

## The Facts About Flame Retardant Chemicals in Household Furniture

### ***Q. Why are there flame retardant chemicals in household furniture?***

**A.** There are flame retardant chemicals in many household items – including bedding, carpeting, furniture and electronics. In 1973, a National Commission on Fire Prevention and Control advised against relying on sprinkler systems and smoke detectors alone to protect American consumers from fire. Instead, in a report titled “America Burning,” the Commission recommended that “*materials themselves must be improved for fire safety.*”

Thus began our country’s most robust period of research into the ignition and spread of fire – particularly household fires. Flame retardant chemicals were soon being lauded for their effectiveness in preventing fires from starting, limiting the spread of fire and minimizing fire damage. These chemicals were found to be most effective when added to the components likely to ignite and burn the fastest – and that’s how they ended up in automobile seats, infant strollers, bedding and furniture. The component all of these products have in common is polyurethane foam, which contains petroleum-based ingredients.

It didn’t take Americans long to realize that their quest in the 1970s to improve the products and materials they used on a daily basis had potentially dangerous side effects. The Environmental Protection Agency (EPA) was formed in 1970, and the federal Toxic Substances Control Act was passed in 1976. By that time there were already an estimated 60,000 chemicals in use in American industry.

In 1975 – just two years after the landmark fire safety report was released – the state of California passed a fire safety law requiring all upholstered furniture sold in that state to pass a stringent open flame test. The test targets the filling material in seat cushions, because this is the most flammable part of upholstered furniture. Furniture manufacturers do not make this filling material, which most often includes polyurethane foam. Rather, they purchase it from foam suppliers, who in turn purchase flame retardant formulations from chemical manufacturers.

Flame retardant chemicals were added to the foam supplies used in sofa seat cushions in America in order for those products to pass the open flame test in the California flammability law, known as Technical Bulletin 117, or TB 117.

### ***Q. What are the suspected health impacts of these chemicals?***

**A.** That sounds like a simple question, but to be fair (not to mention more scientifically accurate), we need to break it down into two questions. First, what are the suspected health impacts of the chemicals themselves and, second, what are the suspected health impacts of being exposed to these chemicals in amounts that might be present in our homes as a result of the foam inside our sofas?

Let’s tackle the broader question first. In 2010, the EPA added a family of flame retardant chemicals known as polybrominated diphenyl ethers (PBDEs) to its “chemicals of concern” list, meaning it considers them substances that “may present an unreasonable risk of injury to health and the environment.” In animal and human health studies, PBDEs are linked to neurotoxicity,

reproductive toxicity and developmental toxicity. Their use was banned in Europe when studies showed these compounds were accumulating in the environment and in humans. The polyurethane foam industry voluntarily phased out use of PBDEs in 2005 due to these health concerns.

PBDEs were largely replaced with another flame retardant, tris (1-3-dichloroisopropyl) phosphate, or TDCPP. But TDCPP was added to California's Proposition 65 list of suspected carcinogens in 2011. This means any products containing TDCPP above a certain level must carry a cancer warning label if they are sold in California. As a result of this required warning, many foam manufacturers have eliminated or are in the process of eliminating TDCPP from their foam supplies.

Now, for the second, more specific question: What do we know about the health impacts of being exposed to these or other flame retardant chemicals in the amounts that might be present in household dust? Of course, this dust would result from all foam items in your house, not just the furniture, and the amount you inhale or ingest would vary greatly based on factors very difficult to assess in a laboratory setting – like how often you dust and vacuum and the type of covering on your sofa (fabric vs. leather, for example).

There are many opinions on this subject. Americans may remember that brominated tris, or TDBPP, was removed from children's sleepwear in 1977 as a suspected carcinogen. The TDCPP widely used as a flame retardant in furniture foam has a "different risk profile" than brominated tris, according to the American Chemistry Council. It has been extensively reviewed in the European Union, where the most recent risk assessment (May 2008) concluded that "there are no concerns" for consumer toxicity.

However, the Green Science Policy Institute – a research organization founded by the same scientist whose work led to the removal of TDBPP from children's sleepwear – cites their own study in which men living in homes with *high* amounts of TDCPP in household dust had reduced sperm counts and altered levels of hormones related to fertility and thyroid function. AHFA is not aware of any other published studies linking health impacts with flame retardant chemicals in household dust.

