**Flame Retardant Advisory Committee Nov 9, 2018 - meeting notes**

**Participants**

Stakeholder advisory members in attendance:

* Cheri Peele, MCP, Senior Research Associate, Clean Production Action
* Grant Nelson, Representing Washington Association of Business and American Chemistry Council
* Kimberly Bloor, Deputy State Fire Marshal, WSP
* Chief Scott LaVielle, WA Fire Chief’s Association, City of Tumwater Fire Marshal.
* Holly Davies, PhD, Local Hazardous Waste Management Program, King County Parks and Natural Resources
* Elizabeth Friedman, MD, Pediatric Environmental Health Specialty Unit, University of Washington
* Jennifer Lanksbury, WA Dept of Fish & Wildlife
* Laurie Valeriano, Executive Director, Toxic-Free Future

By Webinar:

* Richard Henrich, Lanxess
* Donald Lucas, PhD, Lawrence Berkeley National Laboratory (retired), Green Science Policy Institute.
* Brad Miller, Advocacy & Sustainability, BIFMA
* Shirlee Tan, PhD, Toxicologist, Seattle-King County Public Health
* Heather Trim, PhD, Executive Director, Zero Waste Washington
* A.J. Johnson, Washington Council of Firefighters

DOH/Ecology team

* DOH - Barbara Morrissey, Jennifer Sabel, Judy Hall, Theresa Phillips, Elmer Díaz, Melissa Reynolds, Peter Beaton

Ecology – Saskia van Bergen

Stakeholders attending (in-person or by webinar)

* Jennifer Frey, Sustainability Program Manager, Sellen Construction
* Rebecca Stamm, Healthy Building Network
* Carrie Cathalifaud, BEARHFTI, California
* Rosemarie Pecota, BEARHFTI, California
* Brad Tower
* Steve Fischer, BEARHFTI, California
* Reber Brown, DTSC, California
* Ranjit Gill, DTSC, California
* Evan Bruning, Serlin Haley LLP
* Jing Hu, Dow
* June-Soo Park, DTSC, California
* Erika Schreder, Science Director, Toxic-Free Future
* Andrea Carey, Biologist, Washington Department of Fish & Wildlife
* Thor Petersen, NW EcoBuilding Guild
* Shiang-Lan Rau, JCP
* Cher Sanchez
* Rajinder Sandhu, BEARHFTI, California
* Steve Scherrer, Lanxess
* Lauren Scott, American Chemistry Council
* Ariel Weinstein, Underwriters Laboratory (UL)
* Don Asleson, Target
* Christine Sigurdson

**Introduction:**

**Theresa Phillips and Barb Morrissey, DOH**, welcomed stakeholders to the third meeting of the Flame Retardant Stakeholder Advisory Committee and reviewed the meeting agenda and the project timeline. A 4th meeting has been added (January 4th 2019) to address flame retandants (FRs) in electronics. We are organizing our policy discussions around three product sectors where the 6 FRs named in HB 2545 are primarily used: polyurethane foam in furniture and children’s products, foam insulation for buildings (TCPP), and electronics.

We will post a draft report with findings, policy options and recommendations for stakeholder review and comment by April 2019. After we consider stakeholder comments, we will draft a final report for the legislature by July 2019.

**Panel 1: FRs in building materials**

**Rebecca Stamm, Senior Researcher with Healthy Building Network** (HBN) presented information from ‘A Guide to Healthier Upgrade Materials” (2018) <https://healthybuilding.net/reports/19-making-affordable-multifamily-housing-more-energy-efficient-a-guide-to-healthier-upgrade-materials>. The guide reviews insulation and air sealing materials and rates the insulation materials based on health and safety considerations. The information on FRs in building insulation is based on HBN’s research (mostly in 2015-2017) in publically available documents such as health product declarations, patents, safety data sheets and other literature. Based on this research, they develop a typical profile for each type of product.

The HBN is a non-profit organization that works to reduce human exposures to hazardous chemicals and to create market incentives for healthier buildings. They created a resource called Pharos that contains information on > 100,000 chemicals and associated health effects (cataloged from 46 hazard lists and 32 restricted substances list). Learn more at <https://www.pharosproject.net/>.

