

## FINAL Meeting notes

First meeting of the Flame Retardant Stakeholder Advisory Committee

June 15, 2018 in Tumwater, WA (w/ webinar)

### Stakeholder advisory members in attendance:

- Kimberly Bloor, Deputy State Fire Marshal, Washington State Patrol
- Andrea Carey, Biologist, Washington Department of Fish & Wildlife
- Grant Nelson, attended for Gary Chandler, Vice President, Government Affairs, Association of Washington Businesses
- Holly Davies, PhD, Local Hazardous Waste Management Program, King County Parks and Natural Resources
- Kevin J. Delaney, Environmental Compliance Coordinator, Costco Wholesale
- Elizabeth Friedman, MD, Pediatric Environmental Health Specialty Unit, University of Washington
- Joe Johnson, Senior Director, Cisco Environmental Affairs
- Chief Scott LaVielle, Washington Fire Chiefs Association
- Cheri Peele, MCP, Senior Research Associate, Clean Production Action
- Shirlee Tan, PhD, Toxicologist, Seattle-King County Public Health
- Heather Trim, PhD, Executive Director, Zero Waste Washington
- Laurie Valeriano, Executive Director, Toxic-Free Future. Erika Schreder, Science Director, Toxic-Free Future represented Laurie Valeriano during the second half of the meeting.

### By webinar:

- Vyto Babrauskas, PhD, Fire Science and Technology, Inc.
- Richard Henrich of Lanxess, U.S, attended for Mark Barratt, Regulatory Compliance Specialist, Lanxess Solutions UK Ltd.
- Andy Hackman, represented the Juvenile Products Manufacturers Association
- Donald Lucas, PhD, Lawrence Berkeley National Laboratory (retired), Green Science Policy Institute.
- Brad Miller, Advocacy & Sustainability, BIFMA
- Joel Tenney, Director of Advocacy, ICL (Israel Chemicals Ltd)
- Heather Stapleton, PhD, Associate Professor, Duke University, Nicholas School of the Environment

### DOH/ECY team

- DOH – Barbara Morrissey, Jennifer Sabel, Lauren Jenks, Theresa Phillips, Laura Baune, Elmer Diaz, Kelly Cooper
- Ecology – Saskia Van Bergen, Darin Rice, Callie Matthew

### Others attending (in person or by webinar)

- Becky Berg McClintock, Costco
- Brad Tower

- Jennifer Gibbons, Toy Association
- Troy Nichols, Toy Association
- Jennifer Lanksbury, WA Dept of Fish & Wildlife
- Mark Johnson, Washington Retail Association
- Pratik Ichhaporia, Intertek
- Peter Beaton, DOH
- Kara Steward, Ecology
- Mary Clogston, Washington State Legislature
- David Panning, BIFMA
- Justin Metz, Melissa & Doug, LLC
- Lindsay Stovall, American Chemistry Council
- Eden Brandeis, Nintendo of America
- Genna Heath, REI
- Shiang-Lan Rau, JC Penney
- Matthew Nudell, Bureau Veritas
- Jennifer Morgan, JC Penney
- Megan Lui, Kroger
- Meg Hughes, Bureau Veritas
- Kristen Kern, AAFA Global
- Ariel Weinstein, UL
- Asiedu Gyebi, New Balance

The meeting began at 10 AM with a welcome by Jen Sable, DOH, and introduction of stakeholder advisory members. Theresa Phillips, DOH, reviewed the role of the stakeholder advisory committee and instructions for participating via webinar. She emphasized that the meeting was not the only chance to ask questions. Follow-up questions can go to either [Theresa.Phillips@doh.wa.gov](mailto:Theresa.Phillips@doh.wa.gov) or [Barbara.Morrissey@doh.wa.gov](mailto:Barbara.Morrissey@doh.wa.gov).

