast ignition and flame front across the full width of the 48" test sample. The ignition source for the FR EPS was the much larger ASTM E108 Class B burning brand (a burning 6"x6"x2" crisscrossed wood "crib") and resulted in a parabolic 9.5" flame front. This fast ignition and significant flame spread of the non-FR EPS compared to the FR EPS is concerning and begs the question of safety with larger quantities of non-FR EPS that would be used in an actual installation.

E. The storage and installation test series was not reflective of actual construction site conditions.

The typical pallet of foam insulation delivered to the job site is 8'x4'x8'. The test samples were 16"x16"x16". The only reason for this scale down was that "a smaller more manageable volume was selected as the basis for comparison."[7] Once again, the ignition source varied, as shown in Table 4 on page 47, and there were clear differences demonstrated between FR EPS and non-FR EPS with the non-FR EPS exhibiting quicker ignition and faster flame spread.

F. The "relative risk" of non-FR foam on the job site is a false equivalency.

Perhaps one of the most troubling portion of the OSU experimental design was the decision to compare the fire performance of the foam insulation to that of wood. When energy efficient foam insulation was first introduced to the market, it was assumed that, as an organic material, like wood, the fire performance would be the same. At the time,

[6] OSU Report, page 14.
[7] OSU Report, page 17.

> the flammability of foam insulation was determined by a small scale test. A series of catastrophic fires prompted the US Federal Trade Commission to launch an investigation into the underlying fire tests for foam insulation. This led to the development of an entire building code chapter, first adopted in the 1976 Uniform Building Code, that placed restrictions on foam insulation that were more extensive and robust than those used for wood products.
>
> To assume that non-FR foam insulation would burn like wood or other common construction materials is to dismiss the long history of loss and the now successful use of foam insulation when flammability standards prescribed by the code are met.

CRITERION 4. The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.

EEFC believes these proposals are arbitrary because they reflect only the input of very limited Phase II Working Group participation and the OSFM staff. Between the issuance of the Phase II OSU report on August 17, 2017, and the OSFM proposal provided to the Building, Fire and Other Code Advisory Committee (BFO CAC), there was no stakeholder consultation to discuss the implications and views of affected parties like foam insulation manufacturers, contractors who would be installing non-FR polystyrene insulation, code-accredited fire test labs and inspection agencies, or the fire service.

This lack of transparency is problematic and is not at all reflective of the major effort taken by the Phase I Working Group. That working group was composed of 32 members representing multiple viewpoints and was convened 10 times in face-to-face meetings and numerous intervening conference calls.[8] As noted in the executive summary of the working group's final report:

> "This report reflects the efforts of the Working Group. Throughout the process, consensus proved difficult on a number of important issues. This report sets out those issues and competing perspectives. The Working Group developed the following recommendations for the SFM's consideration:
>
> 1. Perform proof of concept testing for the proposed Wall Assemblies, Floor-Ceiling Assemblies, Crawl Space Assemblies, and Attic Assemblies Proposed Performance Tests.
> 2. Proof of concept testing should be designed so that adequate and usable data can be obtained from the Proposed Performance Tests.
> 3. After the proof of concept testing, form a second smaller workgroup composed of fire service operations personal, fire marshals, representation from the initial Working

[8] Agendas and minutes of all of these meetings are available at http://osfm.fire.ca.gov/codedevelopment/wgfsbim.

> Group, technical experts and interested parties to review the test data and develop additional recommendations."[9]

While the OSFM can argue that items 1 and 2 above were accomplished through the OSU demonstrations, there is no evidence that item 3 was addressed. Certainly, the continuity from the Phase I Working Group did not occur due to the selected limited participation on the Phase II Working Group.

Also troubling was the statement in the August 31, 2018, initial statement of reason where the OSFM responds to the recommendation of the BFO CAC:

> "The OSFM disagreed with the action advised for long term further study, but did a short term further study with the work group to refine the proposal and to capture the intent that the non-fire treated product is an option when installed beneath a concrete slab".[10]

On October 15, 2018, representatives from our group met with the OSFM staff, who confirmed that the reference to "the work group" meant an internal discussion among OSFM staff, not a stakeholder work group.

We maintain that the development of these code change proposals does not satisfy the transparency requirements for rulemaking of the California Administrative Procedure Act. This fact alone should be the basis for disapproval of this code change proposal.