The presentation focused on which additive FRs are used in common types of building insulation, the preferable alternatives, and the feasibility and potential trade-offs of these alternatives. Not all building insulation contains additive FRs. Those that do may have halogenated FRs or other types such as boric acid, ammonium sulfate and antimony trioxide. Rebecca showed tables of different types of insulation and the most common FRs used in them. TCPP is common in polyisocyanate and in spray polyurethane foam. In other types of plastic foam insulation (EPS and XPS) the industry is switching from HBCD to a polymeric FR that is a brominated styrene butadiene polymer. There are data gaps and some life cycle concerns such as potential release of hazardous chemicals during manufacturing and combustion.

Rebecca reviewed the viability of alternatives in terms of cost, availability, and R-value. The report identifies a number of recommended materials (alternatives) which do not have halogenated FRs. For example, expanded cork insulation, certain types of fiber glass, cellulose insulation, and mineral wool. GAF (a leading US roofing manufacturer) makes a non-halogenated polyisocyanate product. There are cost competitive alternatives for most applications. Availability is increasing as the market develops. You can reach the same R-value with alternatives but it may require a thicker application of certain insulation types. The R-value per inch of insulation is higher for many foam products, but the installed cost for the same R-value using some of the preferred materials is actually lower.

Additional information provided during questions:

* Are there key applications for foam insulation with HFRs that we have trouble finding an alternative for? There might be some applications. The halogen free polyisocyanate boards are primary for roof application. Not recommended for exterior foundation applications. Mineral fiberboard insulation could be used in those applications. Would need to check with manufacturers.
* Greener isn’t necessary more expensive. Fiber glass and cellulose insulation actually can meet the R-values for a lower cost (installed) than foam plastics and have no halogenated FRs. In cases where you have design constraints in terms of wall thickness, this could be an issue in achieving particularly high R-values.
* In your chart, Greener products seem to have a lower R- value than the foam plastic materials. How do the greener products compare to plastic foams in terms of flame retardancy and energy efficiency? The foam products do have a higher R-value per inch than cellulose or fiberglass but you could use a thicker width to achieve the same R-value. In terms of flame retardancy, all the alternatives except cork have a Class A rating so they would be effective. Cork is Class B rated. Some materials need to be covered with a thermal barrier like dry wall to reach the standard but that applies to most plastic foam insulation as well.
* What does expanded cork board look like? How is it installed? The cork material is treated with steam which actives a natural binder. Final product is a rigid board product.
* To be considered a viable alternative, the material has to be rated and has to meet the flammability standard? If it is not Class A rated, additional restrictions are placed.
* HBN will continue to work on this project to determine the application challenges to using the materials they have identified as healthier.

**Jennifer Frey,** from Sellen Construction (a large general contractor in the Puget Sound area) presented on the practical use of alternative building insulation materials in commercial buildings.

Most contractors are aware of toxics such as asbestos and formaldehyde. Concerns about halogenated FRs are new to most contractors especially outside of those working with LEED certification. Most are familiar with installation risks of certain plastic spray foam systems. Sellen discovered that blowing agents used to make expanded plastic foam could also result in an inhalation and fire hazard on site from pentane off-gassing. Usually pentane off-gasses during transportation to the site on open flat-bed trucks.

She explained different applications of building insulation and how Sellen has worked with manufacturers, architects and clients to find and use healthier options for insulation. In current practice, commercial building construction uses a lot of mineral wool. Sellen commonly uses EPS to build up the foundation slab. Polyurethane foam is also used but need to be careful about protecting it from cutting torches or sparks as combustion creates toxic gases.

Healthier building insulation should be considered in the design phase. Sellen works with architects up front or works with clients to suggest substitutes during building stage. Asbestos and SPF create health issues for workers, so generally want to steer away from those. XPS and EPS polystyrene can trap moisture against the wall. Mineral wool breathes so it is an advantage for moisture. And if it gets wet during a flood, it is easier to pull out and replace.

Shopping for halogen free insulating materials: look on SDS or website, Declare labels with Red List free or Living Building Compliant (LBC). Some products have a health product declaration label that shows green screen score and other attributes.

