PFAS Contaminated Drinking Water in the US: A Look at the Extent of Contamination, the Failure of the EPA, and the Success of Community Action

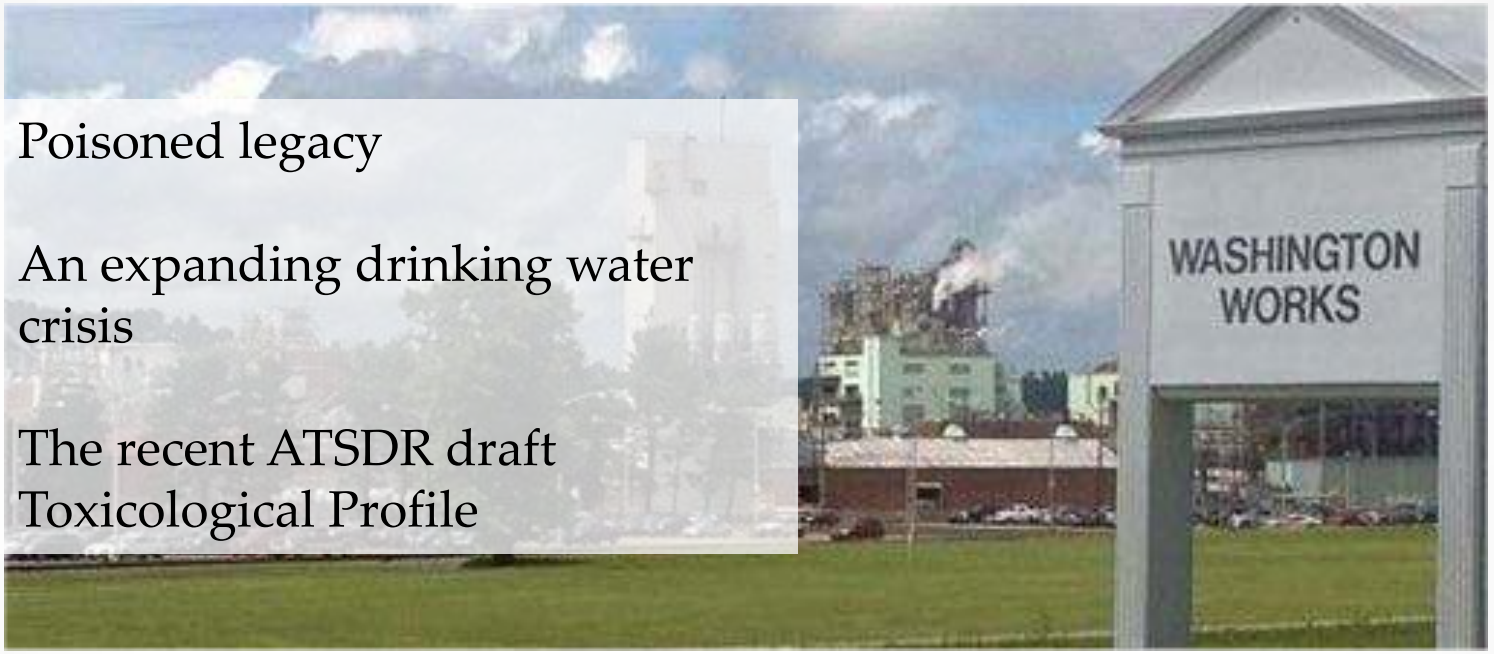
Alaska Collaborative on Health and the Environment

David Andrews

August 1st, 2018

ewg
Know your Environment.
Protect your Health.

