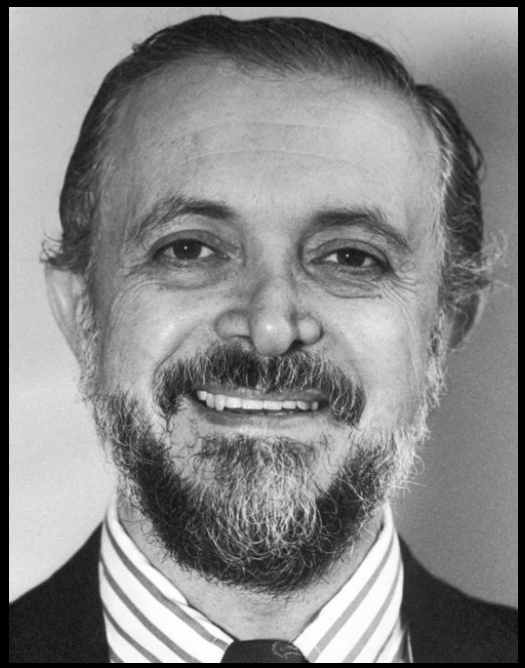
GREEN SCIENCE POLICY INSTITUTE

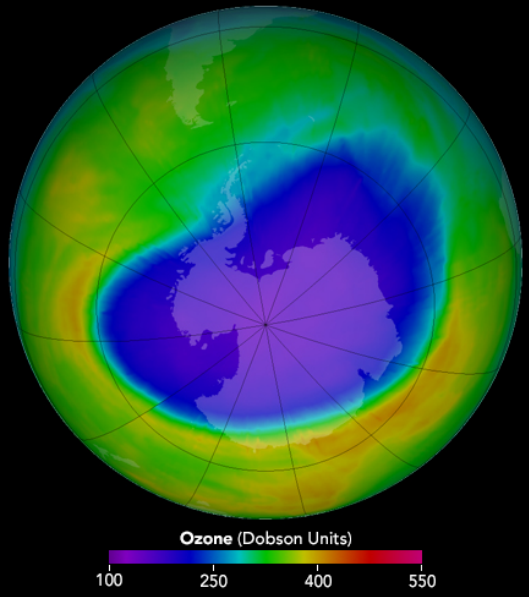
How To Limit Flame Retardants Use: The Class Concept Or Code Reform?

