



Green Science Policy Institute

The Class Concept:

**A New Approach to Reducing the use of Flame
Retardants & Other Harmful Chemicals**

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Green Science Policy Institute











DENALI



DAMSELS



1970



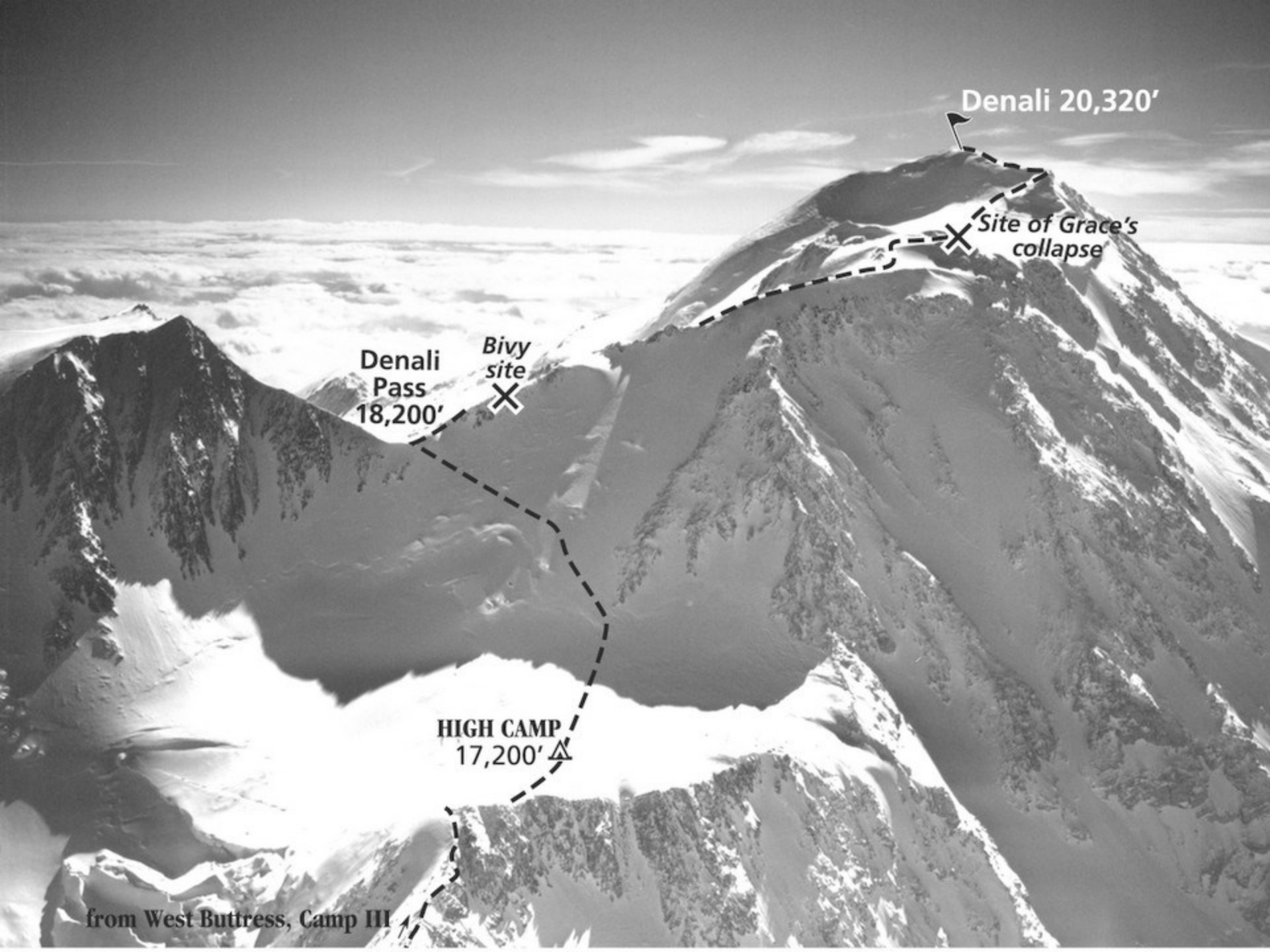






DENALI
DAMSELS
1970





Denali 20,320'

Site of Grace's collapse

Denali Pass
18,200'

Bivy site

HIGH CAMP
17,200'

from West Buttress, Camp III









Brominated Tris Flame Retardant

Tris (2,3-dibromopropyl) phosphate

- In children's sleepwear 1975 to 1977
- Up to 10% of the weight of fabric
- In children's urine
- Mutagen and possible carcinogen















THE
MUTANTS

Science, January 7, 1977

Flame-Retardant Additives as Possible Cancer Hazards

**The main flame retardant in children's pajamas is a
mutagen and should not be used.**

Arlene Blum and Bruce N. Ames



**U.S. Consumer Product
Safety Commission**

TRIS-Treated Children's Garments Banned

April , 1977

Chlorinated Tris replaced Brominated Tris

- Removed from pajamas in 1978
- Used in furniture until 2012























ANNAPURNA I
8,078 m 26,504 ft

East Summit

Two fall to their death.

