Preventing PFAS Pollution

GRAC PFAS Week

Tom Bruton, PhD
Green Science Policy Institute
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GREEN SCIENCE POLICY INSTITUTE

Policy & Purchasing Change

Education

Research

Retreats

Policy & Purchasing Change
Principal 1: Prevention

It is better to prevent waste than to treat or clean up waste after it has been created.
Water Treatment Costs: North Carolina

Brunswick County: reverse osmosis filtration:
- $99M to build
- $2.9M to operate each year

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

Wilmington Star News, May 9th & 10th, 2018
US Department of Defense Sites

- 651 potential cleanup sites\(^1\)
- 30 year timeline for remediation\(^1\)
- Estimated $2 billion for PFOA & PFOS alone\(^2\)

1. DoD PFAS Task Force Progress Report, March 2020
2. Dep. Secretary Sullivan, SERDP ESTCP webinar, Sept. 2017
PFAS: the Cost of Inaction

Estimates for Europe:

- Remediation: 10-20 billion EUR over 20 years
- Health-related costs: 52-85 billion EUR / year

Nordic Council of Ministers, 2019
PFAS are Problematic & Difficult to Clean Up

Prevention is Preferable!
May 2015 The Madrid Statement on Highly Fluorinated Chemicals

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

Signed by 230 scientists from 40 countries
From Surfer Shorts to Surgical Drapes: The concept of essential use
Ian Cousins, Gretta Goldenman, et al., June 17, 2019

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>PFAS examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Uses that are not essential for health and safety, and the functioning of society. The use of substances is driven by market opportunity.</td>
<td>Dental floss, water repellent surfer shorts, ski waxes</td>
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<tr>
<td>2</td>
<td>Uses regarded as essential by society because they perform important functions, but where alternatives have now been developed that have equivalent functionality.</td>
<td>Most uses of AFFFs, certain water-resistant textiles</td>
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<tr>
<td>3</td>
<td>Uses considered essential for health or safety or for important purposes and for which alternatives are not yet established. There should be a constant search for alternatives to move these uses into Category 2</td>
<td>Certain medical devices, occupational protective clothing</td>
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</tbody>
</table>
Common Uses

- Carpets
- Carpet Cleaning Products
- Food Packaging
- Furnishings
- Cosmetics
- Outdoor Gear
- Clothing
- Adhesives and Sealants
- Protective Coatings
- Non-Stick Cookware
- Car Seats
- Firefighting Foam
Firefighting foam (AFFF)

- Discharge to environment
Firefighting foam (AFFF)

- Discharge to environment
- Large volumes

- 75-100 L of AFFF used weekly to monthly for 30+ years
- Up to 7 mg/L PFCAs in groundwater 7-10 years after last AFFF use

Firefighting foam (AFFF)

- Discharge to environment
- Large volumes
- Many sites

76% of sites likely related to firefighting foam use

Source data from:
SSEHRI PFAS Contamination Site Tracker, 7.02.2019
Fluorine-Free Foams

• Contain no PFAS
• Used
  • at airports abroad (Norway, Sweden, UK, Australia, UAE…)
  • by many companies in oil and gas industry
  • increasingly by local fire departments

But...

• Not used by U.S. Military or airports

https://ipen.org/documents/fluorine-free-firefighting-foams
Washington State’s Ban on PFAS in Firefighting Foam
(HB 2793/SB 6413)

• Signed into law on March 27, 2018
• Bans sale of firefighting foam containing any PFAS beginning July 1, 2020

• The states of CT, GA, KY, MA, MN, NY have similar bills this year

More info https://toxicfreefuture.org/key-issues/legislative-priorities-2018/
Federal Policy Changes

• 2018: Congress tells Federal Aviation Administration to allow fluorine-free foams by 2021

• 2019: Congress sets timeline for military AFFF phaseout
Food Packaging

Fluorine in U.S. fast food packaging paper (percent positive; 400 products sampled)

Food packaging: Human exposure

- PFAS can migrate from food contact material to food\(^1\)-\(^2\)
- Diet is important component of exposure\(^3\)

![Pie chart showing sources of PFOA exposure](chart)

\[ \text{[PFOA]}_{\text{DW}} = 1.3 \text{ ng/L} \]

- Drinking water
- Consumer articles
- Precursors (FTOHS)
- House dust
- Diet

Life Cycle Impacts

PFAS manufacturing → Paper mill → PFAS into food → Landfill

Compost → Recycle
Microwave Popcorn Bags

• High PFAS concentrations ¹⁻⁴

• Coop Denmark - halted popcorn sales in 2015 due to PFAS

• RESULT: PFAS-free popcorn bags

Moving away from PFAS in food packaging

Whole Foods Ditches Packaging Containing PFAS Chemicals
12/11/2018

Taco Bell to phase out toxic chemicals in food packaging
Fast-food chain will ban PFAS, phthalates, and BPA by 2025; public health advocates urge the

Sweetgreen to phase out toxic PFAS in food packaging

Chemours asks US FDA to pull food contact approvals for PFASs
FDA reviewing all authorised uses of chemicals in food applications
16 August 2019 / Food & drink, Food contact, PFAS, United States
Food Packaging: Policy & Regulation

Bans:
- 2018 - Washington state
- 2019 – Maine
- 2019 – Denmark
- 2020 – San Francisco
- 2020 – CA DTSC possible priority product
- 2020 – US Congress: no PFAS in military meals-ready-to-eat (MREs)
Carpet:
A significant exposure in indoor environments

- For infants, toddlers & children, hand-to-mouth transfer from carpet contributes 40-60% of total PFOA and PFOS uptake\(^1\).

- After-market treatment linked to high PFAS levels in blood\(^1\)

Carpets: Release of PFAS to the environment

- Contamination of water supplies downstream of manufacturing sites¹
- Long-term emissions from landfills (municipal solid waste and construction & demolition)²
- Runoff from artificial turf³

2. Solo-Gabriele et al. 2020
Carpet industry phasing out PFAS

- Demand from large purchasers
- Potential CA regulation
- Potential liability

- Major manufacturers decide to stop using PFAS
Moving away from PFAS
PFAS Phase-out Gaining Traction in Europe

• Proposal from Sweden, Netherlands, Germany, Denmark:

• Take action “on the EU-level to phase out PFASs at the latest by 2025, to be in effect by 2030.”

• “A broad restriction under REACH covering all PFAS would be the preferred option.”
Thank you!

To learn more:
Sign up for our newsletter
tom@GreenSciencePolicy.org

PFASCentral.org