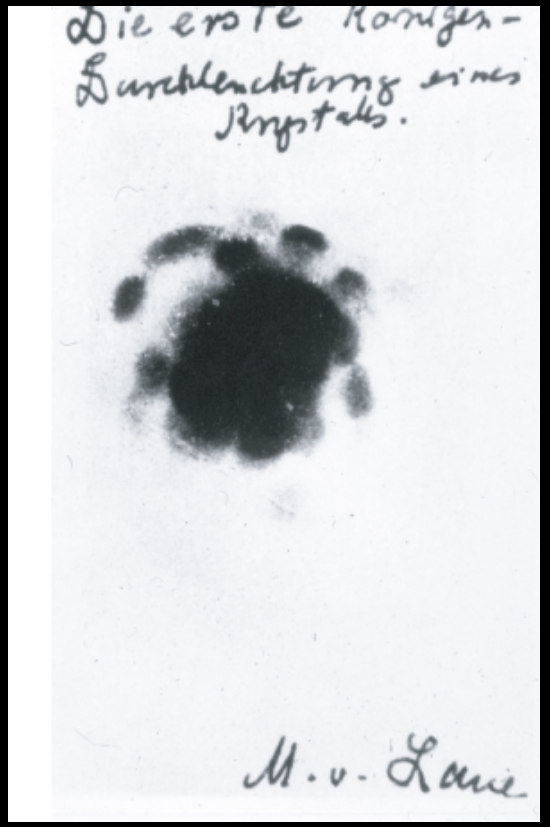
Joe Charbonnet, Vyto Babrauskas,

Miriam Diamond & Arlene Blum

BFR May 17, 2019




Ozone (Dobson Units)
100
250
400
550


Die erste Röntgen-
Durchleuchtung eines
Kryptalls.
M. v. Laue

GREEN SCIENCE POLICY INSTITUTE

Research

Education

Retreats

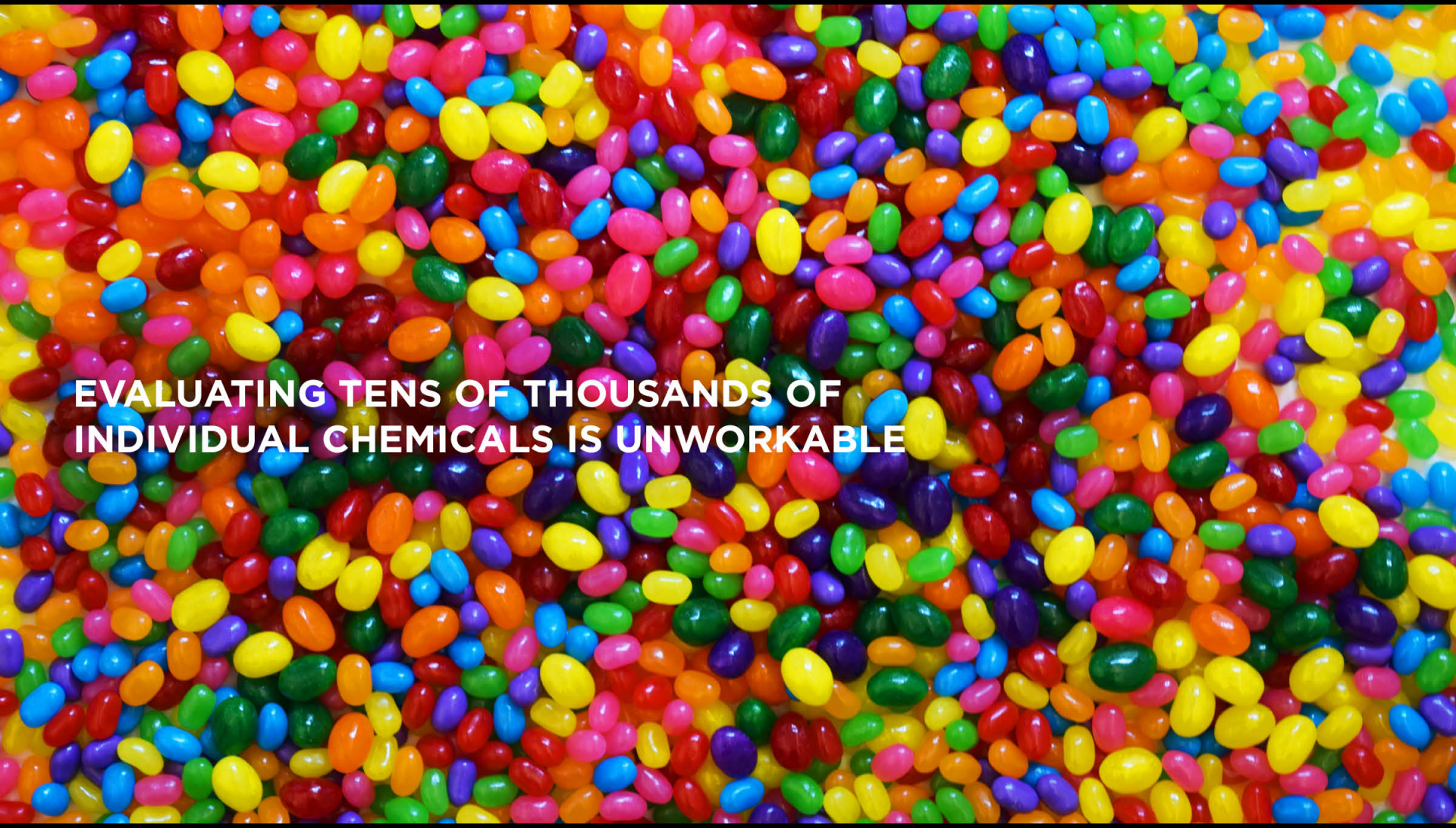
Policy & Purchasing Change

Is it necessary?