V

IV

III

IIIA

Dutch Rib

Camp II

Viewpoint of photo at right

To Camp I and Base Camp

S









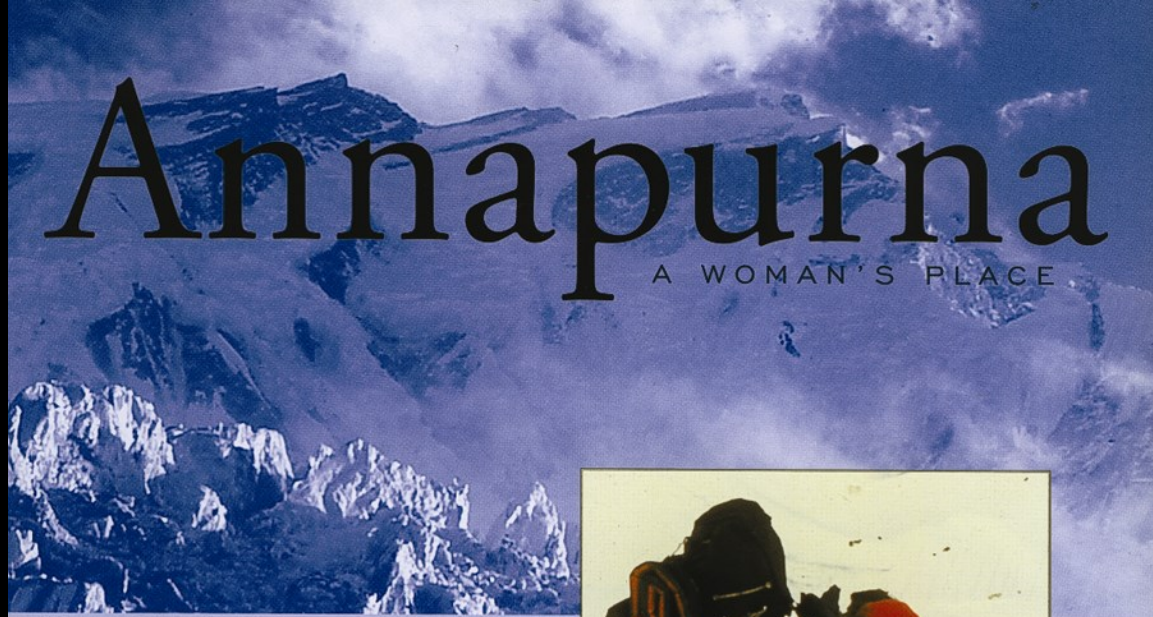






Annapurna

A WOMAN'S PLACE



The dramatic
story of the first
American ascent of
one of the world's
highest peaks



ARLENE BLUM

20TH ANNIVERSARY EDITION

With a new Preface and Afterword by the author

On Top of the World: Five Women Explorers in Tibet



Arlene Blum

BREAKING TRAIL

A Climbing Life

By the bestselling author of

**ANNAPURNA:
A WOMAN'S PLACE**



U.S. Toxic Substances Control Act, 1976

- 62,000 previous chemicals “grandfathered”
- 20,000 new chemicals
 - 85 % have no health data
 - 67 % have no data at all

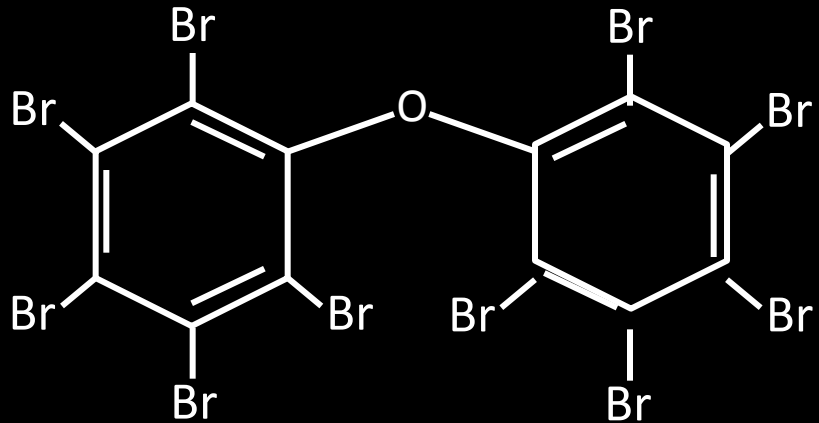


Human Toxicological Trial?

“We are conducting a massive clinical toxicological trial, and our children and our children's children are the experimental subjects.”