Overview

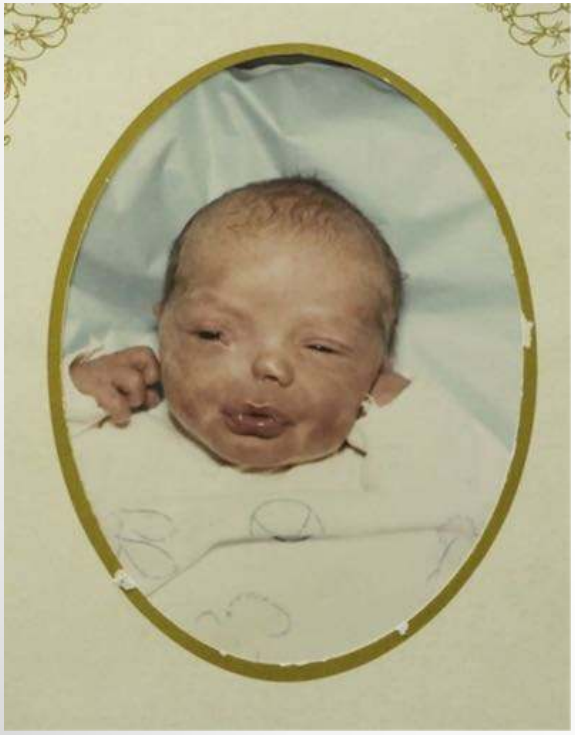


- Poisoned legacy
- An expanding drinking water crisis
- The recent ATSDR draft Toxicological Profile


The New York Times Magazine
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 upend his entire career — and expose a brazen, decades-long history of chemical pollution.
By NATHANIEL RICH JAN. 6, 2016

DuPont 1981

"PERSONAL & CONFIDENTIAL: C-8 BLOOD SAMPLING RESULTS"



PERSONAL & CONFIDENTIAL

C-8 BLOOD SAMPLING RESULTS

Births and Pregnancies

PPM C-8 in Blood	Status
0.43	Normal child - born June 1980. Transferred out of Fluorocarbons 4/79.
0.28	Normal child - born April 1981.
0.078	Normal child - born April 1981. Umbilical cord blood 0.055 ppm.
1.5	Five months pregnant. On pregnancy leave
0.013	Five months pregnant. Normal child - born August
2.5*	Child - 2 plus years. Unconfirmed eye and tear duct defect.
0.048	Child - 4 months. One nostril and eye defect.
0.007	Normal child - born July 1981

*Current blood level - in fluorocarbons area only one month before pregnancy.

Chemical Industry Archives

a project of Environmental Working Group

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Type in a word or phrase in the box above to search 37,000 pages of internal company documents, or start from here for more search options, including searching by decade, or by the subcommittee of the Chemical Manufacturers Association that produced the document.

About the Archives

Chemical companies say that their products are rigorously tested for health and safety, their facilities are safe for workers and nearby communities, and their industry is tightly regulated. Can we believe their claims?

Not based on their own internal documents, thousands of which we are publishing on this site for the first time.

Take Action!

Please join Coming Clean's effort to get the chemical industry to come clean. Tell Congress what you think.
(take action)

DuPont Hid Teflon Pollution For Decades

Company Kept 1984 Tap Water Tests Secret After Finding C8 Contamination in Ohio Town

Secret tests conducted in 1984 by the DuPont chemical company found a Teflon-related contaminant (C8) in the tap water of the Little Hocking Water Association in Ohio, just across the river from the company's Teflon plant in Parkersburg, West Virginia. But the company never told the community, its water utility or state regulators about the tap water testing program, which continued through at least 1989, or about the positive findings.

(Read more) 12/5/2002.

BHOPAL: 18th Anniversary of Bhopal disaster

December 3, 2002 marks the 18th anniversary of the worst disaster in the chemical industry's history. A toxic release in the middle of the night of December 3, 1984 at a Union Carbide pesticide factory in Bhopal, India sent a cloud of Methyl Isocyanate into the air over the city. An estimated 6,000 people died in the immediate aftermath, most suffocating from the cloud's toxic chemicals. Since 1984, over 20,000 people have died as a result of the disaster, according to survivor groups in Bhopal. Hundreds of thousands of Indians have claimed health effects from exposure to the chemical cloud.

Documents recently uncovered in litigation [Bano et al v. Union Carbide Corp & Warren Anderson, 99cv11329 SDNY, filed 11/15/99)] and obtained by EWG demonstrate that Union Carbide cut corners and employed untested technologies when building the Bhopal plant.

