The Summits of Healthier Products, People, & Planet

Arlene Blum
Green Science Policy Institute
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
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
CPSC Bans TRIS-Treated Children's Garments
April 7, 1977

Chlorinated Tris (TDCPP) replaced Brominated Tris

• removed from children’s PJ’s in 1977
• used furniture until 2012
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
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”

• 23,000 new chemicals
  – 85% have no health data
  – 67% have no data at all

Michael Wilson, Green Chemistry in California:  http://coeh.berkeley.edu/news/06_wilson_policy.htm
GREEN SCIENCE POLICY INSTITUTE
GreenSciencePolicy.org
Regrettable Substitution

Decabromodiphenyl ether

Concerns:
• Persistence
• Bioaccumulation
• Toxicity

Decabromodiphenyl ethane

Concerns:
• Persistence
• Bioaccumulation
• Toxicity

GREEN SCIENCE POLICY INSTITUTE
www.GreenSciencePolicy.org
EVALUATING TENS OF THOUSANDS OF INDIVIDUAL CHEMICALS IS UNWORKABLE
BUT ADDRESSING SIX GROUPS OF CHEMICALS OF CONCERN IS MANAGEABLE
Six Classes Videos

1. PFAS (Highly Fluorinated)
2. Antimicrobials
3. Flame Retardants
4. Bisphenols + Phthalates
5. Some Solvents
6. Certain Metals

www.SixClasses.org
Healthier products, healthier people in four minutes!
Is it necessary?

Is it worth it?

Is there a safer alternative?
Flame retardants

Updating 1970s Flammability Standards

• Children’s sleepwear – 1977

• Furniture and baby product foam -- 2014

• Foam building insulation

• Electronics cases
From Products to People
Furniture foam flame retardant (PentaBDE) associations with human health problems

Increased time to pregnancy
Altered thyroid hormone
Thyroid disease in women

Impaired attention
Poorer coordination
Lower IQ
Developmental toxicity
Baby boys’ genital problems
Lower birth weight
Delayed puberty in girls
Earlier puberty in boys

Main et al. 2007; Goodyer et al 2017;
TB117 Fire Safety Benefit?

TB117 foam ~ Non-TB117 foam

“No significant, consistent difference...”

Babrauskas et al. 2011; Talley 1995; Mehta (CPSC) 2012
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

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)

GREEN SCIENCE POLICY INSTITUTE
GreenSciencePolicy.org
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 2-month-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 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 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-month-old patient who Heimbach told California lawmakers died in a candle fire in 2000. 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 records.

Some fire retardants, often added to plastics and other products, are linked to cancer and other health problems. The chemicals may also negatively affect the endocrine system, which governs some body functions.

In a statement, flame retardant maker Firemaster Inc. called the Tribune's story "distorted and misleading." The company said the Tribune had "misrepresented the content of testimony given before state legislative committees by a physician who is no longer associated with our company.

The Tribune stood by its story. "We are not trying to imply that Big Tobacco is responsible for the current fire safety crisis," said Tribune executive editor Steve Duckett. "But that's part of the story we're telling. We're exploring the connections between fire safety and health issues.

A recent study found that children exposed to flame retardants in their homes were more likely to have asthma, attention deficit hyperactivity disorder and other health problems. Some scientists say the chemicals can harm the brain and the immune system.

The Tribune story was part of a larger investigation into the fire safety industry, which includes a look at the role of flame retardants in the market and a look at the health effects of the chemicals.

The investigation has been ongoing since 2006, when the Tribune first reported on the issue. The story has been closely watched by the industry, which has spent millions of dollars on advertising and lobbying to influence lawmakers.

The Tribune's story was the first to link the fire safety industry to health problems. The industry has been under scrutiny since the Tribune story was published, and some lawmakers have called for tighter regulations.
California TB117-2013
Class 1 PFAS
(Per- and polyfluoroalkyl substances)

PFOA (C8)

PFOS (C8)

Carbon-Fluorine bond strength:
• Leads to oil and water repellency
• “Forever chemicals” -- last for geologic time!