-Herbert Needleman & Philip Landrigan

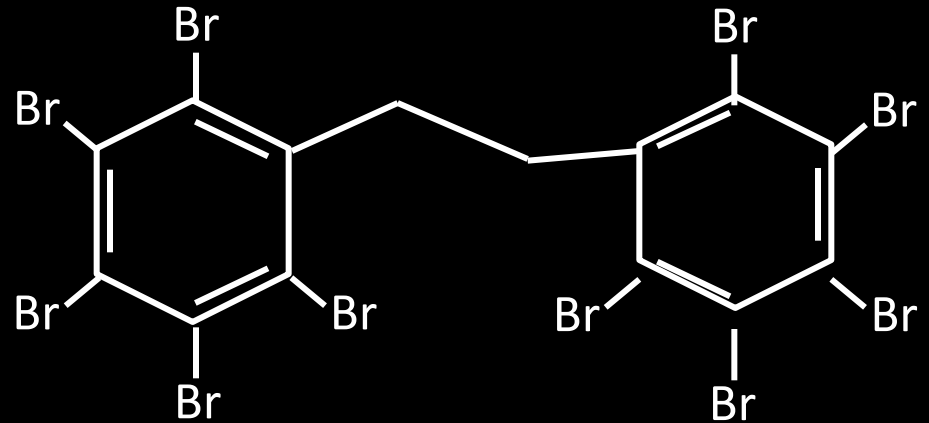
Regrettable Substitution



Decabromodiphenyl
ether

Concerns:

- Persistence
- Bioaccumulation
- Toxicity

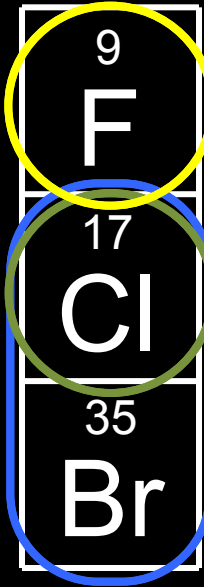


Decabromodiphenyl
ethane

Concerns:

- Persistence
- Bioaccumulation
- Toxicity

One Solution: SixClasses.org



1. **Highly fluorinated chemicals**
water and oil repellants, surfactants...

2. **Antimicrobials**
triclosan, triclocarban...

3. **Flame retardants**
brominated, chlorinated, phosphate

4. **Bisphenols and phthalates**
plastic additives...

5. **Hydrocarbon solvents**
benzene, methylene chloride...

6. **Certain metals**
lead, mercury, chromium, cadmium, arsenic...

Is it necessary?

Is it worth it?

Is there a safer alternative?

Green Chemistry



Green chemistry is the design of chemical products that reduces the use of hazardous substances.



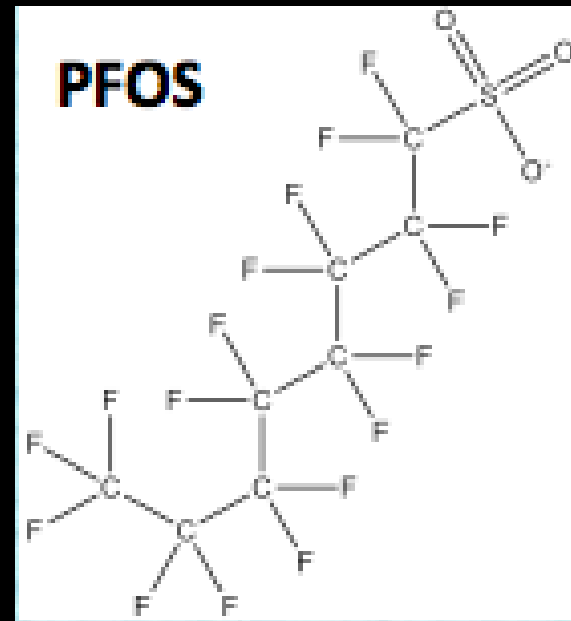
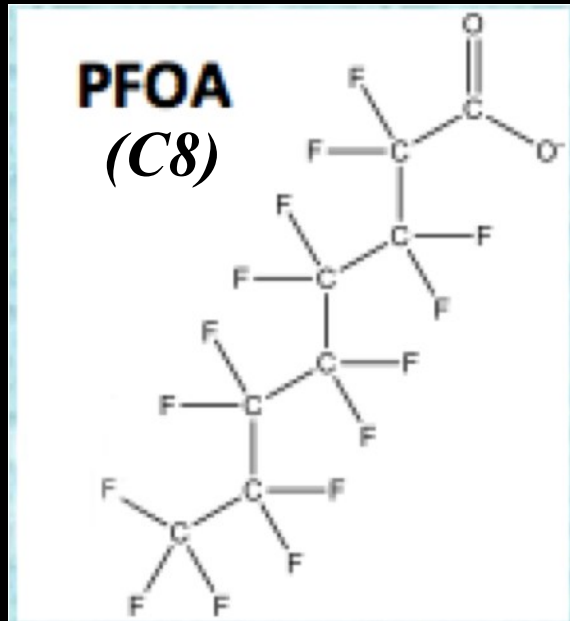
s i x c l a s s e s . o r g

SixClasses.org

15-minute webinars on Six Classes
containing harmful chemicals in consumer products.

Class 1: Fluorinated Chemicals (PFAS)

- C-F is one of the strongest bonds in nature
- This results in unique properties:
 - oil and water repellency
 - resistance to breakdown in the environment



Fluorochemicals are used in:



Human Toxicology

- PFOS and PFOA persist in the body for years
- Health effects linked to exposure to PFOA:
 - Kidney, prostate, ovarian, and testicular cancer
 - Thyroid disease
 - Delayed puberty, decreased fertility (women) and early menopause
 - Reduced testosterone levels
 - Reduced immune response in children
 - Elevated cholesterol

C8 replaced with thirty forms of C6



- Persistent, a family trait
- In groundwater, wastewater, & seawater
- Limited toxicology data
- Increasing C6 levels in human blood
- Can causes cell changes associated with tumors

The Madrid Statement



Documents the scientific consensus regarding the persistence and potential for harm of poly- and perfluoroalkyl substances (PFAS), and lays out a roadmap to gather needed information and prevent further harm.

