

STUDY SHOWS ROBUST FIRE SAFETY STANDARDS SIGNIFICANTLY INCREASE FIRE SAFETY AND ESCAPE TIME

New research shows how product fire standards impact the severity of room content fires. Differences among country-specific fire codes in real-world scenarios can dramatically affect overall fire conditions, including ignition development, smoke generation, escape time, and time available for emergency personnel response.



FIRE SAFETY STANDARDS

Product fire safety standards help ensure public safety. Fire standards for products like furniture and electronics are often referred to as passive fire protection in that ignition resistance is built into the materials by design. This approach helps diminish the risk of a small fire becoming a larger fire.

While fewer fires have occurred in the U.S. since the introduction of stricter fire safety standards in the 1970s, some have questioned whether strong fire standards that consider open flame ignition sources make a difference and are needed. Some have also claimed that the use of flame retardants to help meet such standards is not effective and may increase the dangers of smoke.



WHY WAS THE STUDY DONE?

Researchers from Southwest Research Institute, an independent, nonprofit research organization, set out to explore questions frequently encountered in discussions about fire safety standards, fire performance, and the efficacy of flame retardants.

The study was conducted to evaluate differences in fire performance of identically configured rooms, based on the furniture fire safety standards of three countries: France, United Kingdom and U.S.



CONCLUSIONS

Differences among country-specific fire codes in real-world scenarios can dramatically affect overall fire conditions, including ignition development, smoke generation, escape time, and time available for emergency personnel response.

- **Country fire codes for upholstered furniture and home furnishings affect performance in fires.**
 - The time to flashover (the time for a room to be completely engulfed in fire) of furnishings from the U.K. was delayed more than 13 to 17 minutes in comparison to countries with less protective standards.
 - Likewise, escape time significantly increased in the U.K. room burns, adding 13 to 15 minutes of escape time.
- **Smoke is NOT more acutely toxic from furniture containing fire retardants.**
 - The chemical composition of the smoke generated in the room burns featuring the most highly fire retardant standards (i.e., U.K.) was less acutely toxic.
- To view video from this burn comparison study, visit <https://flameretardants.americanchemistry.com>



DETAILS OF THE RESEARCH

This study featured a total of nine test rooms — three rooms with identical configurations for each country tested (France, U.K. and the U.S.). The three replicated rooms for each country contained commonly available upholstered furniture and home furnishings from that country-specific market. In all tests, the sofa was the first item ignited, and the rooms were allowed to burn to completion in fully ventilated conditions. Test rooms were burned to determine the impact of each country's fire codes on the burning performance of upholstered furniture and the furnished room. The results provided a robust data set.



RESULTS

Comparison of the heat release data shows the U.K. room configuration — the country with the most stringent fire ignition standards — to be significantly less flammable than either the French or U.S. room configurations, which appear to be nearly identical in performance. In all cases, furniture represented the largest room fuel load, and its fire performance heavily influenced the testing outcomes.

“Ignoring or eliminating open flame ignition sources from furniture and electronics equipment decreases their safety by reducing their resistance to ignition.”

*Dr. Matthew S. Blais
Director of Fire Technology
Southwest Research Institute*

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The American Chemistry Council's North American Flame Retardant Alliance (NAFRA) is committed to promoting the safe and effective use of flame retardants. Flame retardants can provide an important layer of fire protection by stopping or delaying the onset and spread of fires.