

**Written Testimony of Mr. Marshall Moore
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**Before the
Committee on Environment and Public Works**

“Oversight of EPA Authorities and Actions to Control Exposures to Toxic Chemicals”

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Good morning. I am Marshall Moore, Director of Technology, Advocacy and Marketing at Chemtura. Thank you for the opportunity to speak on behalf of our 4,300 employees. We sincerely appreciate the opportunity to share our views about proposals to reform the Toxic Substances Control Act and how improvements to the regulatory process would affect the innovative products that Chemtura manufactures, including the life-saving and injury-reducing products that we manufacture for the purpose of fire prevention. We welcome the opportunity to discuss the important contributions our innovative solutions, like our flame retardants, make to modern life.

At Chemtura, our scientists have used chemistry to make other products more durable, safer, cleaner and more efficient in a number of industries, including construction materials such as insulation, furniture, electrical and electronics, and transportation.

One area of which we are particularly proud is our scientists’ work in the field of flame retardancy. Chemtura flame retardants are proven to protect lives and property by significantly reducing the risk of fire.

Flame retardants have received a significant amount of attention in recent months — some of which has been inaccurate and misleading — so I feel compelled to summarize our position in very clear terms: Chemtura stands by its products. We have acted proactively with the Environmental Protection Agency (EPA) and other agencies not only to fully comply with chemical management regulations, but also to lead the industry in the introduction of greener alternatives.

These innovations enable manufacturers to meet the strict fire-safety standards that government regulators and independent standards organizations have established to protect the public by reducing the number and severity of fires that threaten families, homes, and businesses.

In my testimony, I want to make three clear points:

- 1) Flame retardants are effective in reducing the flammability of synthetic materials;
- 2) EPA has conducted an extensive assessment of new flame retardants, such as tetrabromobenzoate (TBB), to ensure that they are safe for use;
- 3) Chemtura acts proactively to continually develop new flame retardant products with improved environmental profiles, and has demonstrated its willingness to cooperate with EPA in its assessment of both new and existing chemicals.

Flame Retardants are Effective

We share a common goal: reduce the number and severity of fires. In contemporary society, it is essential for manufacturers to find ways to limit the age-old risk of fire — a risk that has only increased with the introduction of modern products into our daily lives. Our scientists are working every day to find better, safer, and greener ways to do just that.

According to the National Fire Protection Association (NFPA), between 2005 and 2009, “U.S. fire departments responded to an average of 7,040 home structure fires per year in which upholstered furniture was the first item ignited. These fires caused an average of 500 civilian fire deaths, 890 civilian fire injuries, and \$442 million in direct property damage.”¹ We are doing our part to lower these numbers even more, but this is a significant improvement over the days that preceded the use of effective flame retardants.

By adding flame retardants to polyurethane foam — which is highly flammable when left untreated — the manufacturers of furnishings have been able to comply with a variety of standards worldwide, including those of California, which has the strictest standard in the United States. California Technical Bulletin 117, the formal name of the standard, was developed by the California Bureau of Home Furnishings through a consensus standards development process and first implemented in 1975. This regulation was intended to prevent ignition or slow the spread of the flame if the furniture is the first to ignite. When fires do occur, multiple studies show that foams treated with flame retardants burn much slower than untreated foam, giving occupants precious time to escape.

The implementation of California TB117 coincided with a dramatic reduction in upholstered furniture fires across the United States. From 1980 to 2009, upholstered furniture fires dropped 84 percent, from 36,900 to 5,900, according to NFPA data.² Deaths caused by furniture fires fell by 67 percent.³ During the same period, furniture fires from all sources fell dramatically.⁴

The statistics are just as impressive in the United Kingdom. A December 2009 report commissioned by the Consumer and Competition Policy Directorate of the Department for Business, Innovation and Skills, examined the effectiveness of that country’s flammability standards for furniture and furnishings (F&F). Overall, the report said: “Both the number and lethality of F&F fires rose before the introduction of the regulations and fell afterwards. . . . The reduction in the rate and lethality of F&F fires was estimated to equate to 54 lives saved per year, 780 fewer casualties per year and 1,065 fewer fires per year in the period 2003-2007.”⁵



Figure 1 Side-by-side test of FR and non-FR foam against open flame in Chemtura lab

¹ <http://www.nfpa.org/assets/files/PDF/UpholsteredFactSheet.pdf>

² <http://www.nfpa.org/assets/files/MbrSecurePDF/OS.Upholstered.pdf>

³ Ibid.

⁴ Ibid.