Brands can eliminate all PFASs from products



MANGO

As of Jul. 2013



As of Aug. 2014



As of Oct. 2014



As of Jan. 2015

As of Jan. 2013



By Jul. 2015



By Jul. 2015



By Dec. 2015



By Dec. 2015



By Dec. 2015



By Dec. 2015



By Jul. 2016



By Jul. 2016



By Dec. 2017



99% PFAS-free
by Dec. 2017

1970s Flammability Standards

- Children's sleepwear
- Furniture
- Foam plastic building insulation

Technical Bulletin 117



- Required furniture foam to withstand a small open flame for 12 seconds
- No significant fire safety benefit (fires start in exterior fabric not filling)

Animal health effects

- Chronic toxicity: long term impacts
 - Endocrine disruption: Interference with thyroid hormone action
 - Neurodevelopment: Decreased memory, learning deficits, altered motor behavior, hyperactivity
 - Reproductive system effects: Abnormal gonadal development, reduced ovarian follicles, reduced sperm count
 - Immune suppression
 - Cancer

Human Health

Higher pentaBDE

associated with

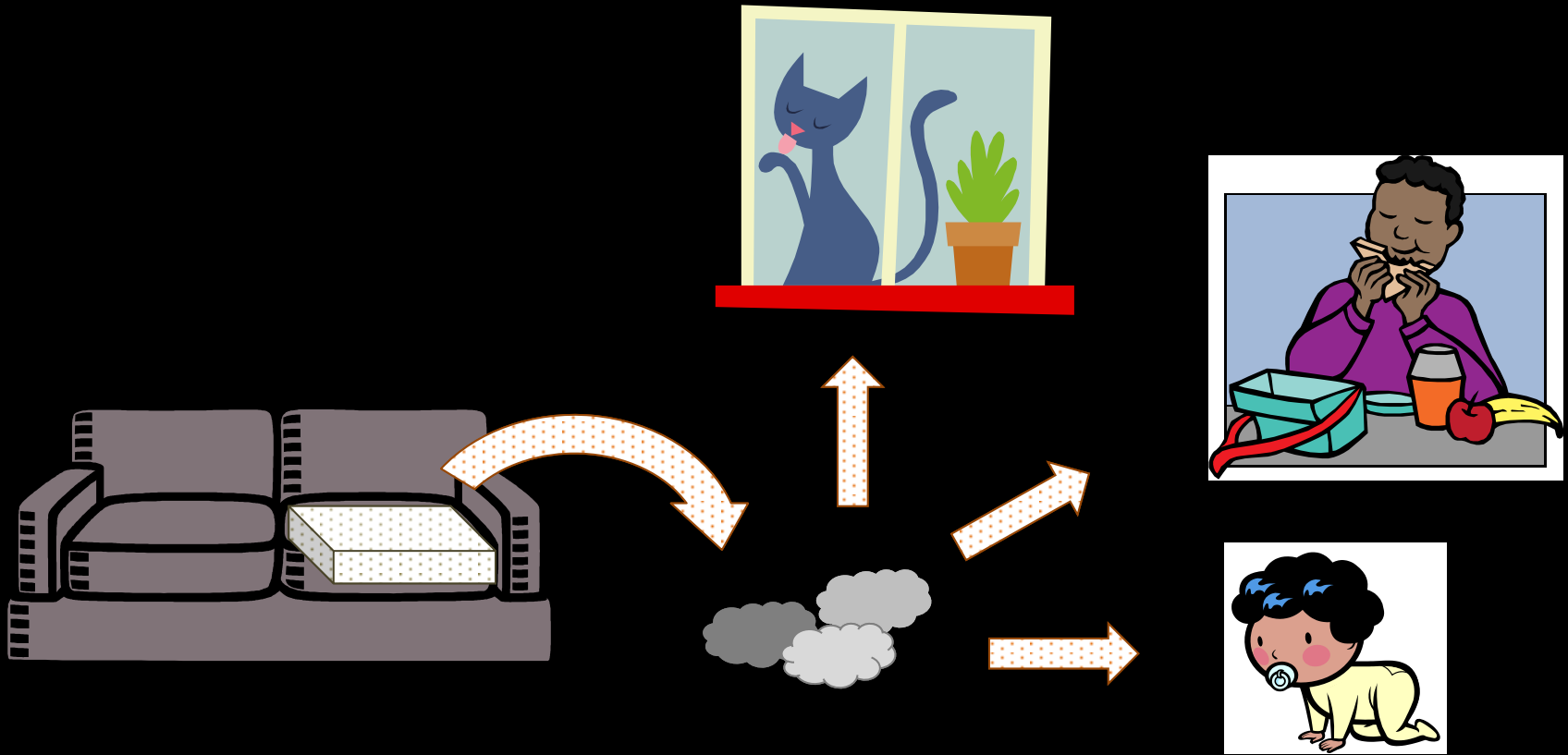
lower birth weight
impaired attention
poorer coordination
lowered IQ



