



## Flame Retardant Deca-BDE Claims vs. Facts

The proposed ban of Deca-BDE contradicts the findings of the European Union's comprehensive, 10-year-long risk assessment and the findings of numerous U.S. government agencies. An ill-founded public policy recommendation to ban this safe, highly-effective product should not be considered.

### KEY FACTS:

- Deca-BDE is the most studied flame retardant available and has repeatedly been found safe for continued use.
- No US agency has taken any action against Deca-BDE; only two states have passed limited prohibitions on its use.
- The U.S. Environmental Protection Agency (EPA) has an extensive, on-going range of programs evaluating Deca-BDE.
- Deca-BDE is not classified as a PBT\* substance by the U.S. Environmental Protection Agency. Deca is persistent, meaning that it will be present and provide fire protection in consumer goods throughout the life of the product, but it is not bioaccumulative and is not considered toxic.
- Deca-BDE does not degrade to any significant extent in the environment to lower PBDEs of concern.
- Levels of Deca-BDE in breast milk are vanishingly small, and there is no evidence that they are increasing.

**CLAIM:** The toxicology of flame retardant Decabromodiphenyl ether (Deca-BDE) is not well known or understood.

**FACT:** **Deca-BDE is the most studied flame retardant in history** and, after an exhaustive 10-year analysis by the European Union, was found to be **safe for continued use**. The U.S. Consumer Product Safety Commission (CPSC), the National Academy of Sciences (NAS) and others have reached similar conclusions. The results of a 2006 assessment of the use of flame retardants in mattresses by the CPSC indicate that there are a number of flame retardant treatments available, including Deca-BDE, that "are not expected to pose any appreciable risk of health effects to consumers."

**CLAIM:** Deca-BDE degrades into toxic chemicals.

**FACT:** This matter was extensively reviewed under the European Risk Assessment of Deca-BDE and, after reviewing the most recent data available through August 2005, the European Union reinforced its earlier findings on degradation:

*"In summary, the available monitoring data provide little evidence for debromination being a significant degradation mechanism for decabromodiphenyl ether in the environment, and hence a major source of lower brominated congeners."*

In fact, **laboratory studies indicating degradation of Deca-BDE do not reflect real environmental conditions**. Such studies use artificial conditions, including specially cultivated bacteria and accelerants, to produce an artificial degradation potential. Studies carried out under realistic environmental conditions find no indications for degradation of Deca to lower substances of concern.

Additionally, the pattern of substances found in the environment does not match those artificially formed in the laboratory by forced Deca-BDE degradation.

The findings of the European Risk Assessment of Deca-BDE, including the findings on degradation, were reviewed, updated and reaffirmed in December 2007.

**CLAIM:** The levels of Deca-BDE found in the environment and in humans pose an environmental or human health concern.

**FACT:** Deca-BDE does not pose any threat to the North American environment or population. While Deca-BDE may be detected in the environment, the levels are extremely low – 1000 to one million times less than the established reference dose well below any level suggested by regulatory authorities as posing a potential cause for concern. While Deca-BDE has been found in breast milk samples, the highest levels reported are less than 500 parts per trillion and most reported levels are considerably less than this. To give some perspective a part per trillion is equivalent to one second in over 30,000 years. Breast milk continues to be recommended by medical professionals as the preferred feed for babies.

The low levels of PBDEs typically found in people participating in very limited studies of flame retardants in North America are **well below potential levels of concern to human health**.

BSEF and its member companies do, however, recognize the importance of minimizing potential emissions of chemicals to the environment to the greatest extent practicable. Through the Voluntary Emissions Control Action Program (VECAP™), the manufacturers and users of brominated flame retardants are working together and have established and implemented best practices for reducing and preventing emissions of these products to the environment.

**CLAIM:** Infants and children are particularly likely to absorb these fire retardant chemicals through direct physical or oral contact with these compounds in furniture, bedding, and mattresses, inhalation of dust, and through ingestion of these substances from their mother's milk and from their diets.

**FACT:** A 2006 assessment of the use of flame retardants in mattresses by the Consumer Products Safety Commission (CPSC), which specifically looked at a number of exposure routes in adults and children for a number of flame retardant treatments, including Deca-BDE, concluded that they "are not expected to pose any appreciable risk of health effects to consumers."

While Deca-BDE has been found in breast milk samples, the highest levels reported are less than 500 parts per trillion and most reported levels are considerably lower. For perspective, one part per trillion is equivalent to one second in 30,000 years. **All major health organizations, including US EPA and WHO, strongly recommend breast feeding.**

**CLAIM:** Equally fire-safe alternatives are available.

**FACT:** Alternatives to Deca-BDE are available, but principles of sound chemical regulation suggest that, in order to be considered "safer," an alternative should have **been subjected to an equivalent battery of testing for human health and environmental effects** as Deca-BDE and been found to have a more favorable toxicity profile. **In fact, no other flame retardant has been as exhaustively evaluated, from initial production through recycling at the end of consumer product life, and been found safe for continued use.**

Other states, including Maryland and Hawaii, have reached the same conclusions as Washington, as stated in its 2006 Washington Chemical Action Plan: "Based on a review of available information, there do not appear to be any obvious alternatives to Deca-BDE that are less toxic, persistent and bioaccumulative and have enough data available for making a robust assessment. It is clear from this exercise that there is much more data available on Deca-BDE than for any of the alternatives."