Courtesy: Dr. Jennifer Field
Dark Waters film

- The story of attorney Rob Bilott, who uncovered massive PFOA contamination from a DuPont factory in WV
PFAS exposure is a health concern

Exposure linked to health risks:
Cancer, elevated cholesterol, obesity, immune suppression, and endocrine disruption

(Ref: Lewis et al., 2015; Grandjean et al., 2012; Braun et al., 2016; Barry et al., 2013)

Courtesy, Cindy Hu, Harvard University
“Regrettable” Substitution?

Long chain:
- Extreme persistence
- Bioaccumulation
- Toxicity

Short chain:
- Extreme persistence
- Build-up in plants
- Suspected toxicity
- More mobile
- Clean up more difficult
- Harder to measure & monitor
AGC – THE FIRST COMPANY TO FULLY CONVERT TO PFOA-FREE* WATER AND OIL REPELLENT

AsahiGuard® E Series is a fluorinated water and oil repellent providing sustainable alternatives for many applications, including paper packaging, textiles, apparel, non-wovens, natural and synthetic leathers and home furnishings based on proven AGC C6 chemistry. AsahiGuard E-Series offers high performance

- “C6 polymers are proven safe for their intended use”
- “Evaluated by regulators, showing they are safe and effective”
- “C6 polymers cannot break down to C8”

https://www.agcce.com/asahiguard-e-series/
May 2015  The Madrid Statement on Highly Fluorinated Chemicals

“We call on the international community to cooperate in limiting the production and use of PFAS and in developing safer non-fluorinated alternatives.”

Signed by 230 scientists from 40 countries

2015: Environmental Health Perspectives
Chemicals in Your Popcorn?

JUNE 4, 2015

What do a pizza box, a polar bear and you have in common?

All carry a kind of industrial toxicant called poly- and perfluoroalkyl substances, or PFASs, that do two things: They make life convenient, and they also appear to increase the risk of cancer.

THE TFEFLON TOXIN
DuPont and the Chemistry of Deception

These Chemicals in Pizza Boxes and Carpeting Last Forever
More than 200 scientists around the world document the threats of perfluorinated compounds and call for more government control.

By Lindsey Kenkel, National Geographic

THE LAWYER WHO BECAME DuPont’s WORST NIGHTMARE
Rob Bilott was a corporate defense attorney for eight years. Then he took on an environmental suit that would send his entire career—and expose a brazen, decades-long history of chemical pollution.

By NATHANIEL RICH | JAN. 6, 2016
EPA Lifetime Health Advisory Level:
70 ng/L PFOA + PFOS

From Cindy Hu et al, ES&T Letters, 2016
Water Treatment Costs: North Carolina

Brunswick County: reverse osmosis filtration for 25,000 customers:
- $99M to build
- $2.9M to operate

Cape Fear Public Utility Authority activated carbon filtration plant:
- $46M to build
- $2.7M to operate each year

Wilmington Star News, May 9th and 10th, 2018
Colorado Springs

Peterson Air Force Base
• Firefighting foam contaminated water supply of 70,000 residents

PFOA+PFOS in drinking water up to 1,370 ppt
• 20x EPA Health Advisory Level

PFHxS in residents blood 10x higher than national average

El Paso County part of CDC study on PFAS health effects

Source: https://www.latimes.com/politics/story/2020-01-30/california-pfas-water-contamination-colorado
PFAS are Problematic & Difficult to Clean Up

Prevention is Preferable!
Fountain Valley Clean Water Coalition

Education, Empower the community, Change the Future to prevent contamination

- Founded in 2016 by Liz Rosenbaum
- Hosts informational meetings
- Pushes for remediation
- Advocates for the prevention of further pollution

FVCWA’s work has contributed both legislation and funding at the state and federal level
Fluorine in U.S. fast food packaging paper

(Percent positive; 400 products sampled)

Adopted from Schaider L. 2016 Fluorinated compounds in U.S. fast food packaging.

