



NATIONAL ASSOCIATION OF STATE FIRE MARSHALS
FINDINGS, CONSIDERATIONS AND CONCLUSIONS
PERTAINING TO THE CONCURRENT PURSUIT OF
FIRE SAFETY, HEALTH AND ENVIRONMENTAL QUALITY

The primary mission of the National Association of State Fire Marshals (NASFM) is to protect life, property and the environment from fire. NASFM's members include the senior fire officials in the U.S. States and the District of Columbia. This paper updates NASFM's policy as it relates to technologies, substances and materials used to make products fire resistant.

Goals

- In a joint statement issued in 2002 with the US Environmental Protection Agency, the National Association of State Fire Marshals (NASFM) affirmed that high levels of fire safety, health and environmental quality are complementary, essential and attainable goals.¹
- NASFM is committed to innovation, science-based policies and practices, fire safety, and the protection of public health and the environment from fire.

Findings

- More than 2,500 people die each year in nearly 400,000 residential fires. The direct cost of residential fires approaches \$7 billion annually. This does not include the cost of human life and injury.²
- The problem is getting worse: research by the National Institute of Standards and Technology shows that a major contributor to the increase in fire growth rate today is differences in modern furniture materials and construction compared to furnishings and constructions of 40 years ago.³

¹“Joint Statement on Flame Retardant Chemicals,” National Association of State Fire Marshals, U.S Environmental Protection Agency, July 2002. Attached to this document.

² National Fire Protection Association (NFPA), www.nfpa.org. All are estimates of losses in fires reported to fire departments, based on data reported to NFPA's annual National Fire Experience Survey. Direct property damage figures have not been adjusted for inflation.

³“Performance of Home Smoke Alarms: Analysis of the Response of Several Available Technologies in Residential Fire Settings,” NIST Technical Note 1455.

- Aside from the obvious threats to life safety from a fire, there are also environmental threats from fires. These include groundwater runoff that contains toxins and debris produced by the fire; air quality effects due to toxic smoke and microscopic particles released into the air from burning plastics, insulation, drywall, cleaning products, solvents, consumer use products and other combustibles ordinarily found in residences; and the tons of building materials, furnishings and other contents hauled to landfills in the aftermath of a residential fire, as well as the construction waste generated from rebuilding the structure.
- Various approaches, both active and passive, exist to reduce the fire risk to consumers and firefighters. These measures include fire sprinklers, smoke alarms, safe construction practices, and use of fire resistant materials (both inherently fire resistant and chemically treated).
- Evidence exists that certain chemicals used to make products fire resistant have negative direct health effects and cumulative environmental effects.
- Concerns have been expressed that firefighters exposed to the combustion by-products of certain flame retardants face greater risks than firefighters who fight fires in settings where these materials are not present. While science must determine the extent to which this is the case, it is important to understand that firefighters are exposed to a hostile environment in every fire, whether or not flame retardants are present. More than 30,000 firefighters are injured fighting residential fires each year.⁴ Evidence suggests that flame retardants do work to reduce the number of fires, thereby eliminating all exposure to toxic gases. This benefit is difficult to estimate or document, as it is based on an estimation of fires and exposure that are avoided.
- To date, regulators and industry have not come together consistently on how to achieve the mission of consumer health and safety. The pursuit of this mission often stumbles over questions related to situations in which fire safety potentially conflicts with environmental quality or health objectives.

Considerations

- Multiple sources of ignition need to be addressed by fire protection measures. These include ignitions by large open flames, ignitions by small open flames, ignitions by smoldering sources and ignitions by radiant heat.
- Redundant “layers” of protection are needed to delay and minimize fuel load involvement.
- Product performance standards (not standards based on prescriptive design specifications) are the preferred approach to achieving safety. Performance standards

⁴ National Fire Protection Association and U.S. Fire Administration.

must be based on science and realistic experimental evidence, and must incorporate a thorough risk analysis.

- NASFM advocates acceptable fire safety performance criteria. NASFM does not, however, specify how those criteria are to be met.
- No products should be used for any application if they are demonstrated to cause harm to people or the environment beyond an acceptable societal threshold. At the same time, products that exist to prevent fires and their consequent destruction to life, property and the environment should not be banned without significant evidence of such harm through their use until similar or greater levels of fire protection can be achieved using other products, technologies or practices.
- A holistic approach to fire safety should be employed wherever possible. This implies, for example, that any evaluation of the environmental impact of a flame retardant should take into account the function of the flame retardant in terms of reduced number and size of fires involving the protected product. Such analysis should be based on a life-cycle methodology similar to that developed in the Fire-LCA model.⁵
- NASFM advocates the continuous development of safer, cleaner technologies and approaches to fire protection – for example, research on nano-particle flame retardants for the fire protection of polymers.

Conclusions

- NASFM is a proponent of all aspects of public safety. NASFM's role is to protect the public by calling for higher levels of public safety.
- There is need to identify areas of research that refine approaches to fire safety. NASFM is a strong advocate of research by both industry and government.
- That said, the need for additional research should not be an excuse to diminish the effectiveness of, delay the implementation of, or reverse fire safety standards to the detriment of the American public.
- It is the responsibility of all manufacturers to provide safe materials and products using available and developing technologies based on the best available science. It is especially incumbent on the manufacturers of all flame retardants to provide whatever data may exist on the health and environmental effects and the fire performance of their products, in order to allow comparisons by those who are in a position to evaluate and decide which materials and products are too unsafe for use.

⁵ P. Andersson, M. Simonson, C. Tullin, H. Stripple, J-O. Sundqvist and T. Paloposki, "Fire-LCA Guidelines", NICE project 04053, SP Report 2004:43 (2005).

- It is the role of government to decide which materials and products are safe.
- In some areas, there are existing standards based on science and approved engineering practices that can move our society in the right direction toward greater safety, and that are consistent with this policy. For other standards, there is a need to transition to risk-consistent performance criteria that address fire safety, human health, sustainability and environmental protection.

*Approved by the NASFM Board of Directors
September 2008*

Attachment



JOINT STATEMENT ON FLAME RETARDANT CHEMICALS

*National Association of State Fire Marshals
United States Environmental Protection Agency*



Too often, fire safety, human health and environmental quality have been in conflict: asbestos, PCBs, underground storage tanks, lead solder and halons have served important fire protection goals but pose unacceptable threats to human health and the environment.

We now turn our attention to flame retardant chemicals that are in wide use in the home, workplace and most modes of transportation. These chemicals prevent countless fires, saving lives and protecting property. However, it is important to fully understand the hazards that these chemicals may pose. We will assess any identified risks, taking into account the fire safety benefits the chemicals provide.

The United States Environmental Protection Agency (US EPA) and the National Association of State Fire Marshals (NASFM) are encouraged by the scientific assessment of existing technologies and the new products now emerging in many markets. We are committed to innovation, good science, fire safety, and the protection of public health and the environment.

US EPA and NASFM seek to achieve high levels of fire safety and environmental quality and believe that these goals are complementary, essential and attainable. We will work together to achieve them.