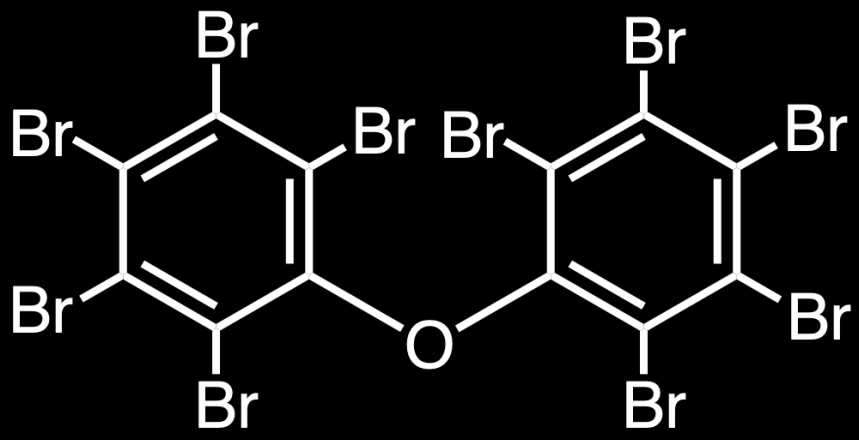
Is it worth it?

Is there a safer alternative?

The Class Concept


EVALUATING TENS OF THOUSANDS OF
INDIVIDUAL CHEMICALS IS UNWORKABLE

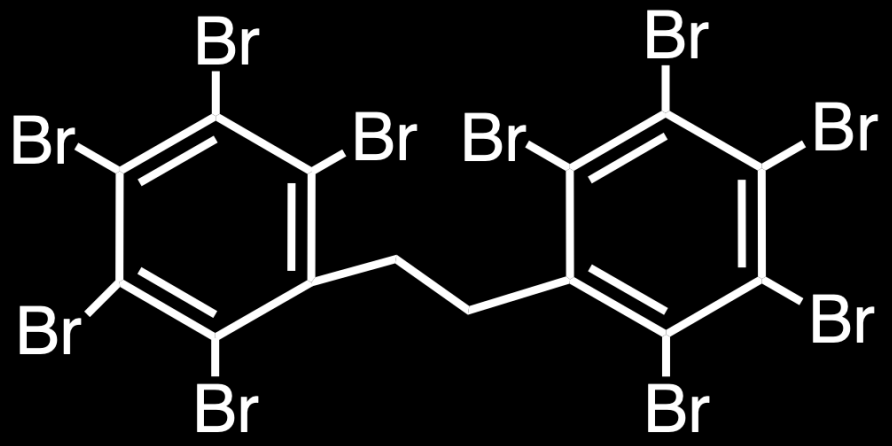
Regrettable Substitution



Decabromodiphenyl ether

Concerns:

- Persistence
- Bioaccumulation
- Toxicity



Decabromodiphenyl ethane

Concerns:

- Persistence
- Bioaccumulation
- Toxicity

Regrettable Substitution

ENVIRONMENTAL Science & Technology

Article

pubs.acs.org/est

Degradation of Polymeric Brominated Flame Retardants: Development of an Analytical Approach Using PolyFR and UV Irradiation

Christoph Koch,[*,†,‡,§] Alexander Dundua,[∥] Jackelyn Aragon-Gomez,[‡,∥] Milen Nachev,[†,‡] Susanne Stephan,[‡,⊥] Sarah Willach,[‡,#] Mathias Ulbricht,[‡,∥] Oliver J. Schmitz,[‡,⊥] Torsten C. Schmidt,[‡,#] and Bernd Sures[†,‡]

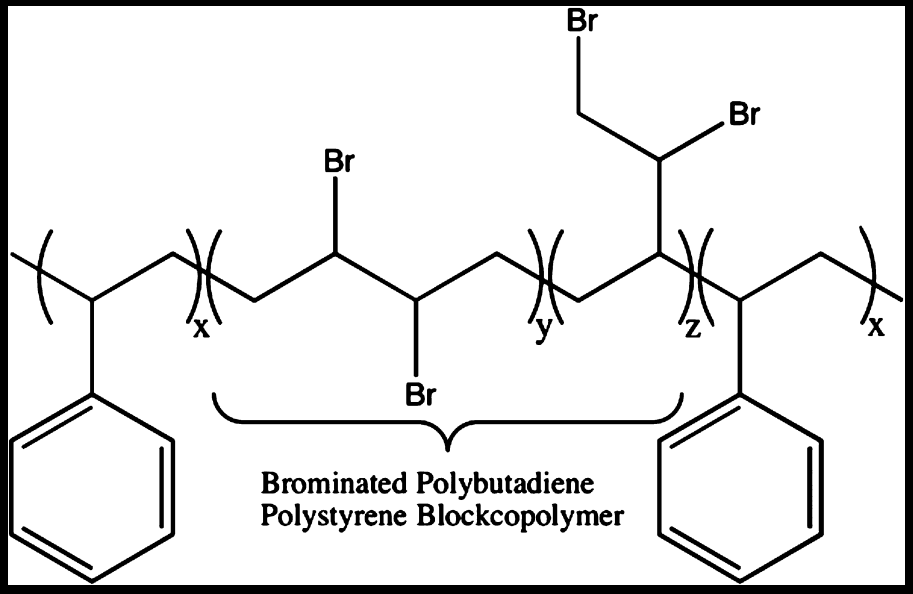
Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere

Degradation of brominated polymeric flame retardants and effects of generated decomposition products

Christoph Koch [a,b,*], Bernd Sures [a]



PolyFR

Tradenames:

- BLUEDGE
- Emerald Innovation 3000
- GreenCrest



BUT ADDRESSING SIX GROUPS OF CHEMICALS OF CONCERN IS MANAGEABLE



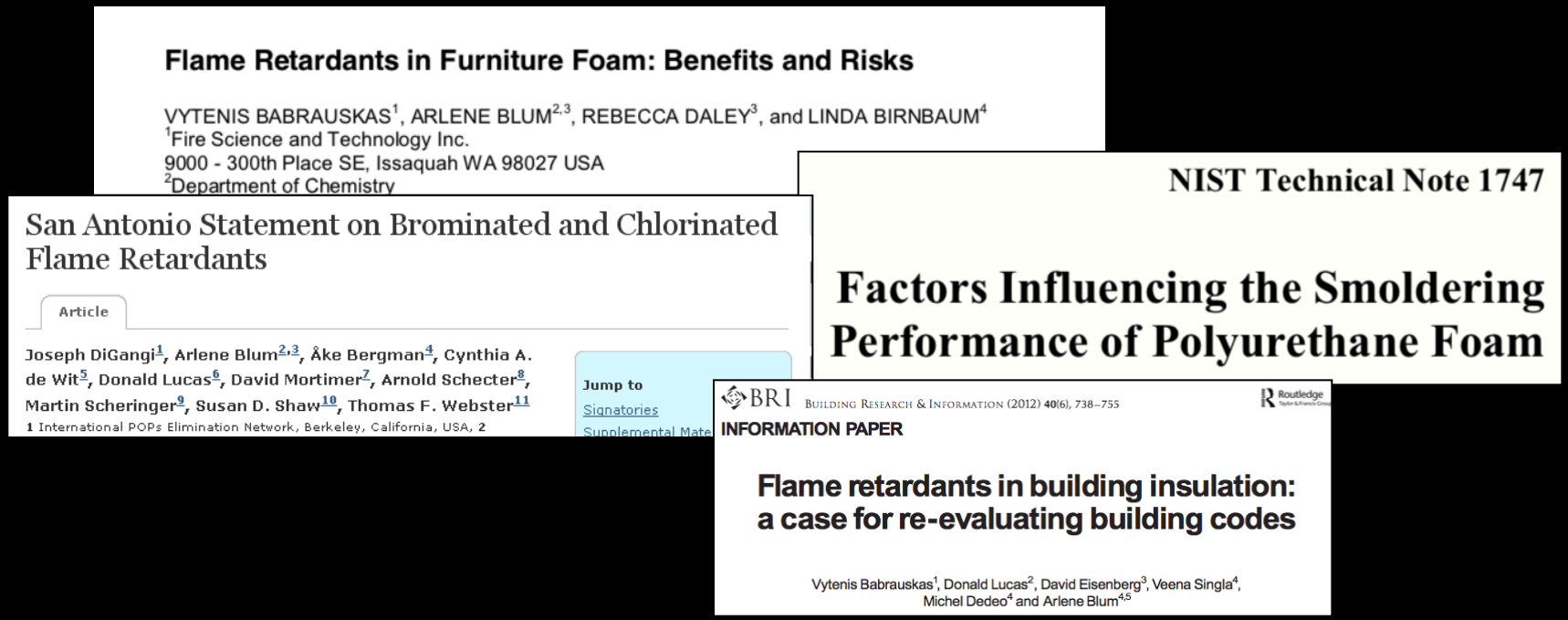
Six Classes Videos

An innovative approach to reducing toxics

VIEW and SHARE: www.SixClasses.org

Healthier products, healthier people in four minutes!