***Q. If TB 117 only applied to furniture sold in California, why do ALL sofas seem to have these chemicals?***

**A.** There are two reasons for this. First, California represents one of the nation's largest consumer markets, and most manufacturers of upholstered furniture cannot afford to ignore it. As a result, regulations in California tend to become *de facto* national standards, and that is certainly the case with TB 117. It is simply cost-prohibitive for manufacturers to maintain two separate production lines for otherwise identical products.

Second, during the 1980s and 1990s, the widespread perception was that California's standard provided consumers with added safety. Consumer advocates often advised shoppers to look for California's TB 117 label on upholstered furniture – and to not buy any sofa that did not carry this label. This widespread perception created a very real liability for any manufacturer who did *not* meet TB 117, even for products sold in other states. In fact, as recently as 2004, two U.S. furniture manufacturers paid substantial out-of-court settlements in lawsuits filed by burn victims who claimed their furniture was flawed because it did not contain flame retardant chemicals.

***Q. Why can't the furniture industry come up with a way to make furniture both fire safe AND free from toxic chemicals?***

**A.** It has. In 1978, the home furnishings industry established the Upholstered Furniture Action Council (UFAC), which developed voluntary construction and material guidelines to make sofas

and chairs resistant to ignition by a smoldering cigarette. The furniture industry focused on cigarette ignition because, *in all data available from the 1970s through 2011*, the vast majority of home fires that involved furniture were ignited by a cigarette.

Over the past 25 years, the number of U.S. household fires involving upholstered furniture has been reduced by more than 85 percent. AHFA attributes this success to:

- Furniture manufacturers' compliance with the voluntary UFAC standard;
- fewer smokers;
- increased use of residential smoke detectors; and, most recently,
- reduced ignition propensity (RIP) cigarettes, now mandated in all 50 states.

Nevertheless, in 1997, 2001 and 2004, the U.S. Consumer Product Safety Commission (CPSC) proposed a federal flammability standard based at least in part on California's TB 117. Each time, AHFA and its member companies supported a workable national standard but also consistently pointed to the growing evidence on the potential eco-toxicity of certain flame-retardant chemicals.

Because of the positive results achieved by industry and societal changes, AHFA continues to advocate a federal flammability standard based on the UFAC smolder test.

In November 2013, California threw out its 38-year-old open flame test and approved a new standard based largely on the UFAC voluntary standard that the industry has backed for nearly four decades. Manufacturers can meet California's new standard without using flame retardants, although the updated rule does not ban the chemicals. Due to liability concerns, some manufacturers will likely choose to continue using treated foam. Others welcome the opportunity to manufacture products that are free of these chemicals. AHFA is once again at the forefront, working with its member companies to develop better labeling practices so consumers can make informed purchases.

***Q. I'm not replacing my furniture any time soon. What can I do to protect myself and my family from the possible ill effects of flame retardant chemicals in my furniture?***

First, keep in mind that, at this time, there is no research establishing a link between your furniture and adverse human health effects. If, based on the available evidence, you are concerned about your exposure to flame retardant chemicals in your home, the Green Science Policy Institute recommends vacuuming often (with an HEPA filter) and wet-mopping to reduce build-up of dust in your home. Wash your hands frequently, and pay special attention to rinsing or wiping hands of babies or toddlers with regularity.

***Q. Should I be concerned about flammability risks if flame retardant chemicals are removed from all upholstered furniture?***

A. As stated earlier, flame retardant chemicals were only used in order to pass the open flame test required by California TB 117. Because most fires involving upholstered furniture begin with a smoldering cigarette, the new smolder standard focusing on cover fabrics is believed to be far more effective than adding flame retardants to the foam underneath.

The most common open flame sources seldom come in contact with upholstered furniture without careless or purposeful behavior, including unsafe use of candles, children playing with lighters, and arson. Common sense dictates that these sources be addressed through education that discourages fire play and encourages installation and maintenance of working smoke detectors in the home – which are proven to be one of the most effective means for preventing injury and death from all types of residential fires, including those involving upholstered furniture.