longer time to get pregnant
altered thyroid hormones



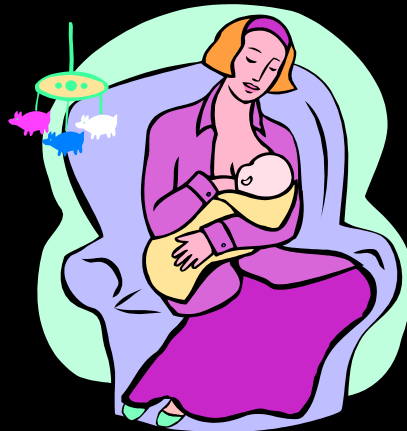
From Products to People



Toddlers have about three times the flame retardant level of their mothers



1st dose



2nd dose



3rd dose

Global pollutants

Migrate towards north and south poles





97 ppm to 3 ppm

Increased fire safety without flame retardants



Assembly Bill 706, Senate Bill 772, Senate Bill 1291, Senate Bill 147

A DEADLY MISTAKE

Help stop the bill that will ban material used to make flame resistant products.

CALL YOUR STATE SENATOR TODAY AND TELL THEM TO
VOTE NO ON AB 706

Call State Senator
Tom Torlakson
at **916-651-4007** and tell him to
VOTE NO on AB 706.

P-15 P25 *****ECRLOT**C018

Richmond, CA 94804-5339

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**DON'T LET THE SACRAMENTO POLITICIANS BAN THE USE OF
PROVEN FLAME RETARDANTS-IT COULD BE A DEADLY MISTAKE**

Paid for by Californians for Fire Safety:

- Albemarle
- Chemtura
- Israel Chemicals LTD (ICL)



