



UNSETTLING DUST: TOXIC CHEMICALS ON COLLEGE CAMPUSES

What are flame retardant chemicals?

Until recently, manufacturers routinely added toxic flame retardant chemicals to furniture in order to meet flammability standards. Flame retardants are still added to textiles, electronics, children's products, and building materials such as insulation. Although flame retardants are intended to prevent or slow the spread of fire, their effectiveness in furniture has been called into question, especially since effective non-toxic alternatives exist such as sprinkler systems, smoke detectors, smolder-resistant furniture, and smoking bans.

What are the health risks?

Flame retardants migrate out of furniture into air and dust, and ultimately end up in people's bodies. Exposure to flame retardants has been linked with cancer, thyroid disease, decreased fertility, and lower IQ. Infants and young children are particularly at risk since they crawl and play on the floor, where contaminated dust settles, and frequently put their hands in their mouths.

Researchers are also studying the health risks among firefighters. During a fire, firefighters breathe in a soup of toxic chemicals and are routinely exposed to high levels of flame retardants. Compared with the rest of the population, firefighters have significantly higher rates of cancer. Silent Spring Institute is conducting a study with female firefighters to investigate associations with breast cancer.

Why do flammability standards matter?

Flammability standards are performance-based, and manufacturers add flame retardants to meet the test parameters. Some flammability standards compel manufacturers to add more flame retardants to their products compared with other standards. Over the last few decades, the use of flame retardants in most furniture has been driven in large part by a California flammability standard called TB117 (Technical Bulletin 117).

Following a public health outcry on the toxicity of these chemicals and their lack of fire safety benefits, California updated TB117 to a smolder standard called TB117-2013. This new standard, which went into effect January 1st, 2014, provides fire safety while eliminating the need for flame retardants. However, many schools still have furniture that meets TB117 or another outdated standard called TB133, which is met by adding even higher levels of toxic flame retardant chemicals to furniture.

What did our study find?

- We analyzed close to 100 dust samples collected from two U.S. college campuses in the northeast, and detected 47 different flame retardant chemicals in total.
- Forty-one percent of dorm rooms had levels of TDCIPP—a carcinogen—above health risk screening levels set by the U.S. Environmental Protection Agency. Levels of two brominated flame retardants, BDE-209 and BDE-47, were nine and five times higher, respectively, than the highest levels reported in previous studies from the last 10 years.
- Levels of some flame retardants were higher in dorm rooms than in common spaces, possibly because dorm rooms tend to be heavily furnished and cleaned less frequently.
- Dust levels of flame retardants were significantly higher on the college campus that adhered to a more severe flammability standard for furniture.

What can college administrators do?

- Look to see which flammability standard the school follows. Consult a campus fire safety official to learn about how the school can buy flame retardant-free while still meeting the local fire code.
- Provide incoming students and their parents with information on acquiring healthy furnishings for their dorm rooms and general tips for reducing chemical exposures.
- Understand the health risks. Reach out to faculty members who have expertise in environmental and public health, toxicology, green chemistry, or other related areas to better understand the health risks associated with the use of flame retardants.

What can students do?

- Keep dust levels in dorm rooms low. Wipe down surfaces regularly with a damp cloth and vacuum frequently using a vacuum with a HEPA filter.
- Buy room furnishings (chairs, couches, pillows) labelled flame retardant-free.
- If acquiring secondhand furniture, check that it's in good condition and meets the new updated flammability standard.
- Look for pillows and bedding made of cotton, wool, down, or polyester.
- Wash hands frequently, and always before eating.