#### **Overview of the Project:**

Barb Morrissey, DOH, provided a brief history of Washington State policy action on flame retardants starting with a state-wide Chemical Action Plan completed by ECY and DOH in 2006 on polybrominated diphenyl ethers (PBDEs). She also showed highlights from a 2015 review of flame retardant exposure studies conducted by DOH to better understand which flame retardants were escaping consumer products and were bioavailable (detectable in human urine and serum samples).

The 2016 legislature, responded to citizen and expert concerns about the potential health implications of some replacement flame retardants by restricting five flame retardants in children's products and residential upholstered furniture. These five were already listed on the Children's Safe Product Act (CSPA) list of "Chemicals of High Concern to Children". The legislature directed the agencies to conduct a two-step process to further evaluate 6 additional flame retardants. Barb reviewed the language in this part of the law (RCW 70.240.035) and DOH's approach to two requirements:

- The law directs DOH to create an advisory committee for each chemical. Because of substantial overlap in uses of these flame retardant and in stakeholder's interest for all 6 chemicals, it was not practical or respectful of stakeholder's time to run 6 concurrent advisory groups (18

meetings). We will continue to engage interested parties, including those with a selective interest in one flame retardant as the law intended.

- The law requires DOH to include quantitative estimates of exposure and risk in the evaluation. DOH will search the literature and evaluate those estimates that we find. The science may not be mature enough to support quantitative estimates for the purposes of this report.

Lastly Barb reviewed the anticipated project timeline. Stakeholder involvement will occur at several steps from June through October. The next step in the process is for DOH to post written summaries of the flame retardant evaluations (mid-July) and invite stakeholder comment by mid-August. The next two committee meetings will focus more on developing policy options. DOH and ECY will finalize the report in November and plan to submit the report to the legislature in December 2018.

Many of the same staff at ECY and DOH (and stakeholders) are involved in developing the Chemical Action Plan for PFAS (per- and polyfluoroalkyl substances). Because of this, the flame retardant work plan is tightly coordinated with PFAS CAP work plan. The flame retardant project schedule may need to be extended into 2019 if more PFAS work arises. For example, DOH is conducting drinking water testing for PFAS in public water supplies from June-October 2018 as part of the PFAS CAP work. If testing reveals major contamination in public water supplies, we will need to pull resources from this project to respond to community concerns and questions. We will keep the committee updated on the work plan as we move forward.

### **Guiding Principles and Agency Goals**

*Lauren Jenks, Director Office of Environmental Public Health Sciences, Dept of Health (DOH)*

DOH is the lead agency in this report to the legislature, but Ecology is our equal teammate. We will be building off previous work done by both agencies including the 2014 Ecology report to the legislature on flame retardants (link provided on our project webpage). Both agencies will participate in determining which policy options to recommend in the final report.

Policy options that we are likely to support will ...

- Maintain or improve safety of everyday products and home materials - We take a broad view here when we think of safety: fire safety, safety of first responders and people escaping fires, and the safety of families living daily with these products.
- Reduce exposure to flame retardant chemicals, especially during pregnancy and childhood
- Be supported by science
- Result in comprehensive solutions
- Be practical and workable within the framework of federal laws
- Be equitable. Broad safety achieved, not just for those who can afford expensive couches, products

DOH goals:

- Ensure process is transparent, respectful of your time, provides adequate opportunities for your input.
- Produce an accurate report on the 6 flame retardants with policy options that offer practical and meaningful improvement in safety of consumer products.

*Darin Rice, Program Manager Hazardous Waste & Toxics Reduction, Dept of Ecology (ECY)*

Ecology has been working on the flame retardants in consumer products since 2004. We implement the bans on chemicals in products but we also have 4 programs that produce data to help us assess and understand hazards of known and emerging flame retardant chemicals:

- disclosure law for toxics of concern to children (Children's Safer Products Act)
- Product testing of consumer products
- Environmental monitoring of fish, waterways for emerging contaminants
- Green chemistry, safer alternative assessments

Much of the pollution that enters our environment now comes from the products we buy rather than from industrial discharges. These small but steady releases of toxic chemicals contained in many everyday products can add up especially if they are persistent and bioaccumulative.