Largest fine under TSCA

- In April of 2003, the Environmental Workin
  submitted a formal petition to the EP
  enforcement action against th
  violations of section 8(e)
  failure to inform the
  drinking wate
  ingredie
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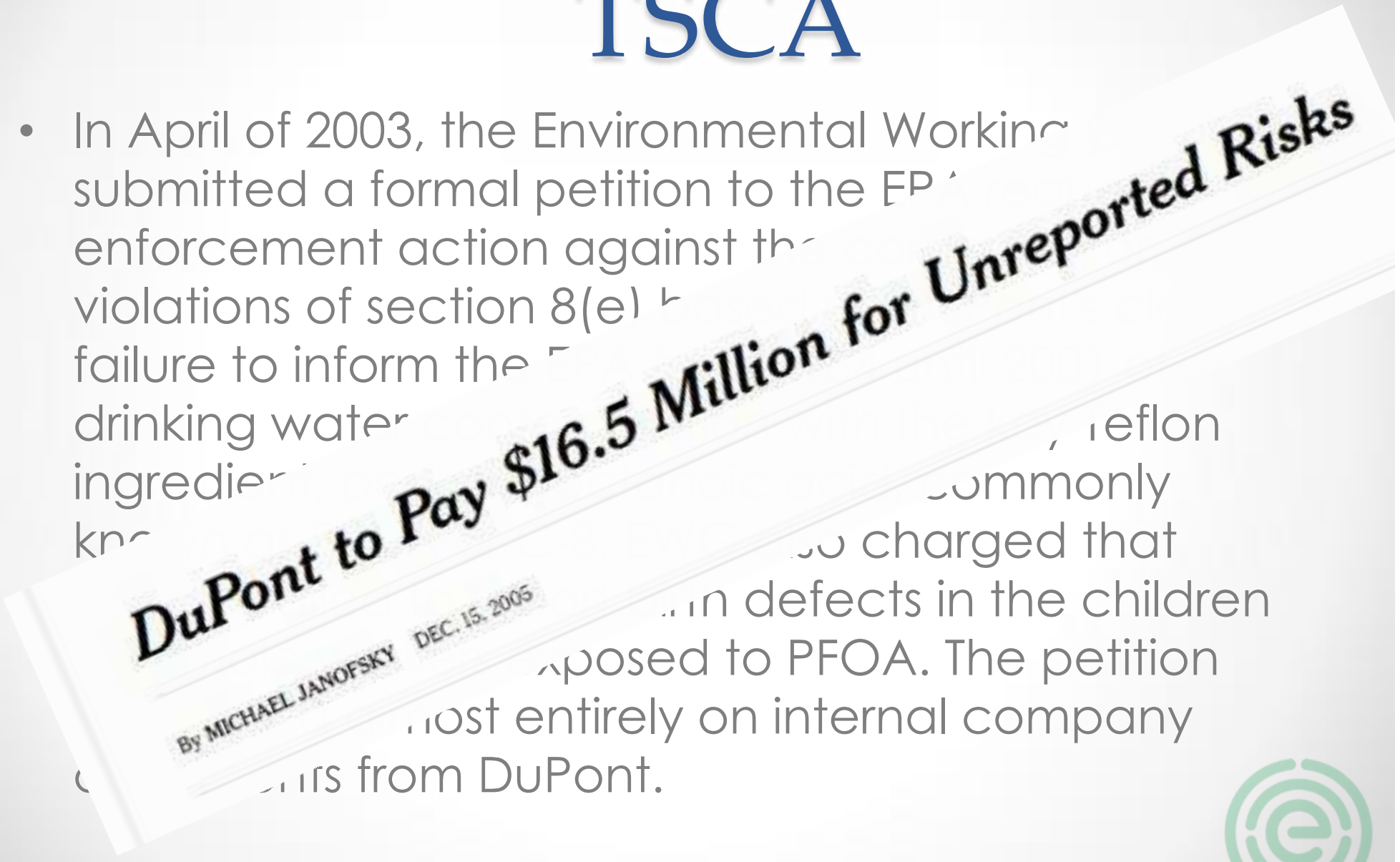
  ...n defects in the children
  ...xposed to PFOA. The petition
  ...ost entirely on internal company
  ...rs from DuPont.