Do flame retardants save lives?



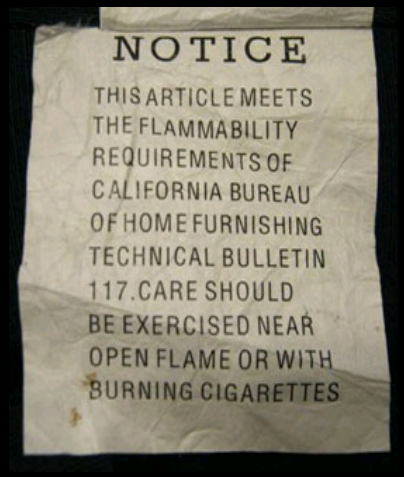
"No significant, consistent difference…"

Flame retardant combustion:

- Smokier, more difficult to escape fires
- Toxic combustion by-products

Flammability Standards Drive FR Use:

Technical Bulletin 117



Furniture foam to withstand a small open flame for 12 seconds

- Smolder vs. open flame fires—6:1 death ratio
- Slow response in ionizing smoke detectors

ASTM E84

All insulation must pass Steiner tunnel test

- Behind thermal barrier?
- Beneath a concrete foundation?

4 attempts at legislative reform of TB 117….

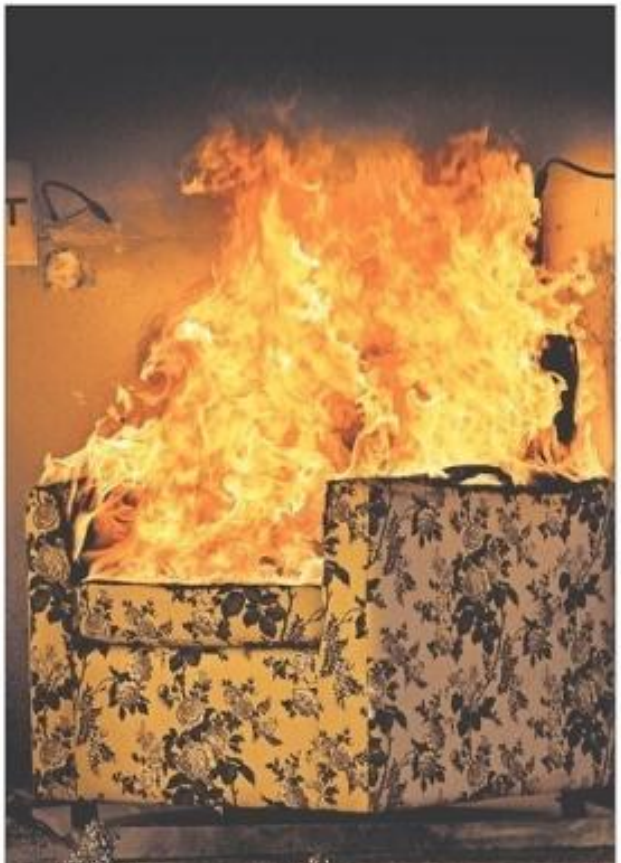
Chicago Tribune

QUESTIONS? CALL 1-800-TRIBUNE | SUNDAY, MAY 6, 2012 | BREAKING NEWS AT CHICAGOTRIBUNE.CO

TRIBUNE WATCHDOG

Playing with fire

A deceptive campaign by industry brought toxic flame retardants into our homes and into our bodies. And the chemicals don't even work as promised.



By Patricia Callahan and Sam Roe
Tribune reporters

Dr. David Heimbach knows how to tell a story.

Before California lawmakers last year, the noted burn surgeon drew gasps from the crowd as he described a 7-week-old baby girl who was burned in a fire started by a candle while she lay on a pillow that lacked flame retardant chemicals.

"Now this is a tiny little person, no bigger than my Italian greyhound at home," said Heimbach, gesturing to approximate the baby's size. "Half of her body was severely burned. She ultimately died after about three weeks of pain and misery in the hospital."

Heimbach's passionate testimony about the baby's death made the long-term health concerns about flame retardants voiced by doctors, environmentalists and even firefighters sound abstract and petty.

But there was a problem with his testimony. It wasn't true. Records show there was no dangerous pillow or candle fire. The baby he described didn't exist.