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

stated 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



Pulitzer Prize

Finalist

Goldsmith Prize

Investigative Reporting

Environmental

Journalists Society

Environmental Reporting

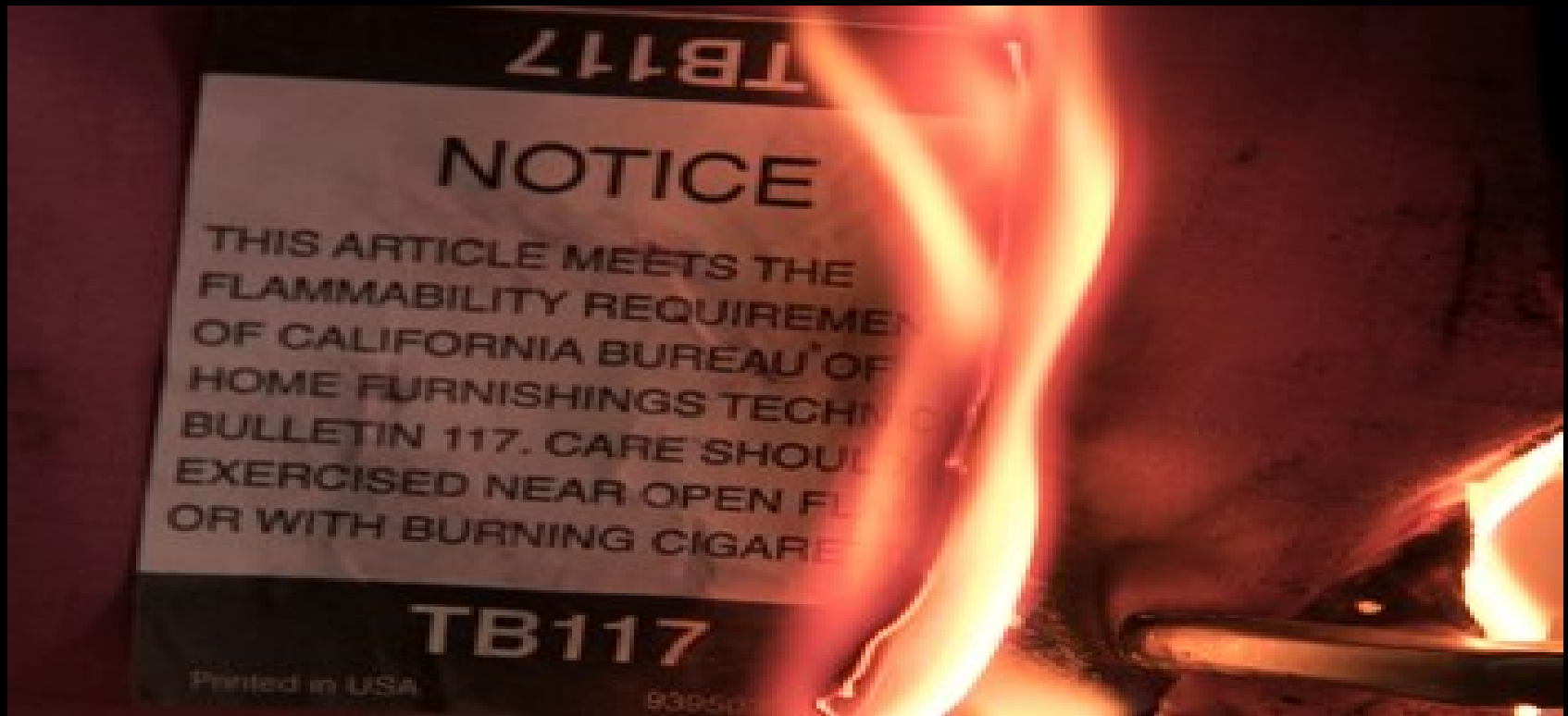
Gerald Loeb Award

Business and Financial Journalism

National Press Club

Consumer Award

Toxic Hot Seat



A film about stopping the use of the harmful and ineffective flame retardants in furniture and baby products

Rent it at <http://vimeo.com/ondemand/toxichotseat>



Office of Governor

Edmund G. Brown Jr.



June 18, 2012

Governor Brown Directs State Agencies to Revise Flammability Standards

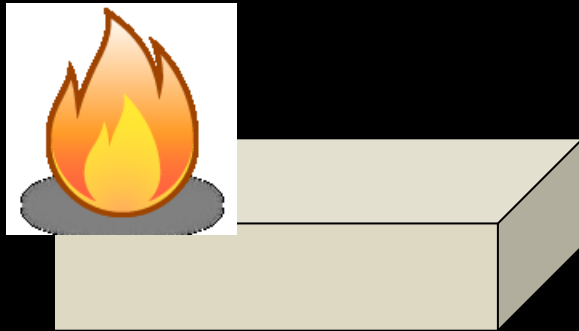
Fire safety with fewer flame retardants:

‘We must find better ways to meet fire safety standards by reducing and eliminating - wherever possible - dangerous chemicals.’”

Open flame versus smolder

TB117

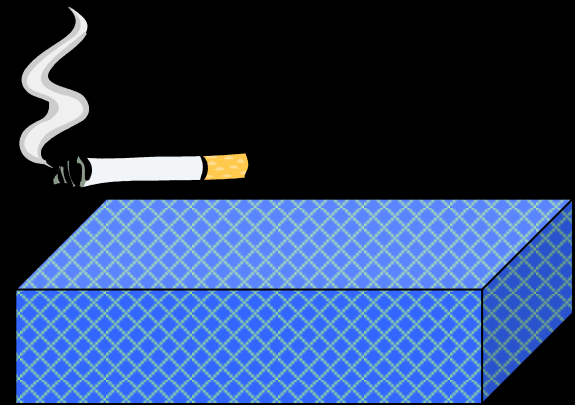
12 second delay of ignition of filling inside furniture



Flame retardants added to meet this small open flame standard

TB117-2013

Majority of furniture fires are started by cigarettes (smolder)



Prevented by smolder-resistant fabric

California Flammability Standard TB117-2013

- Mandatory January 1, 2015
- Flame retardants not needed, but can still be used

Senate Bill 1019

- Effective January 1, 2015
for products that meet
TB117-2013

NOTICE

THIS ARTICLE MEETS THE FLAMMABILITY REQUIREMENTS OF CALIFORNIA BUREAU OF ELECTRONIC AND APPLIANCE REPAIR, HOME FURNISHINGS AND THERMAL INSULATION TECHNICAL BULLETIN 117-2013. CARE SHOULD BE EXERCISED NEAR OPEN FLAME OR WITH BURNING CIGARETTES.

The upholstery materials in this product:

contain added flame retardant chemicals
 contain NO added flame retardant chemicals

The State of California has updated the flammability standard and determined the fire safety requirements for this product can be met without adding flame retardant chemicals. The State has identified many flame retardant chemicals as being known to, or strongly suspected of, adversely impacting human health or development.