We invest substantial resources in cleaning up sites in WA. Investments that prevent or minimize the source of toxic chemicals get results and are far cheaper than managing or cleaning up those same toxic chemicals once released into our water, air, soil, and fish.

ECY Goals:

- In addition to the goals mentioned by Lauren, ECY is looking for options that address potential risk to our ecosystems.
- We are also interested in controlling hazards at the sources, before harm has actually occurred.

## **Q&A**

Q. Some of these 6 flame retardants have major uses as plasticizers as well. Will we consider other uses of these chemicals in our recommendations?

A. We need to clarify if and how plasticizer uses will be included in the scope of this project. We will discuss this further and make a decision before the next meeting.

Q. Are we including worker and community exposures from the manufacturing process of these chemicals and products? What about disposal and recycling releases?

A. We don't think the law was intended to focus on manufacturing worker exposures so these are not likely to be included in the scope. If releases during manufacturing, disposal or recycling impact community exposures in Washington State, we may consider these in the scope. We will discuss this further and make a decision before the next meeting.

Q. Are we looking at hazards during product use & post-use?

A. Yes, we were asked to consider hazards of exposure encountered "during intended or reasonably anticipated conditions of use".

Q. How well do we understand the uses of these flame retardants in products? Can industry help us fill in data gaps on current production volume and use data? Product testing of TVs have found common replacements to PBDEs, but most of the use data are listed as CBI (confidential business information).

A. We recently looked at the 2016 reporting cycle of the Chemical Data Reporting requirement under TSCA (Toxic Substances Control Act, administered by the EPA). This information is included in our next presentation on the six flame retardants.

An industry member commented that they are willing to be a resource for this kind of information. There have been market changes in the flame retardants used in products over time. They can be a resource on flame retardant chemistry, applications, and alternatives when this information is available.

Q. Are there other flame retardants that we might be missing & should be considered in this effort? Example given was a tert-butylated triphenyl phosphate compound that is showing up as a major market replacement in some consumer product testing.

A. While we must cover the six listed flame retardants, we are not limited to those in our report and recommendations. If resources allow, we could add other important flame retardant to our analysis, especially if needed to provide a comprehensive recommendation.

Q. Is anyone doing a review of the 2006 CAP on PBDEs, and which recommendations have already been done and which haven't?

A. We did not have an answer at the meeting but we have since checked. All recommendations have been implemented. The last recommendation to "investigate the feasibility of a worker exposure study in collaboration with federal health officials" was not feasible. A link to the PBDE CAP and the 8 recommendations is on this project webpage.

Q. Are we testing for unknown flame retardants in Washington State consumer product or environmental testing? Has Ecology scanned for other peaks? Since we don't have good information about what new chemistries the industry is using we need to identify unknown chemicals.

A. No answer was provided in the meeting but we will check with ECY product testing group and get back to the group. UW Tacoma has done some testing in fish of new, emerging chemicals, and might also have some information for us.

#### **Review of uses, toxicity, exposure on six flame retardants:**

Barb Morrissey presented a broad overview of information on each of the 6 flame retardants listed for further review in the 2016 law. She presented the information on uses and production volume from the initial release of 2016 CDR data. These data are reported by manufacturers to EPA under a 2016 Chemical Data Reporting requirement. She also presented the EPA hazard summaries from a 2015 alternative assessment of flame retardants used in flexible polyurethane foam. Finally she summarized independent research evidence for each flame retardant's presence in consumer products, in indoor dust or air, or in biomonitoring exposure studies.