Neither did the 9-week-old patient who Heimbach told California legislators died in a candle fire in 2009. Nor did the 6-week-old patient who he told Alaska lawmakers was fatally burned in her crib in 2010.

Heimbach is not just a prominent burn doctor. He is a star witness for the manufacturers of flame retardants.

His testimony, the Tribune found, is part of a decades-long campaign of deception that has loaded the furniture and electronics in American homes with pounds of toxic chemicals linked to cancer, neurological deficits, developmental problems and impaired fertility.

The tactics started with Big Tobacco, which wanted to shift focus away from cigarettes as the cause of fire deaths, and continued as chemical companies worked to preserve a lucrative market for their products, according to a Tribune review of thousands of government, scientific and internal industry

stoked the public's fear of fire and helped organize and steer an association of top fire officials that spent more than a decade campaigning for their cause.

Today, scientists know that some flame retardants escape from household products and settle in dust. That's why toddlers, who play on the floor and put things in their mouths, generally have far higher levels of these chemicals in their bodies than their parents.

Blood levels of certain widely used flame retardants doubled in adults every two to five years between 1970 and 2004. More recent studies show levels haven't declined in the U.S. even though some of the chemicals have been pulled from the market. A typical American baby is born with the highest recorded concentrations of flame retardants among infants in the world.

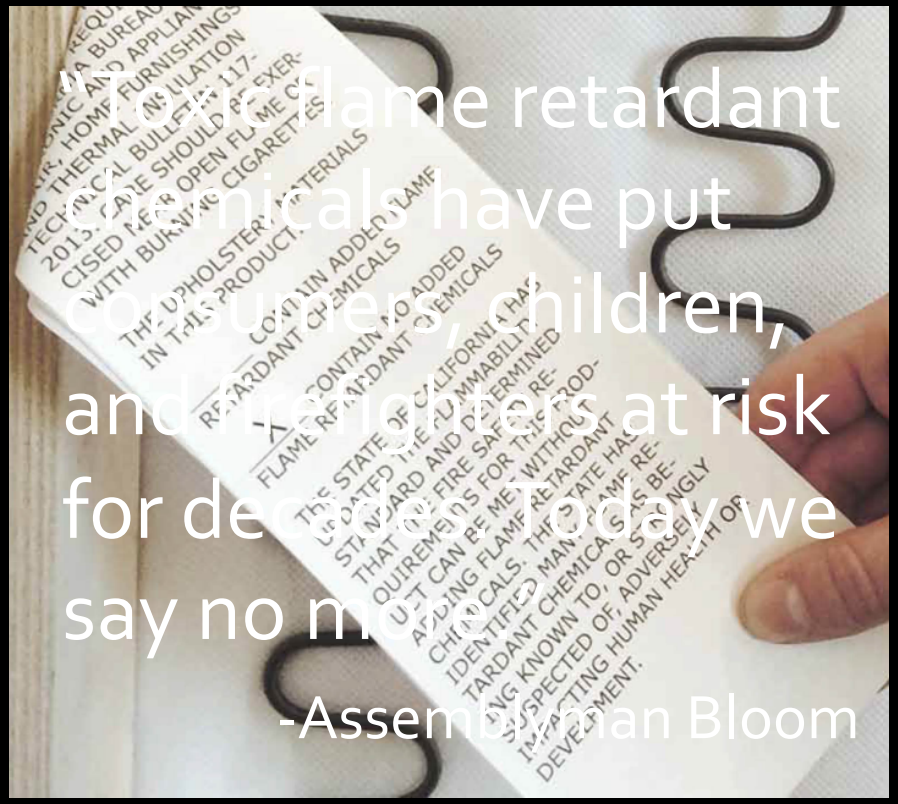
People might be willing to accept the health risks if the

Code Reform

TB 117-2013: Updated standard
- Greater fire safety, optional FR use
- Reporting on label

TB 133: Open-flame testing of upholstered furniture in high occupancy public spaces
- Repealed January 2019

AB 2889: California Bans Flame Retardants in furniture, children's products & mattress foam
- Signed September 2018



PETITION: U.S. Consumer Product Safety Commission

Products with the **class** of Organohalogen Flame Retardants

GRANTED --2017

Declare as "banned hazardous substances":

- Children's products
- Residential furniture
- Mattresses & mattress pads
- Plastic electronics enclosures