* WELL Building standard: <https://www.wellcertified.com/>
* Living Building Challenge <https://living-future.org/lbc/>
* Declare – label transparency platform for building products. <https://living-future.org/declare/declare-about/>
* The Red List – list of ingredients, including HFRs, prevalent in the building industry that are health and environmental concerns. <https://living-future.org/declare/declare-about/red-list/>

What drives the market? Energy efficiency is being pushed by the new WA energy codes. Metric of cost per R-value drive building insulation selection. Trend toward more polystyrene and thinner walls which meets R-value while resulting in more leasable space. Non-HFR products typically are thicker to achieve the same R-value.

* State, city and county codes drive the specs.
* Client’s chemical policy drives the choices. LEED and the Green Building Council have also pushed the market.
* Contractors are driven by ease of install and risk reduction. – don’t like to wear full PPE for SPF if there is another option. Also don’t want to trap moisture.

Practical suggestions for moving market towards HFR-free insulation:

* State specs can drive use
* In terms of fire safety, really need to consider the whole assembly. Invite more people into the conversation such as insulation manufacturers, fire sealant companies (like Hilti) and the gypsum companies.
* Help manufactures see the benefits of HFR free. For example, maybe check with GAF about worker benefits of switching to non-halogenated polyiso boards?
* Refine fire codes. There are applications where FRs are not needed - under slab applications. There is a potential to change building codes. For example, FRs are not needed for insulation when whole assembly is considered. There are exemptions within building codes. For example, polystyrene and polyiso can be used outside and not inside. There are exemptions for Green Building standards.

Additional information provided during questions:

* WELL building standards are specific to the health of the building occupant, such as ways to build in encouraging physical activity into the building design, access to light, access to organic food in break room, use of stairs over elevators, etc. It is in its infancy in being used, where LEED standards were 20 years ago.
* What is mineral wool? Fibers are from volcanic rock or slag that are bound together. It’s similar to glass fibers, and they are biosoluble. In some cases formaldehyde is used in binders, so potential health concerns with some ingredients. Look for Formaldehyde-Free mineral fiber.
* Do LEED standards restrict FRs? LEED standard gives points to do different things.LEED version 4 has restricted all formaldehydes now in composite wood and insulation. Halogenated FR haven’t been banned yet, but there is some discussion about this.
  + LEED version 4 is a green building rating system developed by the U.S. Green Building Council. <https://new.usgbc.org/leed>
* Is LEEDs used in residential buildings? Yes, in multifamily dwellings, typically.
* Spray polyurethane foam is used more in residential buildings as a vapor barrier. In commercial buildings, it is avoided because of the cost of application and the need for PPE.
* Don Lucas – changing regulations. Norway doesn’t use FRs in their building insulation. The Scandinavian tests are based on assembly, the thermal barriers (dry wall) are what provides fire safety and not the FR or the insulation. The Scandinavians have foam insulation that have no FRs, but these don’t meet the current standards in the U.S.
* What are the big white foam blocks used in highway road construction? These are expanded polystyrene polymers and have FRs. They are off gassing outside, but workers are not breathing these on a daily basis.
* In making buildings tighter, ventilation systems become more important.
* Are alternatives available for low cost construction? LEED has changed the market, and is being done more universally, so at this point there is little to no cost differential.

Potential policy options to consider – Group Discussion:

* Consider state purchasing preferences/specs
* Create policy that restricts HFRs or all FRs in insulation
* Need to learn more about alternative materials for residential construction (single-family).
  + Use BMP’s from commercial to residential
  + Highlight local projects built green
  + Engage more residential builders, and contractors (engage, encourage, support, incentivize, subsidize).
* Policy to change building codes. Building codes don’t specify halogenated FRs. Implement policy that restricts halogenated FRs in insulation, but still allows builders to meet current code. All insulation needs to meet fire code. It looks like cost and availability of alternatives are not barriers for commercial buildings.
* Modify building codes at state and local level – Adopt international green standards
* Ensure policy options maintain or improve fire safety
* Consider life cycle: production, use and safe disposal of materials
* Learn more about highway insulation materials. Talk with DOT about what they are using, Research alternatives to see if there’s another product that can be used. Concern about releases to water ways.