She explained that she has not yet incorporated all studies from 2017 and 2018 but will do so before she sends written summaries out for review and comment by the advisory committee. She is working with another toxicologist at DOH to identify and evaluate quantitative estimates of human exposure and risk as requested by the legislature. In addition, staff at Department of Ecology are summarizing information on environmental levels and ecological impacts. She plans to have draft summaries on the 6 flame

retardants to share by mid-July. Advisory members will have until mid-August to submit comments on these summaries.

#### Q&A

Q. EPA has prioritized & evaluated several FRs under TSCA. Will EPA actions preempt our state from taking action?

A. Possibly, yes. EPA listed IPTPP as a PBT (persistent bioaccumulative and toxic) under TSCA section 6(h). Actions adopted by EPA could preempt our action in WA. Andy Hackman submitted a comment: Technically preemption is already in effect for chemicals for which EPA has initiated risk assessment and mitigation. DOH will research this further and update the committee at the next meeting.

Q. What does the national production volume include?

A. NPV is the aggregate amount of a chemical imported into the country or produced here as reported by US manufacturing sites that manufacture (or import) 25,000 pounds or more a year.

Q. What do we know about toxicity of combinations of FRs in products, or combinations of contaminants observed in human exposure studies? Has this been studied?

A. Some studies have investigated the toxicity of commercial mixtures that involved combinations of these flame retardants (e.g., Firemaster 550). EPA prepared screening level hazard summaries for some commercial mixtures as well in their alternative assessments for flame retardants. Very little is known about the combined effects of multiple chemicals escaping from consumer products. We know from environmental sampling and exposure studies that human exposure to multiple environmental contaminant is routinely occurring.

Q. Do we have information about the major manufacturers of these 6 chemicals?

A. We have what is reported in the 2016 CDR. Manufacturers are identified for 5/6 flame retardants listed.

Comment from advisory member: Some of the exposure evidence of FRs in consumer products is from 2011 and earlier. The market place has changed and FR requirements in CA have been relaxed so presence is likely to be significantly different now.

#### **Flame Retardant Use in Consumer Products and Exposure in the US Population.**

Heather M. Stapleton, PhD, Nicholas School of the Environment, Duke University, presented on her laboratory's research into flame retardant uses in baby products and residential furniture. An ongoing project offers free laboratory analysis of foam samples from US furniture, mattresses, car seats, carpet pads, etc. Firemaster 550 (which contains TPP, TBB, TBPH, and IPTPP) and TCPP are among the most commonly identified flame retardants in the over 2000 samples received so far. The use of flame retardants has changed significantly over the past 2 decades with PBDEs declining and organophosphate FRs increasing. Recently there is a suggestive decrease in overall use of FRs in residential furniture. A

decrease is expected as California furniture standard TB-117 was revised in 2014. Manufacturers can now meet the fire safety standard without additive flame retardants in the furniture foam.

She and her colleagues have conducted research into whether flame retardants in household furniture contribute to exposure of occupants. In Hammel et al., 2017, levels of PentaBDE in indoor dust were 6.4x higher in homes with PentaBDE in the sofa compared to homes without PentaBDE in their sofas. Similarly, biomonitoring showed blood levels of pentaBDE were about 2.5x higher in occupants of homes with PentaBDE in their sofa.

Lastly she presented evidence from biomonitoring studies that infant's and children's exposure are frequently higher than their mother's exposure. Results from a study by Hoffman et al., 2017 suggest that infant exposures to TDCIPP (a restricted flame retardant in WA) may exceed the acceptable daily dose. This suggests that FR exposures are not insignificant and deserve more careful evaluation and study.

Q&A

Q. Is there a charge to people for your testing of furniture foam?

A. No, it's free of charge. The work is supported by a grant.

Q. Have you also analyzed plastic components of electronics from homes?

A. No. People are reluctant to destroy their electronics ☺. Instead, they have collected surface dust wipe samples for evidence about what FRs are used in the plastic casing.

Q. Have you analyzed outdoor soil or dust? Some FRs are detected in storm water but there's not a lot of research on the source or pathways.

