

Matthew Blais

A fire testing laboratory Perspective.

Over the last 12 years the Fire Technology Testing Laboratory at Southwest Research Institute has performed expensive testing in the flammability and toxic smoke generation of flame retardant and none flame retardant materials. General observations are that Halo FR materials perform the better than other materials available. States that have restricted their use have seen an increase in fire deaths per year. While coincidence is not causality, we can conclude by the quantity of data that the increase is tied to the decreased fire safety of consumer products due to the reduced use of Halo organic FR.

We have performed thousands studies on urethane foam furniture, urethane foam insulation, whole-room furniture fires, television casing burns, battery burn testing, plastic fuel tank testing, maritime materials fire testing and many others. Few of our programs are large enough to publish and much of the data acquired is proprietary to the organization that sponsors the work. However the work we have published in peer reviewed journals are consistent in the conclusion that FR's measurably improve the fire performance of consumer products by reducing ignition or reducing the rate of combustion based on large ignition sources. Reducing the rate of burning reduce the heat release rate and reduces the probability of ignition of the next nearest item resulting in a small fire or no fire if there is no ignition.

With this knowledge in hand, the development of new, non-halo FR are always benchmarked on the performance of halo-organic FR. The halogenated FR systems are the comparison point because they are so effective. In cases where fire does result for FR protected materials ignition it is usually do to other large items acting as a large ignition source. Of interest in these cases is the fact that the smoke produced for the FR protected items is less toxic because they slow the rate of burn so that the fire has sufficient oxygen to burn more completely. We have published the acute toxicity data in our fire journal peer reviewed papers and have also published chronic toxicity results in toxicology journals. In all cases, we have seen less toxic smoke from fire where the halogenated FR protected items were directly compared to their non-FR counterparts. All smoke from fire is toxic, we can quantify the components of smoke by direct measurement and by exposure of human cell assays and assess relative toxicity quite easily. The evidence is unequivocal, the smoke is less toxic from halogenated FR protected items because they burn more slowly or not at all.

In Conclusion, Halogenated FR are the benchmark for performance for FR in plastics, all others are compared to them because they perform so well. Peer reviewed references are available upon request to validate these claims. If additional information is required, please feel to contact me at mattew.blais@SwRI.org. or 801-541-5705. Video evidence of testing is also available. Our testing Laboratory is a part of a Non-profit Research Foundation and we do not individually benefit from the Fire retardant Industry. We do provide professional assistance to this industry.

Sincerely,

Dr. Matthew S. Blais
Director, Department of Fire Technology
Southwest Research Institute, San Antonio TX.