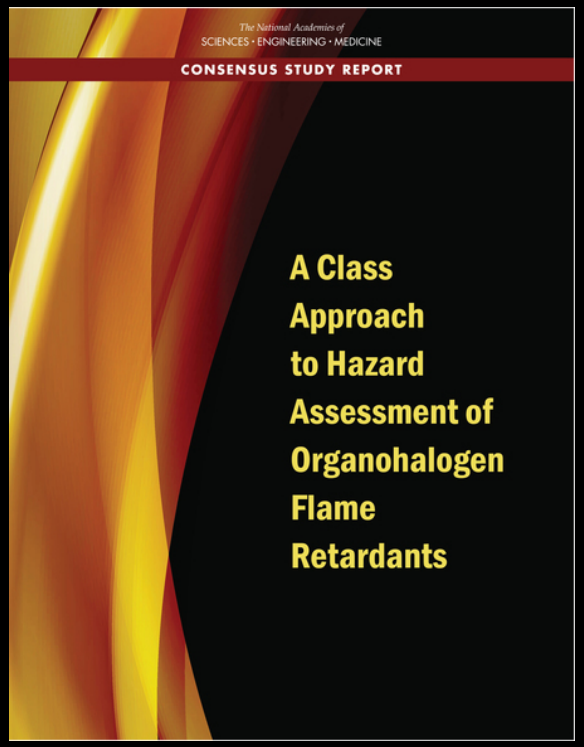
containing additive, non-polymeric organohalogen FRs

PETITION: U.S. Consumer Product Safety Commission

UPDATE: May 15, 2019

- National Academy of Science advisory Committee to Develop Scoping Plan Report

- OFRs can be divided into 14 subclasses subclasses for hazard assessment



"Although the challenges to a class approach might appear daunting, the alternative—individual assessments of hundreds of chemicals—is unrealistic. The only possible practical approach for a set of chemicals as large as the OFRs is a class approach."

Recycling Flame Retarded Plastics

Flame Retardants in Kitchen Utensils

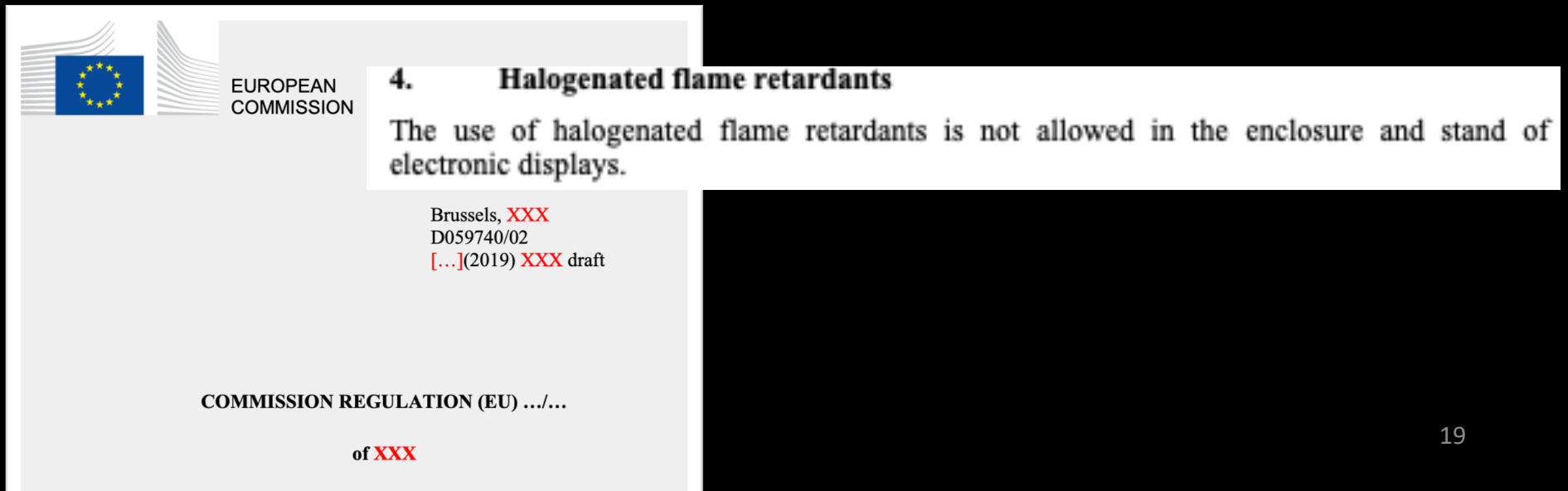
- Black plastic often contains BFRs
- BFRs found in 34% of tested utensils
- Up to 20% of BFRs transferred to cooking oil