No, we have not. But other studies have measured concentrations of FRs in soils and they are significantly lower than levels measured in indoor dust. There are some data available.

Q. Where were these studies done? All in North Carolina?

A. Some studies with dust and blood samples were conducted in North Carolina, but the studies on organophosphates measured in urine were based on samples collected from NJ and CA. The lab receives foam samples from all across the country.

**Fire Safety considerations presented by Donald Lucas, PhD. Lawrence Berkeley National Laboratory (retired), Green Science Policy Institute.**

Don posed the question of whether flame retardants are needed in furniture. He presented 2011 fire statistics that show steady declines since 1980 in home structure fires that start in furniture, along with a decline in fire deaths caused by furniture fires. Furniture fires are started by two main sources. The first more common type is called smoldering ignition, and this is mainly cigarettes or smoking materials. The second more rare type are small open flame sources like candles, lighters, and matches. The old CA furniture standard, TB117, was focused on the less common small open flame sources along with smoldering ignition. It has now been revised to focus on the more common source of fire: a better smoldering standard. Don outlined a number of fire safety tools that have helped lower fire hazard in homes: decrease in smoking rates, fire-safe candles and lighters, smoke detectors, sprinklers, fire and building codes, prevention work of the fire service, fire safety education and furniture regulations.

Furniture regulation requiring flame retardants did not appear to make a measurable difference when introduced into the UK and Ireland. Several studies have compared fire retardancy of CA TB117 foam vs. non-TB117 foam in assembled upholstered furniture. There was no significant fire safety benefit; the data were often within the data scatter of the experiment. (Babrauskas et al. 2011; Talley 1995)

Flame retardants can delay but do not prevent foam from burning. When polyurethane foam does burn, the flame retardants can produce or increase the production of soot and smoke, carbon monoxide, hydrogen cyanide and acid gases, dioxins and furans. All these are toxic and can impeded occupant's escape from a structure fire and pose a hazard to first responders. Firefighters have elevated rates of cancers that are associated with dioxin/furan exposure (LeMasters et al, 2014). We want to prevent injury and death from fire but we also need to ensure that in doing so, we are not creating more injury and death in other populations. Emerging evidence is that nearly 100% of people in the US tested have flame retardants in their serum or urine, including infants and children. What is the risk of all that exposure? What is the right balance for overall safety?

Don reviewed recent policy actions in CA on furniture and building flammability standards. CA furniture standard TB117-2013 is a smolder standard for cover fabric where most furniture fires start (adopted Jan 2014, mandatory Jan 2015). The new standard is expected to increase fire safety for smolder-type fires. Flame retardants are allowed but not needed in the foam to meet the std. California Assembly bill 127 re-evaluates building insulation. Flame retardants should not be required where they provide no benefit. Thermal barriers are effective at stopping fire for 15 min of flame.

Don also reviewed 2 policy developments at the federal level. The Consumer Product Safety Commission accepted a petition to take action on additive non-polymeric halogenated flame retardants as a class (Sept 2017). The action would remove these substances from children's products, residential furniture, and mattresses and mattress pads. The National Fire Protection Association proposed an open flame test as a national standard for residential upholstered furniture. This met opposition from many groups and individuals and did not go forward.

No time for questions.

**Next steps:**

- DOH will continue on our literature review, and look at available quantitative assessments of exposure and risk.
- Ecology partners will add information about environmental presence and impacts.
- DOH will provide a written draft on evaluation of six Flame Retardants by mid-July for advisory committee review. Please return any comments before the second meeting in mid-August.
- Next meeting will finish up with background information and then focus on policy options.

What does the group need to hear more about before we start policy discussions?

**Members asked for more information on:**

1. Fire standards and product testing & environmental studies
2. Standards for flame retardants in other places
3. Need for environmental data (product testing)

#### 4. Flame retardants in automobiles