



U.S. CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MARYLAND 20814

Arthur Lee
Electrical Engineer
Division of Electrical Engineering
Directorate for Engineering Sciences

Tel: (301) 987-2008
Email: alee@cpsc.gov

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Paul E. Lloret
Project Manager for STP 0217
Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062

Re: Request for Comments on the Proposed Requirements, Polyurethane Flaming and Smoldering Tests, for the *Standard for Single and Multiple Station Smoke Alarms*, UL 217

Dear Mr. Lloret:

This letter presents comments from U.S. Consumer Product Safety Commission (CPSC) staff regarding proposed new requirements in UL 217, *Single and Multiple Station Smoke Alarms*.¹

Improving the fire death rate requires alerting occupants and providing them enough escape time to exit the home safely before the conditions become untenable. This has become particularly important today because today's homes are furnished with increasing numbers of synthetic materials, including polyurethane foam. Improving smoke alarms by testing them to respond according to the smoke characteristics of polyurethane material will require that smoke alarms be redesigned to meet the new requirements. CPSC staff acknowledges that the UL task group had a difficult task of weighing the tradeoffs in selecting challenging test criteria, which could result in lower detector sensitivities, and thus, more nuisance alarms but offer earlier detection of fires.

A National Institute of Standards and Technology (NIST) report,² Table 10, *Matched pairs of flaming and smoldering fire performance criteria where the average success rate is nominally equal for smoke obscuration target values on the same row*, lists the average occupant successful escape rate for selecting smoldering and flaming fire test criteria. UL's proposal is 5%/ft obscuration for the flaming polyurethane tests and a 12 %/ft obscuration limit for the smoldering polyurethane test, which corresponds to

¹ The views expressed in this letter are those of the CPSC staff, and they have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

² Cleary, T. (July 2014), NIST Technical Note 1837, *Improving Smoke Alarm Performance – Justification for New Smoldering and Flaming Test Performance Criteria*, U.S. Department of Commerce, National Institute of Standards and Technology, Gaithersburg, MD. <http://dx.doi.org/10.6028/NIST.TN.1837>.

80.8 percent average occupant successful escape rate and 93 percent average occupant successful escape rate, respectively. This proposed performance test criteria would be a vast performance improvement over today's typical single sensor smoke alarms performance of 45 to 49 percent average occupant successful escape rate for selected fires.

As a member of the task group that participated in helping develop the foundation for this proposal, the UL task group had a difficult task of weighing the tradeoffs in selecting challenging test criteria, but the option of not using the last 15 years of research to improve smoke alarms would be irresponsible. CPSC staff agrees that the present proposed tests and passing criteria will increase the overall performance of residential smoke alarms by subjecting smoke alarms to smoke characteristics that are not captured in the present UL 217 performance tests. CPSC staff supports the overall recommended changes to UL 217 regarding addition of the Polyurethane Flaming and Smoldering Tests because ultimately, the changes achieve the goal of improving smoke alarm performance.

Thank you for the opportunity to make these comments. We look forward to participating in additional discussions on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Arthur Lee', with a large, sweeping initial 'A'.

Arthur Lee
Electrical Engineer
Directorate for Engineering Sciences