TB117 and baby products

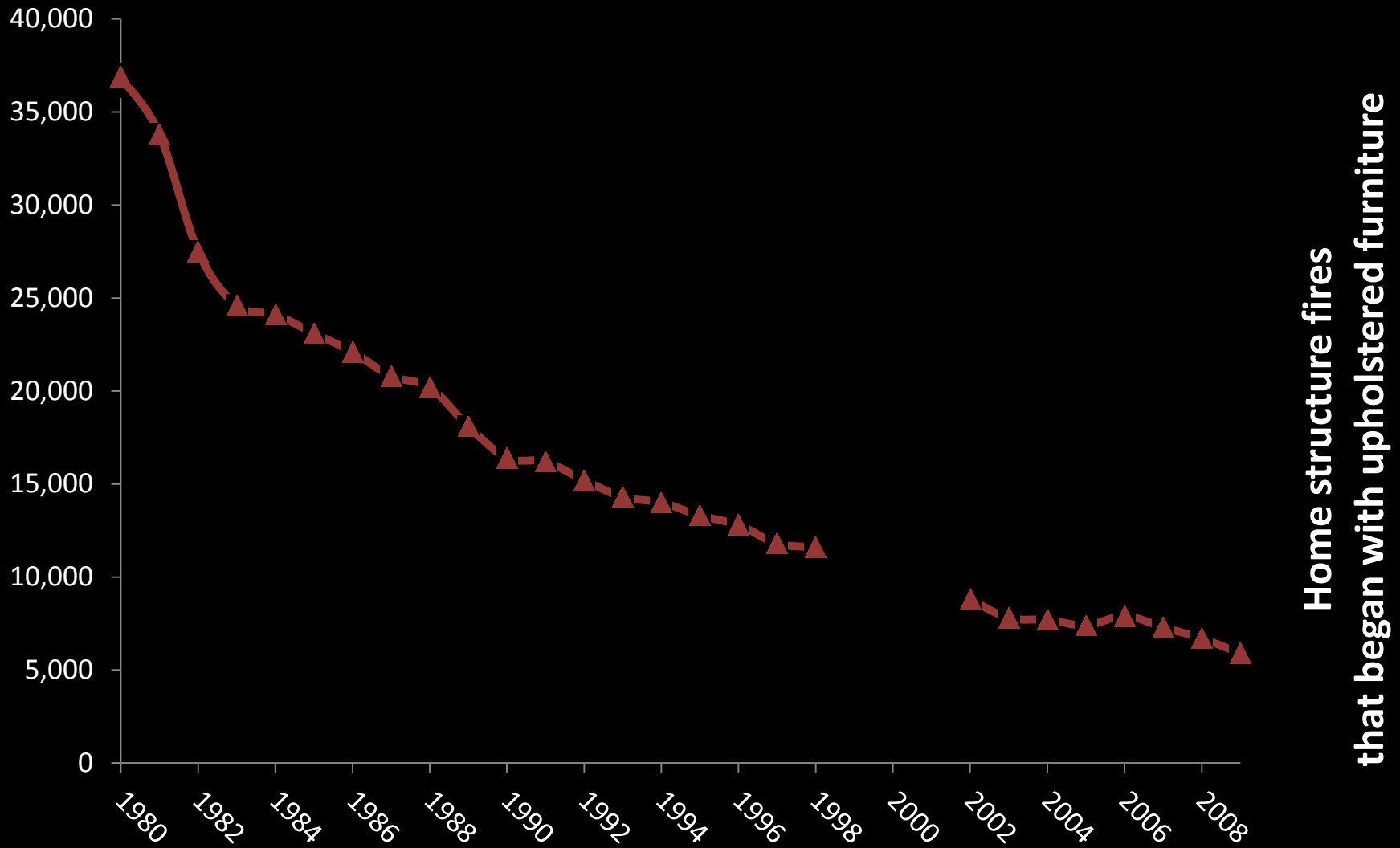
– December 2010: three exempted



– January 1, 2014: 15 more exempted



Fires that start in furniture are decreasing



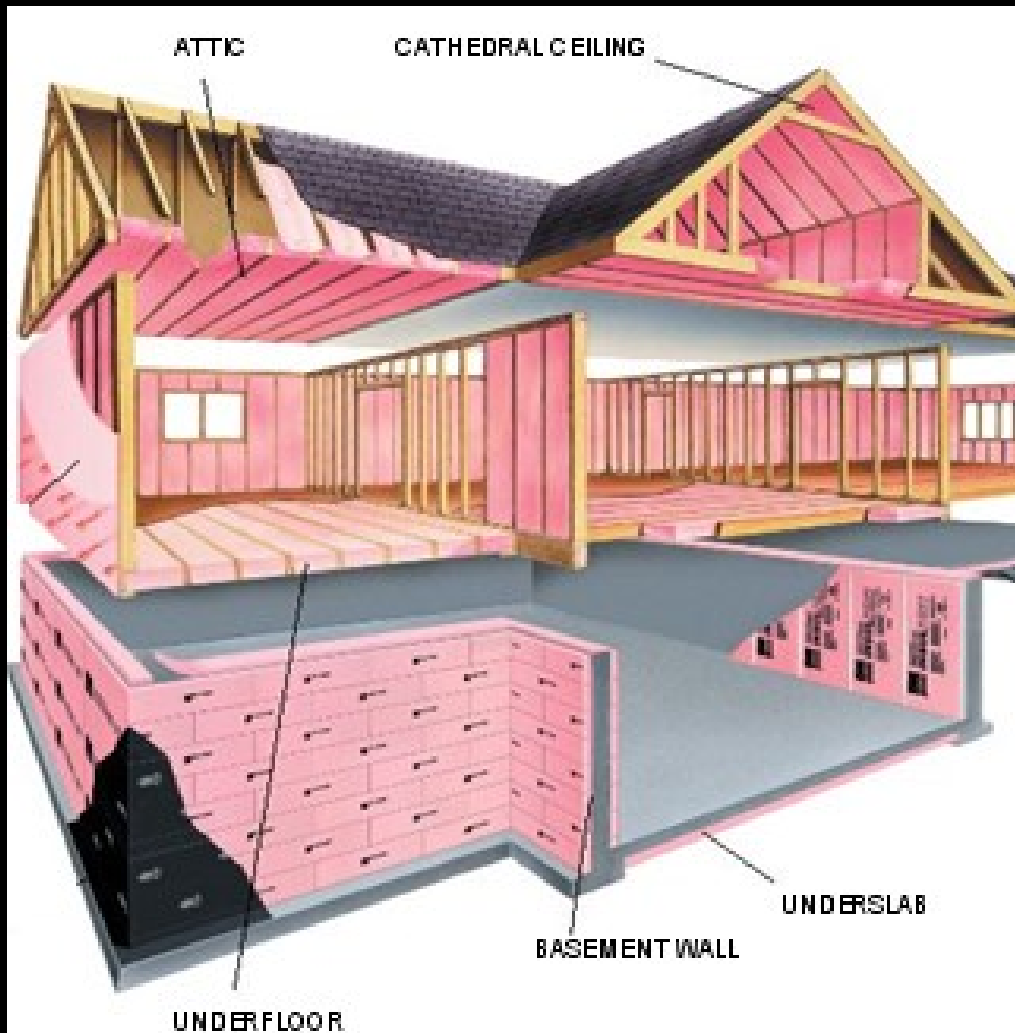
Home structure fires
that began with upholstered furniture