Should these products be considered compostable?
Researchers found fluorinated chemicals in one-third of the fast food packaging they tested, according to a report cnn.it/2jWUBRw

Researchers find "another reason" to avoid fast food: Chemicals in the packaging

Researchers find 'another reason' to avoid fast food: Chemicals in the packaging
Substances with links to health problems have been found in wrappers and containers, where they can leach into food.
washingtonpost.com

The Nasty Ingredient in Fast-Food Wrappers
mojo.ly/2jCPzA4

United States Senate
WASHINGTON, DC 20510

March 9, 2017

Mr. Daniel S. Schwartz
Chief Executive Officer
Restaurant Brands International Inc.
226 Wyecroft Road,
Oakville, Ontario L6K 3X7,
Canada

Dear Mr. Schwartz:

We write to inquire about Burger King’s use of potentially harmful fluorinated chemicals in food wrappers, bags, boxes, or other kinds of food packaging. Per and polyfluoroalkyl substances (PFASs) represent a class of chemicals sometimes used in fast food packaging to prevent grease and sauces from seeping through packaging. These chemical compounds have been
PFAS and Carpet

- PFAS-treated carpet linked to high PFAS blood levels
Moving away from PFAS in carpet

- Major manufacturers phasing out PFAS
  - 2014 – Interface
  - 2017 – Tarkett
  - 2019 – Engineered Floors
  - 2019 – Shaw
BRANDS ARE ELIMINATING HIGHLY FLUORINATED CHEMICALS

IKEA  H&M  Crate&Barrel  LEVI STRAUSS & CO.

PUMA  benetton  ESPRIT  adidas

MARKS & SPENCER  MANGO  BURBERRY  ZARA
2020 National Defense Authorization Act

• Require military to phase PFAS out of firefighting foams

• USGS nationwide water sampling

• Authorize Air Force to compensate for contaminated agricultural lands

• Prohibit fluorinated packaging in meals ready to eat
Moving away from PFAS
PFAS Central: sharing notable news, scientific papers & events

NEWS
PFAS Chemicals to be Banned in Firefighting Foam Used on Military Bases
U.S. Senator Kristen Gillibrand today announced that a provision she cosponsored to prohibit the Department of Defense from procuring firefighting foam that contains per- and polyfluoroalkyl substances (PFAS) passed the Senate Armed Services Committee as part of the annual National Defense Authorization Act (NDAA).
LEARN MORE

SCIENCE
Larval amphibians rapidly bioaccumulate poly- and perfluoroalkyl substances.
Toxic frogs lead to bioaccumulation in predator species.
LEARN MORE

POLICY
The Cost of Inaction: A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS
A recent Nordic Council study, The Cost of Inaction: A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS, estimates the very high cost of harm to human health and the environment from PFAS exposure in Europe.
LEARN MORE

Although useful, PFAS or highly fluorinated chemicals are associated with serious health harm and can remain in the environment forever.
LEARN MORE
PFAS-Free Products

PFAS-Free Products

We will be adding many more products to this list.

For more information about these products, click links and see footnotes.

Carpets and Rugs

- Engineered Floors (all products, policy)
- Interface (all products, policy)
- Shaw (all products, policy)
- Tarkett (all products, policy)

- Home Depot (carpets and rugs, policy as of 12/31/2019)
- Lowe’s (residential carpets and rugs, policy as of 1/1/2020)

Outdoor Gear

Rain Gear:

- Columbia (Outdry Ex Eco products, policy)
- Endura (select products, policy)
- Jack Wolfskin (all products, policy)
Six Classes Videos

1. PFAS (Highly Fluorinated)
2. Antimicrobials
3. Flame Retardants
4. Bisphenols + Phthalates
5. Some Solvents
6. Certain Metals

www.SixClasses.org
Healthier products, healthier people in four minutes!
For monthly e-newsletters
www.SixClasses.org
By limiting use of the Six Classes

We can have a healthier world.

For more information:
GreenSciencePolicy.org