⁵ <http://www.bis.gov.uk/files/file54041.pdf>

A 1989 study conducted by the Commerce Department's National Bureau of Standards at the request of an industry group compared fire-retarded (FR) and non-fire-retarded (NFR) products in large-scale fire testing. Here is a verbatim quote from the government's report on its study:

The impact of FR (flame retardant) materials on the survivability of the building occupants was assessed in two ways: (1) Comparing the time to untenability in the burn room; this is applicable to the occupants of the burn room. (2) Comparing the total production of heat, toxic gases, and smoke from the fire; this is applicable to occupants of the building remote from the room of fire origin.

The time to untenability is judged by the time that is available to the occupants before the earlier of (a) room flashover, or (b) untenability due to toxic gas production occurs. For the FR tests, the average available escape time was more than 15-fold greater than for the occupants of the NFR room. With regard to the production of combustion products,

- *The amount of material consumed in the fire for the FR tests was less than half the amount lost in the NFR tests.*
- *The FR tests indicated an amount of heat released from the fire which was 1/4 that released by the NFR tests.*
- *The total quantities of toxic gases produced in the room fire tests, expressed in "CO equivalents," were 1/3 for the FR products, compared to the NFR ones.*
- *The production of smoke was not significantly different between the room fire tests using NFR products and those with FR products.*

Thus, in these tests, the fire retardant additives did decrease the overall fire hazard of their host products.

The above conclusions are specifically pertinent only to the materials actually examined. Thus, while it has been demonstrated that very significantly enhanced fire performance can be obtained with fire retarded products, such improvements are by no means to be automatically expected from all fire retarded products. Instead, it will still be necessary to test and evaluate proposed new systems individually. However, these tests do show that the proper selection of fire retardants can markedly improve the fire safety of specific products.⁶

Flame retardants remain effective. In a recent study funded by the National Institute of Justice at the U.S. Justice Department, Dr. Matthew Blais, the director of the Fire Technology Department at the non-profit Southwest Research Institute, tested materials treated with flame retardants in order to meet the strictest U.S. furniture flammability standard. He concluded:

Urethane foam filled furnishings have the potential for contributing tremendous energy to a fire and when not protected with flame retardants (FR) can lead to rapid transition from incipient fire to a free burning condition. The time to reach flashover (spread to the rest of the room) in a recent study performed at Southwest Research Institute (SwRI®) by Janssens et al. was as short as 200 seconds from time of ignition. The addition of flame retardant covering over the foam adds a layer of defense that delays transition to flashover to almost 800 seconds from initiation. The additional use of CA TB 117 rated urethane foams prevented sustained burning when a small ignition source was used. In cases where the CA TB 117 foams are used with flammable coverings, significant reductions in both peak Heat Release Rate (HRR) and total HRR were measured and a significant delay in reaching the free burning condition was observed. The impact of adding FR to the covering material and urethane foams adds defense in depth to the furnishing that undoubtedly saves lives.⁷

That is up to 10 additional minutes for an individual or family to escape to safety.

⁶ <http://fire.nist.gov/bfrlpubs/fire88/PDF/f88003.pdf>

⁷ Blais, Matthew. *The Utility of CA TB 117, Does the Regulation Add Value?* Southwest Research Institute, 2012.

Flame Retardants have Undergone Extensive Scientific Study



Figure 2 ACC illustrates the rigorous review process for new chemicals

Our flame retardants work as intended. They have also undergone rigorous testing and meet the standards set by government scientists and regulators, as well as those set forth by our customers. The U.S. EPA requires extensive scientific review before it authorizes the production of flame retardants, which are among the most carefully studied chemicals used in consumer products. Our Firemaster® 550 flame retardant led our industry in an innovative move to greener chemicals.

EPA required a rigorous review of 2,3,4,5-tetrabromo-ethylhexylbenzoate (TBB), the brominated component of Firemaster 550. In keeping with our corporate commitment to leading the move toward greener innovation, this product was developed to provide the same or better flame retarding properties as PentaBDE in furniture foam, but with an improved environmental profile. In total, 15 studies were submitted to EPA during the course of the assessment of TBB. These include studies specifically designed to assess the potential exposure of consumers to the substance, as well as the persistence and potential for bioaccumulation. All of these studies were conducted at independent accredited laboratories following standardized methods. Based on these studies our scientists concluded — and the EPA agreed — TBB is less persistent and less likely to bioaccumulate than the product it replaced. Perhaps the best public summary of this assessment is shown in the final report of EPA's Design for the Environment project titled [Furniture Flame Retardancy Partnership](#). In the 2005 final report, TBB is shown to have low persistence and low bioaccumulation potential.

EPA oversight did not stop there. In the years that followed, we conducted additional studies on environmental fate and toxicity. Until those studies were provided to EPA, we were subjected to a time limit during which we were allowed to produce the product — a process that took more than 13 years.