Fire safety tools

- Decrease in smoking/ fire-safe cigarettes
 - Fire-safe candles, child-safe lighters
 - Smoke detectors/ alarms
 - Sprinklers
 - Work of fire service
 - Fire codes
 - Fire safety education
 - Furniture regulations
 - Smolder standard: TB117-2013
 - Open flame: TB117
- (Open flame standards have potential for harm)

Foam Plastic Insulation

(polystyrene, polyurethane, polyiso, etc.)



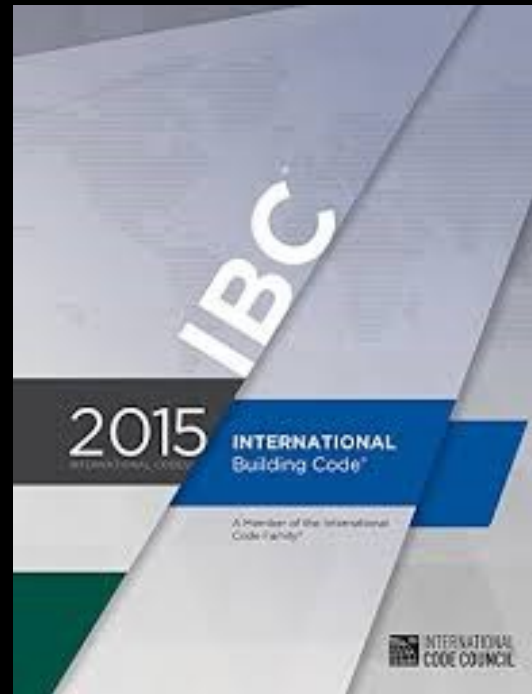
Used increasingly for energy efficiency

Can be used:

- inside walls
- below grade
- attics, etc.

2018 International Building Code (IBC)

- Allow foam plastic insulation without FRs when fully protected below grade



2018 International Building Code (IBC)

- Allow foam plastic insulation without FRs when fully protected below grade



The Big Idea

A petition to the CPSC to ban four categories of consumer products if they contain any member of the class of organohalogen flame retardants:

- ✓ children's products
- ✓ residential furniture
- ✓ mattresses & mattress pads
- ✓ electronics casings



Philip Landrigan, MD



WITH FUNDING FROM:



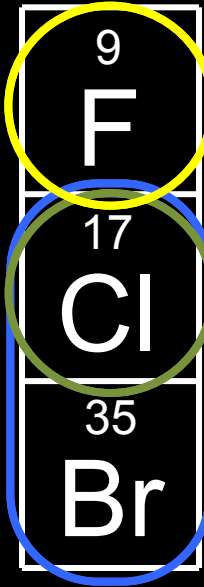
What to do?

- Replace the foam in your furniture.
- Buy furniture with a TB117-2013 label
 - Look for products without added flame retardants
- Vacuum, wet mop, hand wash



<http://greensciencepolicy.org/consumers>

One Solution: SixClasses.org




1. **Highly fluorinated chemicals**
water and oil repellants, surfactants...
2. **Antimicrobials**
triclosan, triclocarban...
3. **Flame retardants**
brominated, chlorinated, phosphate
4. **Bisphenols and phthalates**
plastic additives...
5. **Hydrocarbon solvents**
benzene, methylene chloride...
6. **Certain metals**
lead, mercury, chromium, cadmium, arsenic...

“Buyers’ Club” for Healthier Building Materials



- Require transparency from manufacturers about chemicals in products and building materials
- Utilize collective purchasing power to create a demand for healthy products and materials

A high-altitude mountain peak with a climber on a snow ridge under a bright sun. The climber is wearing a yellow helmet and dark gear, positioned on a narrow snow ridge. The sun is in the upper left corner, creating a lens flare effect. The sky is a deep blue, and the snow is bright white with some shadows.

For more information
www.greensciencepolicy.org
to join our e-list

**Please give Arlene your card
Or sign our e-list**

With improved flammability standards

**We can have both fire safety
and a healthy world.**

**Google: Green Science Policy
www.GreenSciencePolicy.org**