



Toxic-Free Kids and Families Act



HB 1174/SB 5684

Flame Retardants: Unexpected Hazard for Firefighters

Everyone knows that firefighting is a hazardous occupation—but until recently, cancer wasn't considered a primary occupational hazard. Today, we know that firefighters are more likely to be afflicted with some forms of cancer, and that increased incidence may be due to chemical exposures on the job.

Building materials and home furnishings now include many synthetic materials, from PVC and other plastics to polyurethane foam, as well as the flame retardants used in these materials. Toxic chemicals are released from these materials during fires, and the protective equipment firefighters use does not completely protect them from toxic exposures.

Firefighters and Cancer

To determine to what extent firefighters face increased cancer risk, the National Institute for Occupational Safety and Health (NIOSH) launched a major study in 2010 to determine cancer incidence among career firefighters. NIOSH looked at cancer incidence as well as deaths from cancer in nearly 30,000 firefighters from San Francisco, Chicago, and Philadelphia who served between 1950 and 2009.

NIOSH published initial results in 2014[1]. The study found that these firefighters had increased incidence of a number of cancers, primarily those associated with the respiratory and digestive systems, such as stomach and lung cancer, and cancers of the esophagus and pharynx. This finding is particularly striking since firefighters, as a working population, have lower incidence of other health problems such as diabetes, cardiovascular disease, and respiratory disease.

Other studies have had similar results. A meta-analysis of 32 studies, published in 2006, found an association of firefighting with increased incidence of cancers including multiple myeloma, prostate cancer, and non-Hodgkins lymphoma[2].



Exposure to Flame Retardants

Some research indicates that firefighters have greater than average exposure to flame retardants. One study, published in 2013, found higher levels of some compounds in firefighters[3]. Specifically, firefighters had PBDE levels two to three times those of the general U.S. population.

A recent investigation of the presence of flame retardants in fire stations found higher levels in the stations as compared to homes. Components of Firemaster 550, major PBDE replacements, were found in the dust in fire stations at levels four to seven times those in homes[4].

Toxic Smoke and Ash

A major concern with the use of halogenated flame retardants (those made with chlorine or bromine) is the creation of highly toxic compounds when they burn.

When organic compounds burn in the presence of chlorine, chlorinated dioxins and furans are formed. Elevated levels of chlorinated dioxins and furans have been found in combustion gases and soot from simulated house fires[5]. Similarly, brominated dioxins and furans form when brominated flame retardants burn, and flame retardant-contaminated ash has also been found on firefighter gear[6].

The Worst of Both Worlds

Flame retardants have been used heavily in furniture foam to comply with state of California regulations that required foam to withstand a small open flame. But U.S. government studies have shown that when actual furniture is tested, flame retardants used in foam don't provide a fire-safety benefit. Fire science expert Vyto Barbrauskas called this the worst of both possible worlds: toxic flame retardants contaminate our homes and threaten our health, but don't prevent fires. California has now changed its regulations to a more sensible standard that requires furniture fabric—the first line of defense—to withstand a smoldering ignition source such as a cigarette.

Changes Needed in Washington

Washington state was the first in the nation to ban all forms of the persistent toxic flame retardants known as PBDEs, back in 2007. Unfortunately, manufacturers turned not to safer substitutes but other toxic flame retardants including cancer-causing Tris compounds. The Toxic Free Kids and Families Act would ban the use of five toxic flame retardants, including Tris compounds, in furniture and children's products. Importantly, it would also make sure other toxic chemicals aren't put in place to replace them, by giving our state's health department the authority to keep toxic flame retardants out of furniture and children's products.

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