The result of an assessment of the toxicity and environmental fate studies provided to EPA indicated the levels at which observable effects would be expected are orders of magnitude higher than the predicted exposure levels.

In addition to the 15 studies that Chemtura submitted to EPA, 17 additional studies have been conducted on this compound for the purpose of registrations in other regions. Chemtura will be submitting these studies to EPA as part of the Toxic Substances Control Act (TSCA) Work Plan Chemicals program.

We welcome the opportunity to work with federal regulators to conduct a fresh, objective, and scientific review of this data as well as studies conducted by independent academic researchers. Scientific data show the relative risk associated with our flame retardants is extremely low, and is far outweighed by the societal benefits of an innovation that reduces the number and severity of fires that can threaten lives and property.

Regulatory Reform is Needed

Chemtura supports efforts to reform TSCA. It is our experience with flame retardants that the current process for the evaluation of new chemical substances under TSCA has been effective and thorough. The review of substances by EPA is done in a way that effectively minimizes the risk of adverse environmental impact, while at the same time not undermining the competitiveness of U.S. manufacturers in global markets.

That said, our nation's primary chemicals management law must be updated to keep pace with scientific advances and to ensure that chemical products are safe for their intended use — while also encouraging innovation.

TSCA has been protective of human health and the environment, but we recognize that public confidence in the regulatory system has eroded in recent years. This lack of confidence has resulted in regulatory inconsistencies at the state level and caused undue concern among consumers, often based on the rhetoric of activists rather than published research of scientists. This is not sustainable.

We all share the desire for a modern regulatory system that gives everyone — consumers, manufacturers, and others — confidence in the products of chemistry that have enabled the development of modern society and preserved the role of the United States as the world's leading innovator. We believe TSCA should be modernized to be more efficient, to use current scientific technologies, and to reflect our improved understanding of how chemicals interact with the human body and the environment.

Despite the need to update TSCA, there is broad agreement that EPA's program to evaluate and approve new chemicals before they are manufactured and commercialized works well. Every new chemical, including TBB, has had to go through a systematic assessment of human health and environmental risks before a company can begin commercial production or import. EPA has full authority — and uses it — to collect information, demand additional information and testing, limit uses to manage potential risks, and deny the application for manufacture if the agency cannot establish that the new product will not pose an unreasonable risk of injury to health or the environment. Existing chemicals and those in long-time use are subject to ongoing scrutiny, with the federal government maintaining continuous reporting, testing, and evaluation authority under TSCA, and as many as 12 other federal laws.

The flame-retardant industry has also shown a commitment to self-regulation through its own product stewardship initiatives. At Chemtura, for example, we engage in a process of continuous improvement. That was why we developed a greener alternative and voluntarily phased out production of PBDEs. We also work with our customers to minimize the potential release of flame retardants to the environment

through the Voluntary Emissions Control Action Program (VECAP), an award-winning product stewardship program developed by the European Flame Retardants Association (EFRA) and the Bromine Science and Environmental Forum (BSEF).

Going forward, EPA's decisions must consistently be based on a strong scientific framework that uses modern technology, proven safety testing methods, and high-quality data. Chemtura has always welcomed the opportunity to work with EPA in its efforts to conduct objective, science-based assessment of chemicals, including flame retardants. For us it means continuing to provide our company's scientific data and other information regarding flame retardants in support of the Design for the Environment projects, and the EPA's upcoming assessments of its Work Plan. This will provide the agency with the facts it needs to conduct an objective scientific review that sets a direction for the future use and study of the products.

Since scientific understanding is always evolving, a regulatory system that can adapt to advances in science and technology will help ensure the safe use of the essential, innovative products made possible by chemistry, as well as maintain American competitiveness in this important arena.

Chemtura is Committed to Continuous Improvement

We are proud of the fact that Chemtura leads our industry in the introduction of new flame retardants through Greener Innovation that maintains the fire safety efficacy that enable manufacturers to meet fire prevention standards in this country and around the world. Reducing the number and severity of fires that threaten families, homes, and businesses — efficiently and safely — is common ground for all of us.

As a company, we have shown our commitment to continuous improvement in our scientific endeavors by voluntarily replacing older products with newer options that are better, safer, and greener. EPA has required rigorous review of these products, which have been found to have an improved environmental profile when compared to their predecessors.

Moreover, we all share the desire for a modern regulatory system that evokes confidence in the products of chemistry that have enabled the development of modern society and preserved our national competitiveness. We believe TSCA can be modernized to be more efficient, to use current scientific technologies, and to reflect our improved understanding of how chemicals interact with the human body and the environment. You have our commitment to help in this effort.

Thank you.