Kuang *et al.*, Science of the Total Environment, 2018

EU Ban on Flame Retardants in Electronics Cases

Ecodesign directive bans the **class** of organohalogen flame retardants

- In cases and stands of electronic displays and TVs
- Unanimously approved by 24 member states
- Effective March 2020
- Motivation: plastic recycling in the Circular Economy



EUROPEAN
COMMISSION

4. Halogenated flame retardants

The use of halogenated flame retardants is not allowed in the enclosure and stand of electronic displays.

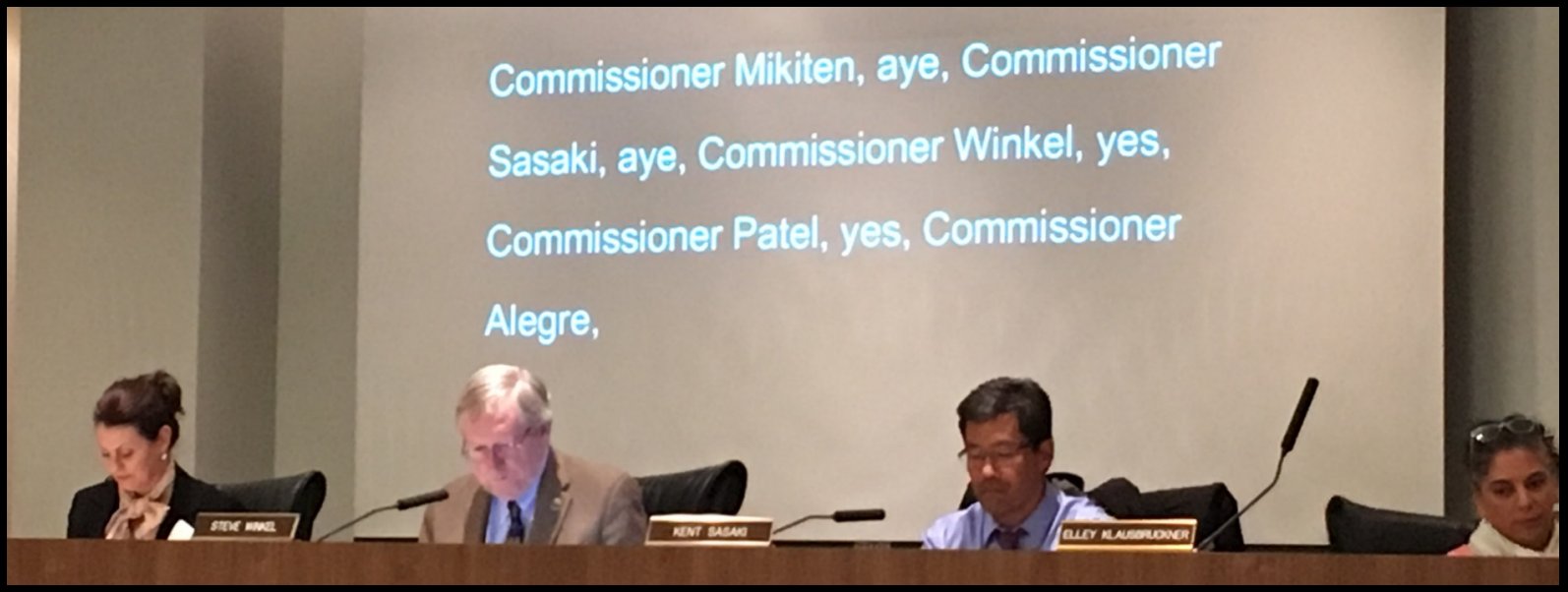
Brussels, XXX
D059740/02
[…](2019) XXX draft

COMMISSION REGULATION (EU) …/…

of XXX

Insulation: Building Code Change

January 2019: California Building Standards Commission unanimously votes to allow flame-retardant free insulation below a concrete slab



May 2019: International Code Council rejects same proposal language by vote of 10-1


I was long aware of the problem before the inherent difficulties had finally been surmounted.
-Max von Laue
GreenSciencePolicy.org