**CLAIM:** "Safer" alternatives to Deca-BDE are readily available.

**FACT:** Alternatives to Deca-BDE are available, but principles of sound chemical regulation suggest that, in order to be considered "safer," an alternative should have **been subjected to an equivalent battery of testing for human health and environmental effects** as Deca-BDE and been found to have a more favorable toxicity profile. **In fact, no other flame retardant has been as exhaustively evaluated, from initial production**

**through recycling at the end of consumer product life, and been found safe for continued use.**

The State of Maine Department of Environmental Protection recently identified one potential alternative – resorcinol bis-diphenylphosphate (RDP) – but based its determination on the assumption that “safer” means “an alternative that, compared with decaBDE, has **not been shown** to pose the same or greater risks to human health or the environment.” Using this approach, the state is actually recommending a product based on the lack of information available about it, rather than on any information demonstrating that is safer.

In Europe, RDP is designated as being harmful to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Therefore, it must be labeled with specific risk phrases. Transportation regulations classify RDP as an “environmentally hazardous substance” (class 9). It is identified as containing “dangerous components.” By contrast Deca-BDE is not classified as toxic, hazardous, or as having dangerous components.

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**CLAIM:** Many companies have already phased out Deca-BDE.

**FACT:** The major uses of Deca-BDE are in the plastic housings of television sets, insulation in wiring, and furniture and fabrics. **The use of Deca-BDE in computers has always been very limited.**

**The decision by some television manufacturers to use alternative flame retardants appears to be driven by market pressures, and not by scientific concerns with the use of Deca.** For those using alternatives, such use is typically in specific models at the higher end of the cost range.

It should be noted that **the use of flame retardants in televisions in the US is voluntary – there are no federal or state fire safety standards for most consumer electronics, despite the fact that electronics generally contain significant heat sources and are made of highly flammable plastics.** Deca-BDE has become the flame retardant of choice in certain electronics applications because it is easy to use, highly effective and cost efficient. As such, eliminating Deca-BDE and forcing the use of products that are harder to use, less effective in some thickness plastics and more costly could very likely lead to the removal of flame retardants altogether, resulting in more fires and more unnecessary injuries or deaths.

Recently, the National Association of State Fire Marshals subjected eight new flat-panel television sets and monitors to a small open candle flame test. Some products did not ignite after as long as four minutes’ exposure to the candle flame, while others ignited in fewer than 15 seconds and erupted quickly into large fires, demonstrating that the fire safety of even the newest television sets varies widely.

Between the mid-1980s and the mid-1990s in Europe, the number of TV set fires fell by as much as 50 percent, following improvements in design and manufacture, decreased power consumption, and the use of effective flame retardant additives in enclosure materials. In the mid-1990s, environmental groups sought legislative restrictions on the use of certain halogenated flame retardants, leading European manufacturers to make and sell television housings with little or no flame retardants included. As a result the rate of television fires in Europe increased to 325 fires per year for every million television sets, as compared with just six per million in the United States, where flame retardants are widely used in television set housings.

**CLAIM:** There are no significant barriers preventing manufacturers from substituting Deca-BDE with alternatives.

**FACT:** There is no “plug-in” alternative to Deca-BDE. It is not possible to simply switch one type of flame retardant for another in a resin mixture and produce a plastic with the same performance and flame-retardant qualities as the original.

**Manufacturers seeking to use alternative flame retardants in plastics are generally required to change the type of plastic they use, to use a larger volume of the alternative flame retardant to provide an equivalent level of fire protection, and to use alternative flame retardants about which much less is known.** Changing flame retardants may also require product design changes and factory re-tooling. All of these are disincentives to making products fire safe voluntarily.

Estimates from the electronics industry place the costs of a Deca ban from approximately \$1 million per company to approximately \$25 million per company, depending on the time of implementation.

**CLAIM:** Products will remain fire safe if Deca-BDE is banned because there are mandatory fire safety standards which manufacturers will still be required to meet.

**FACT:** **The use of flame retardants in many consumer products is voluntary and is not required for most electronics, where Deca-BDE is most commonly used.** Very few applications in which Deca-BDE is commonly used are guided by federal standards; only California has mandatory home furnishing requirements. In such high risk areas as furnishing, construction and wiring and cable, standards are controlled by building codes or State Fire Marshal regulations and vary greatly by state. Few are mandatory.

**CLAIM:** Firefighters are calling for a Deca-BDE phase-out.

**FACT:** State Fire Marshals have the responsibility for fire safety within their state jurisdictions. Through the National Association of State Fire Marshals they have clearly indicated their opposition to calls for a Deca-BDE phase-out, and advise against individual state actions since piecemeal state by state actions can result in inconsistent fire safety standards that can make effective fire fighting more difficult. At more local levels, within the broad fire fighter community, there is a range of opinion from those supportive of bills to limit the use of Deca-BDE to those against such proposals.

