HEALTHY BUILDING NETWORK

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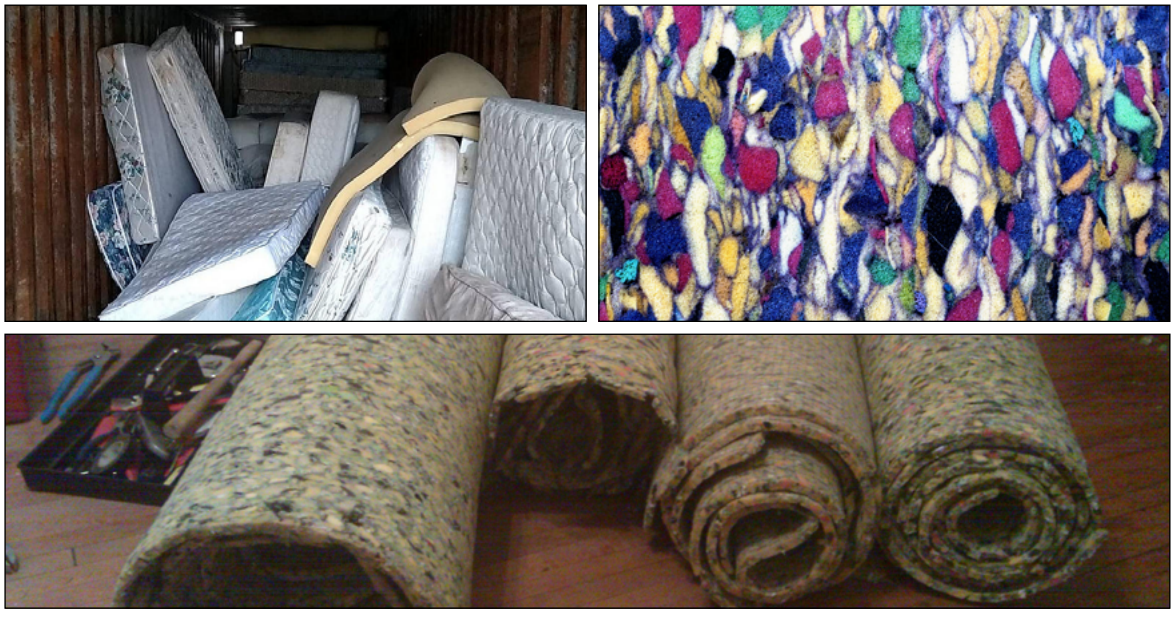
Optimizing Recycling:
Post-Consumer Flexible Polyurethane Foam Scrap Used In Building Products

BRIEF



A collaboration between StopWaste and the Healthy Building Network
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Until 2014, toxic flame retardant chemicals were added in large quantities to consumer products that contained foams in order to meet product flammability standards. The use of these chemi-cals has contaminated recycled flexible polyurethane foam (FPF) feedstocks, most of which are used in recycled content bonded carpet cushion. As flexible foam manufacturers shift away from using toxic flame retardants, this feedstock will become more acceptable for such use. Today, however, the common contamination of this post-consumer feedstock with flame retardants creates the potential for exposure to these hazardous substances for recycling workers, carpet pad factory workers, and building occupants, particularly young children who are in closest con-tact with carpet cushion.

The bonded carpet cushion industry consumes almost all of the FPF scrap that is recovered for recycling in the United States. Most of the scrap used in carpet cushion is pre-consumer (post-industrial) waste, sourced from furniture manufacturers that have historically been required to use toxic flame retardants to meet product flammability standards. The majority of post-consumer FPF currently recovered for recycling comes from old carpet cushion that has incorporated these legacy flame retardants. Bonded carpet pad manufacturers typically use a blend of pre-consumer and post-consumer scrap.

Scientists found that the common practice of mechanically recycling this scrap elevates some workers' body burdens of flame retardants. Recycling these foams into new products disperses these highly toxic substances into homes and, eventually, the global environment. In homes, people, particularly crawling children, can be exposed to hazardous flame retardant chemicals released from carpet pad. The EPA notes that "as carpet padding ages, foam dust will be generated and become airborne with traffic on carpet."[1] Additionally, flame retardants can migrate over the life of the product and deposit in household dust which can expose building occupants through inhalation or ingestion of this dust.

Recycling offers many advantages over other waste management options, but the benefits of recycling must be weighed against negative impacts on humans and the environment.

Flame retardant chemicals historically added to FPF are in a class of chemicals considered persistent, bioaccumulative and toxic (PBT). PBTs are long-lived in the environment (persistent) where they concentrate (bioaccumulate) in the food chain and can transfer easily among air, water, and land for generations. Therefore, when the full lifecycle of flame retardant PBT chemicals is considered, there is no safe threshold for their use.

While some analysis suggests that the presence of problematic flame retardant additives in recycled FPF feedstocks is on the decline because they have been phased out of much of the virgin production lines, the post-consumer scrap market supply chain still contains these additives in amounts that likely exceed precautionary exposure levels. There is a need for much more frequent testing for a wide range of flame retardants in recycled FPF feedstocks. Until the feedstock is free of flame retardants, post-consumer recycled content foams are not recommended in building products where their use potentially exposes workers, installers, children, and other vulnerable populations.

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1 US EPA. "Furniture Flame Retardancy Partnership: Environmental Profiles of Chemical Flame-Retardant Alternatives for Low-Density Polyurethane Foam," September 2005. http://www.epa.gov/sites/production/files/2015-04/ documents/ffr_foam_alternatives_vol1.pdf.

against negative impacts on humans and the environment. There is no easy solution to the problem of flame retardant contaminated foam, but there is an opportunity to develop pathways for dealing with current contaminated foams and to assure clean future feedstocks.

See our full report on post-consumer flexible polyurethane foam and others in our Optimizing Recycling series here.