CBSC members should also be aware that the exceptions proposed by the OSFM (or ones nearly identical) have been vetted and disapproved at five International Code Council Public Hearings. One reason for rejection was the lack of supporting data, but the OSU report clearly fails to justify the proposed changes.

CRITERION 5. The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.

While "cost to the public" can be interpreted as financial cost, there must be a consideration of cost to the public in terms of public safety. The OSFM's justification for the proposed code changes does not articulate a reason other than the enabling legislation, AB 127. This legislation asked for a determination of whether non-FR insulation can be used safely. The OSFM offers no specific justification other than a reference to the OSU report. The EEFC notes that the OSU Report presents an argument against these proposed changes:

[9] Phase I Working Group Final Report, Executive Summary. See http://osfm.fire.ca.gov/codedevelopment/pdf/OSFM_Flammability_Standards_Report.pdf.
[10] See https://www.documents.dgs.ca.gov/bsc/2018TriCycle/45-Day/ACC-BFO/SFM-01-18-ISOR-Pt2-45d.pdf page 55.

> "The issue under consideration is known by ethicists as a 'right vs right' scenario. On the one hand is the potential risk of chronic adverse health outcomes from low dose exposure to chemical fire retardants.
>
> "On the other hand is the potential risk of acute loss of life and property due to the properties of certain materials. In both cases, the goal is the protection of life. Therefore, these positions are not at odds per se. Rather, the decision must rest upon the evidence. In this case, evidence has been provided that demonstrates, in a laboratory setting, that the risk of fire may be controlled when these materials are used according to the proscribed practice. However, when the proposed non-FR materials are introduced into the market being used 'as prescribed' is not guaranteed. This is not to suggest the slippery slope argument that gasoline may be misused by an arsonist. Rather, that fallible persons may install these materials in inappropriate ways, with no intent for malfeasance, or overlooked by resource limited code enforcement officials. The suggested code amendment proposes to eliminate an existing engineering control (fire retardant) for an administrative control (labeling) which is contrary to the hierarchy of controls adopted by the risk protection community. Additionally, the risk protection community instituted the engineering control of fire retardants in response to numerous fires involving non-FR foam plastics in the 1960s and 1970s. In 2003, we were sadly reminded by the Station Nightclub Fire what improperly used non-FR foam material could lead to."[11]

EEFC submits that the hazard to fire losses, a known problem, bolstered by the data in the OSU report, is an unacceptable pubic cost. The code change proposals appear to dismiss tragic fires in the past on the basis of questionable tests conducted in a laboratory setting, and the OSFM provides no information on cost or any other benefit in its proposal package.

CRITERION 6. The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.

In our reading, the proposed change to Part 12 appears to exempt *all types* of foam insulation from the flame spread requirements of the CBC and the CRC.

CRITERION 7. The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.

- **a. If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.**
- **b. If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.**

[11] OSU Report, pages 39-40.

The OSFM proposals do not satisfy criterion 7. The OSFM does not explain why the current standards (ASTM E84 or UL 723) in Section 2603.3 are inadequate or inappropriate for the use of non-FR polystyrene insulation. One can only assume that given the proposed labeling statements the OSFM believes non-FR polystyrene insulation products will not meet the surface burning limitations required in the codes. In fact, since these products will not be required to test at all, the fire hazard is unknown. Given the long-term safe use of foam insulation since surface burning limitations were first added to the 1976 Uniform Building Code, and carried through to this day in the ICC model codes, it is irresponsible to allow non-FR polystyrene insulation products on the market.

Summary

The EEFC opposes these proposed code changes. The deficiencies in the OSU Report will result in exceptions that will permit the use of non-fire tested foam plastic insulation materials that will decrease overall fire safety and fail to fulfill the legislative mandate to maintain the current level of fire safety. Furthermore, the OSFM's code change proposals fail to meet seven of the nine criteria articulated in Health and Safety Code Section 18930.

Thank you for your consideration of these reasons for disapproving the code change proposals referenced on the first page of this letter. The EEFC will be represented at the December CBSC meeting in Sacramento to further comment and address any questions.

Sincerely,

Jay West
Senior Director, Chemical Products and Technology
American Chemistry Council