**CLAIM:** The potential for increased use of Deca-BDE based on proposed national furniture flammability standards requires an anticipatory ban of the substance in residential furniture.

**FACT:** **The U.S. EPA is following this issue closely and playing a substantial role in research and assessment of all PBDEs, and Deca in particular,** and is taking appropriate management actions to respond to both scientific and market developments, as outlined in the EPA's 2006 PBDE Project Plan. Specifically, EPA is preparing to propose a SNUR under the Toxic Substances Control Act (TSCA) for flame retardants identified as candidates for use to meet the residential upholstered furniture flammability standards under consideration by the State of California and the U.S. Consumer Product Safety Commission (CPSC). Sixteen chemical substances/categories, including Deca-BDE, are being considered for inclusion in the SNUR, which would require persons who intend to manufacture, import, or process any of these chemical substances, or articles containing them, for use as a flame retardant in residential upholstered furniture to notify EPA at least 90 days before commencing such activity. The required notice would provide EPA with the opportunity to evaluate the intended use, and if necessary, to prohibit or limit such activity before it occurs.

Deca-BDE is already the most studied flame retardant on the market, and that work continues in both the U.S. and Europe by both private and government scientists and agencies.

**CLAIM:** Several states are taking action against Deca-BDE.

**FACT:** Only two states, Maine and Washington, have enacted limited bans on Deca-BDE in mattresses.

The Maine bill exempts most major uses of Deca (automotive, transportation and electrical), and applies initially to products that do NOT use Deca (residential mattresses, mattress pads, and textiles for residential furniture) beginning in 2008. The bill further imposes a ban on Deca in the

casings of televisions and computers beginning in 2010. Deca has never been widely used in computers.

The Washington bill exempts most major uses of Deca (automotive, transportation and electrical) and applies initially to residential mattresses, which do not use Deca. In December 2008, the state identified the phosphorus-based flame retardant known as RDP as a "safer" alternative to Deca, and the use of Deca will now be prohibited in televisions, computers and residential upholstered furniture beginning Jan. 1, 2011.

Some states have enacted prohibitions against Penta- and Octa-BDE, two other brominated flame retardants that are no longer produced or used, and several continue to study Deca-BDE.

**CLAIM:** A national approach to the issue of Deca-BDE is most desirable.

**FACT:** True. A patchwork of inconsistent State legislation will not serve the public's interest in protecting environmental quality or fire safety. **The U.S. EPA is following this issue closely and playing a substantial role in research and assessment of all PBDEs, and Deca in particular,** and is taking appropriate management actions to respond to both scientific and market developments, as outlined in the EPA's 2006 PBDE Project Plan. Specifically, EPA is pursuing a number of activities to help better understand any potential concerns for human health and the environment from Deca-BDE.

Deca-BDE is already the most studied flame retardant on the market, and that work continues in both the US and Europe by both private and government scientists and agencies.

**CLAIM:** A ban on all PBDEs in electronics took effect across Europe in 2006.

**FACT:** This is not true. Deca-BDE was **exempted from further regulation under the European Union's Restrictions on Hazardous Substances (RoHS) Directive in October 2005. A recent European court ruling has nullified that exemption on legal, not safety, grounds and the matter is before the European Commission for resolution.** Deca-BDE was originally considered for restrictions but, after completing its 10-year-long risk assessment, the EU determined that Deca-BDE is safe for continued use and exempted all polymeric applications of Deca-BDE from the RoHS Directive in 2005. Based on the recent European court ruling, Deca-BDE is now prohibited for use in electronics, but that prohibition is being challenged.

**CLAIM:** There are three types of PBDEs in commercial use.

**FACT:** **Deca-BDE is the only PBDE in use.** The production and use of the other two commercial PBDE flame retardants was voluntarily terminated on December 31, 2004.

**CLAIM:** Conclusions about effects and levels of PBDEs generally provide a basis for assumptions about Deca-BDE specifically.

**FACT:** It is misleading to refer to polybrominated diphenyl ethers (PBDEs) generically. **Deca-BDE is a distinct product and evaluations and decisions regarding Deca-BDE should be specific to that product.** Activists often refer to PBDEs as a group to create the perception of a larger concern when, in fact, two of the three PBDE products have not been in production or use for more than two years.

**CLAIM:** Deca-BDE can be classified as persistent, bioaccumulative and toxic.

**FACT:** **Deca-BDE, is not a persistent, bioaccumulative and toxic (PBT) substance.** Deca is not classified as a PBT by the U.S. Environmental Protection Agency. Deca is persistent, which means it will be present in the consumer good throughout the life of that product, providing protection against fires. Deca falls well below generally accepted bioaccumulation factors and is not toxic.

**CLAIM:** PBDEs are chemically similar to PCBs and may have PCB-like effects.

**FACT:** **PBDEs do not have PCBs-like effects**, according to a March 2006 study by the University of Utrecht's Institute for Risk Assessment Sciences. The study, "Polybrominated Diphenyl Ethers: Aspects of the Mechanism of Action", has shown that PBDEs do not activate the Ah (aryl hydrocarbon) receptor, the main mechanism that PCBs activate, which sets off a series of toxic responses in the body.