**Panel 2: FRs in upholstered furniture and children’s products**

Carrie Cathalifaud and Rosemarie Pecota from the California Bureau of Electronic and Appliance Repair, Home furnishings and Thermal Insulation (BEARHFTI) presented to the group about: 1) the role of their laboratory in enforcing CA flammability standards; 2) the new 2018 law (AB 2998); and 3) a proposal to repeal TB133 and require upholstered furniture in public buildings to meet the residential standard TB117-2013.

The BEARHFTI laboratory conducts compliance testing on products to ensure that they meet flammability codes and have accurate consumer labels. They contract with DTSC to test veracity of product label statements about FRs. In FY 2017 (July 1, 2017-June 30, 2018), 37 products with a label that declared no FRs were tested for compliance. 9% failed meaning that they were shown to contain a flame retardant over 1,000 ppm.

Additional information provided during questions:

* Is the testing for flammability standard pass/fail? Yes, for the smoldering test.
* How was the 1,000 ppm number arrived at? This is not a health-based number, but reflects the concentration needed to function as a FR. Allows foam and plastic recycling to continue.
* Are you testing older vs. newer products to support what we are hearing in terms of market trends? We are only testing newer products, haven’t noticed any difference in test results for components from 2016 to 2017.
* Are online retailers included in testing? Not at this time, however they are expected to meet the same criteria as products secured from California locations.
* Do you have information to verify that the labeling of a product is accurate? Yes, we procure different types of products, bring them to the lab for testing; we test for TB-133 and TB 117-2013. If label states that they contain FRs we don’t do further analysis for the FRs. If label says no FR’s then we can test that statement by sending to DTSC for FR testing.
* What kind of FRs are you finding? We have a list of chemicals of concern and methods posted. The list is dynamic list- new chemicals can be added. In furniture, we found TDCPP, TCPP, and TBPH in some product components.
* When you find they contain FRs, do you post which FRs are in the product? No, unless we cite them with a violation (those are public).

Barb reviewed the 2017 Consumer Product Safety Commission (CPSC) action, other recent state laws (see handout: Recent State Laws and Federal Actions (xls)), and reminded the group about Washington State’s disclosure law under the Children’s Safe Products Act (CPSA) that requires reporting to Ecology if a covered children’s product contains any of 17 FRs, including the 6 FRs focused on in this project. Starting in Jan 2019, we will have a direct source of information about the presence of these FRs in children’s products sold in Washington.

Policy Options to consider:

* Governor’s directive for state purchasing preference to drive demand in furniture.
* Consider adding policies targeting FRs in products sold to childcare centers, healthcare centers, schools. – Places where children live, learn and play.
* Restriction in consumer products (mattresses already have federal standards)
  + As long as fire safety is maintained (California standard removed open flame standard but made the smolder standard tougher, evidenced-based decision based on residential fire statistics about source of home fires).
  + Market is already moving in this direction, a ban in Washington would help move the last of the market in this direction.
  + Be careful in changing standards. Unintended conseqences
  + Join other states in passing a law to restrict FRs in products – strengthens the effort.
* Reduce exposures from legacy furniture/juvenile products
  + Build on existing work - California workgroup report on disposal options for PBDE containing couches, etc.
  + Consider developing BMP’s for consumers or child care settings– HEPA filters, replacement, cleaning methods.
  + Ecology hazardous waste program should work closer with local government waste management, home owners and second hand retailers to:
    - Educate
    - Prevent
    - Incentivize proper disposal
    - Label

Look into the following:

* What flammability standards apply to toys, other juvenile products? A few juvenile products are exempted from TB117-2013 requirements.
  + Check with California Juvenile Products exemptions
* Standards for fire safety in furniture used at schools, prisons, and other settings is higher than residential. Residential furniture didn’t meet school code when a parent tried to donate it for a reading nook. Research this.
* Are outdoor materials and adult products included (should they be)?
  + Tents
  + Camping chairs
  + Sleeping bags

Next steps – At our next meeting on Jan 4th 2019 we plan to discuss FR uses, alternatives, and solicit ideas for policy options around additive FRs in electronic enclosures. Suggestions for speakers to inform the policy discussion included Erin Gatley from EPEAT in Oregon and inviting a fire protection engineer to address some of the advisory member questions about safety. Please send other suggestions for invited speakers to Barb Morrissey.

Meeting adjourned at 2 PM.