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Subject: Comments for consideration on the proposed rulemaking action to consider revising sections 1374 and 1374.3 of Division 3 of Title 4 of the California Code of Regulations

Thank you for the opportunity to comment on the proposed revision to sections 1374 and 1374.3 of Division 3 of Title 4 of the California Code of Regulations. NIST provides these comments to offer scientific feedback on statements made in the proposed rulemaking. Listed below are statements from the published notice of the proposed action and our associated scientific comments for your consideration.

1) "This proposal would eliminate the TB 133 test standard and accompanying label requirements because TB 133 is a **redundant test standard** that causes confusion within the industry and presents unnecessary health risks." (Page 1, Paragraph 5, Line 5)

   a) Comments

   i) TB 117-2013 is a test to evaluate the *smoldering ignition (e.g.; cigarette)* of upholstered furniture.[1] TB 133 is a test to evaluate the *open flame ignition (e.g.; candle)* of upholstered furniture.[2] Scientists have shown the ignition mechanism [3,4] and mitigation strategies [5] differ for these two types of ignition sources. Protection from a smoldering ignition source, such as a cigarette, can result in increasing the fire hazard from the other type of ignition source, such as an open flame.[3,5]

   ii) Most fire losses (civilian deaths and injuries, and property damage) from upholstered furniture fires occur after the fire spreads beyond the upholstered furniture.[6] Since smoldering is a localized combustion process, for fire to spread beyond the upholstered furniture, smoldering must transition to flaming.[3,4,6] Limiting the size of a fire is an important and commonly used metric for reducing fire risk [4,7,8,9] (e.g.; TB 133 [2] and CPSC 16 CFR 1633 [8]).

2) "In addition, by reducing the need for flame retardant chemicals, this action is anticipated to improve public health by reducing exposure to **carcinogenic organohalogen flame retardants**." (Page 4, Paragraph 3, Line 4)

   a) Comments

   i) There are technologies that have been shown to reduce upholstered furniture flammability without the use of carcinogenic organohalogen flame retardants.[9] For example, a

commercial fire barrier is advertised as a "PBDE (polybrominated diphenyl ether) free and halogen free" fire barrier that "should pass California Technical Bulletin 133".[10]

ii) According to the National Research Council (NRC), certain chemical flame retardants that aren't considered carcinogenic have been deemed safe for use in upholstered furniture.[11] NRC states that these safe flame retardants can be used by manufacturers to meet TB 133. For example, several inorganic additives, including alumina trihydrate, have been deemed safe by NRC and, furthermore, NIST research has shown that these fire retardants do significantly reduce upholstered furniture flammability [5,12].

References

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[2] Technical Bulletin 133 – Flammability Test Procedure for Seating Furniture for Use in Public Occupancies Bureau of Electronic and Appliance Repair, State of California, https://www.google.com/url?q=https://www.bearhfti.ca.gov/industry/tb133.pdf&sa=U&ved=0ahUKEwjGnv7ti8LdAhUIm1kKHSyWAOkQFggEMAA&client=internal-uds-cse&cx=001779225245372747843:0ztv0grzez8&usg=AOvVaw0lmmrRRGVupg5F6UL_Ow3Q, last viewed on September 17, 2018.

[3] T. Ohlemiller, Smoldering Combustion, NBSIR 85-3294, 1986.

[4] V. Babrauskas, Ignition Handbook, Fire Science Publishers, 2003.

[5] M. Zammarano et al., Smoldering and Flame-Resistant textiles via Conformal Barrier Formation, Adv. Mat. Interfaces, 3(23), 2016; M. D. W. van Krevelen, Polymer 1975, 16, 615.

[6] M. Ahrens, Home Fires that Began with Upholstered Furniture, NFPA, 2017.

[7] T. Ohlemiller, Estimating reduced fire risk resulting from an improved mattress flammability standard, NIST Technical Note 1446, 2002, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&ved=2ahUKEwiLyczplMLdAhUJzFMKHeA2Cn4QFjAFegQIBBAC&url=https%3A%2F%2Fwww.gpo.gov%2Ffdsys%2Fpkg%2FGOVPUB-C13-3e563a6fbf3ce06db9e541abe9f99642%2Fpdf%2FGOVPUB-C13-3e563a6fbf3ce06db9e541abe9f99642.pdf&usg=AOvVaw1z-I7eR2YDAeCtoS7j2nq-, last viewed on September 17, 2018.

[8] 16 CFR 1633 Standard for the Flammability of Mattress Set, Consumer Product Safety Commission, https://www.cpsc.gov/s3fs-public/pdfs/blk_media_mattsets.pdf, last viewed on September 14, 2018.

[9] K. Storesund, Fire Safe Upholstered Furniture – Alternative Strategies to use of chemical flame retardants, SPFR Report A15 20124:2, https://risefr.no/media/publikasjoner/upload/2015/rapport-spfr-a15-20124-2.pdf, last viewed on September 14, 2018.

[10] https://customlaminations.com/services/firebloc/, last viewed on September 14, 2018.

[11] Toxicological Risks of Selected Flame-Retardants Chemicals, National Research Council, National Academy Press, Washington, D.C., 2000., available at https://www.nap.edu/catalog/9841/toxicological-risks-of-selected-flame-retardant-chemicals.

[12] https://www.nist.gov/el/fire-research-division-73300/flammability-reduction-73304/upholstered-furniture-fire-videos, last viewed om September 14, 2018.