DuPont to Pay $16.5 Million for Unreported Risks

By MICHAEL JANOFSKY DEC. 15, 2005

...eflon
...ommonly
...o charged that

Former DuPont Top Expert: Company Knew, Covered Up Pollution of Americans' Blood for 18 Years

FOR IMMEDIATE RELEASE: WEDNESDAY, NOVEMBER 16, 2005

Study Results Show Company Found Safer Ways to Coat Food Packaging But Shelved Them to Save Money

WASHINGTON — Glenn Evers was a DuPont employee of 22 years, one of the company's top technical experts and the chairman of an invitation-only committee of its 40 best scientists and technical experts. He holds six patents, and his work has, to date, made the company an estimated $250 million in after-tax profits. Evers was, by his description, a dedicated "company man."

Trademark for Zonyl filed in 1960

1960s, DuPont negotiated a weak standard with the FDA & avoided a two-year toxicity test

Evers explains how that standard, which remains in effect today, **was based on the premise that the chemical would leave the body quickly.**

1987, DuPont's found that the company's marquee paper coating chemical, Zonyl RP, could contaminate **food at over three times the federal safety standard**

Voluntary self-regulation

U.S.

3M Says It Will Stop Making Scotchgard

By DAVID BARBOZA MAY 17, 2000

The 3M Company, the giant consumer products company, said today that it would stop making many of its well-known Scotchgard products after tests showed that the chemical compounds used to make the products linger in the environment and in humans for years.

Minnesota Mining and Manufacturing said that Scotchgard, a spray that protects clothing, fabrics, upholstery and carpets from stains and other damage, was safe and that the chemical compounds pose no health risk to humans. But the company also said the compounds do not easily decompose and therefore are not environmentally friendly.

"These products have been safely used for 40 years and they continue to be safe," said William E. Coyne, the head of research and development at 3M, which is based in St. Paul. "But the best decision we can make now is to stop adding to the environment. This is a corporate responsibility issue. This product does not decompose, it's inert -- it's persistent; it's like a rock."

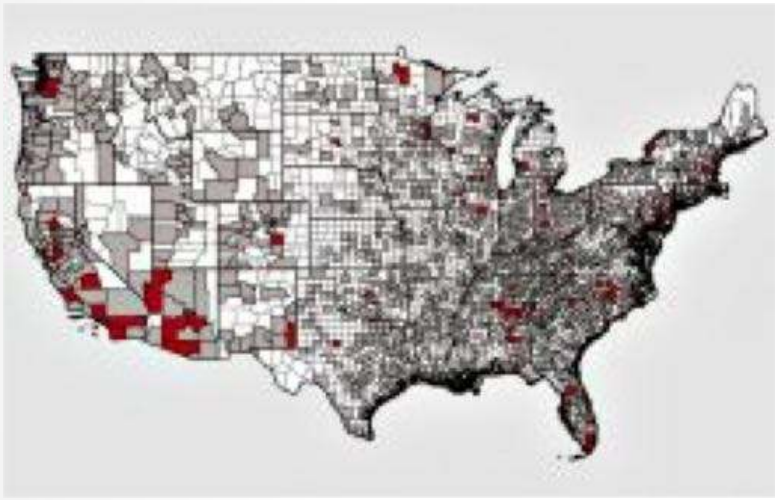
Teflon - trademark

1945	Fluorine poymers	1981	Metal, eletric cotaing
1951	Paints and varnishes	1982	Lubricant for household and commercial use
1954	Thread and fiber for fabrics	1987	Extrusion coatings
1958	Insulation	1989	Inks, plastics
1963	Coating cookware pans (cupcake, muffin, pie) oven coatings	1993	Dry & Wet lubricant
1966	Paint	1995	Car wax, cleaning preperations from home and industrial use
1966	Cooking utensils, electric cookeware	1997	Windshield wiper blades
1967	Self lubricating finish, for bearings, lawn tools, hand saws	1999	Car shampoo wax and polish
1969	Cooking Utensils	2004	Car wash and wax
1969	Snow shovels, saws, shears, axes	2008	Lubricants
1969	Electic irons	2011	Anti-stain carpets and rugs
1973	Minimize dust	2013	All kinds of clothing, hats, shoes and shorts included
1974	Paint Additive	2014	Renewable sourced textile finishes
1976	Powder coating	2014	Luggage, bags, travel packs, umbrellas
1978	Textile finish	2014	Antifreeze, additive for engine oil, brake fluids, power steering fluids

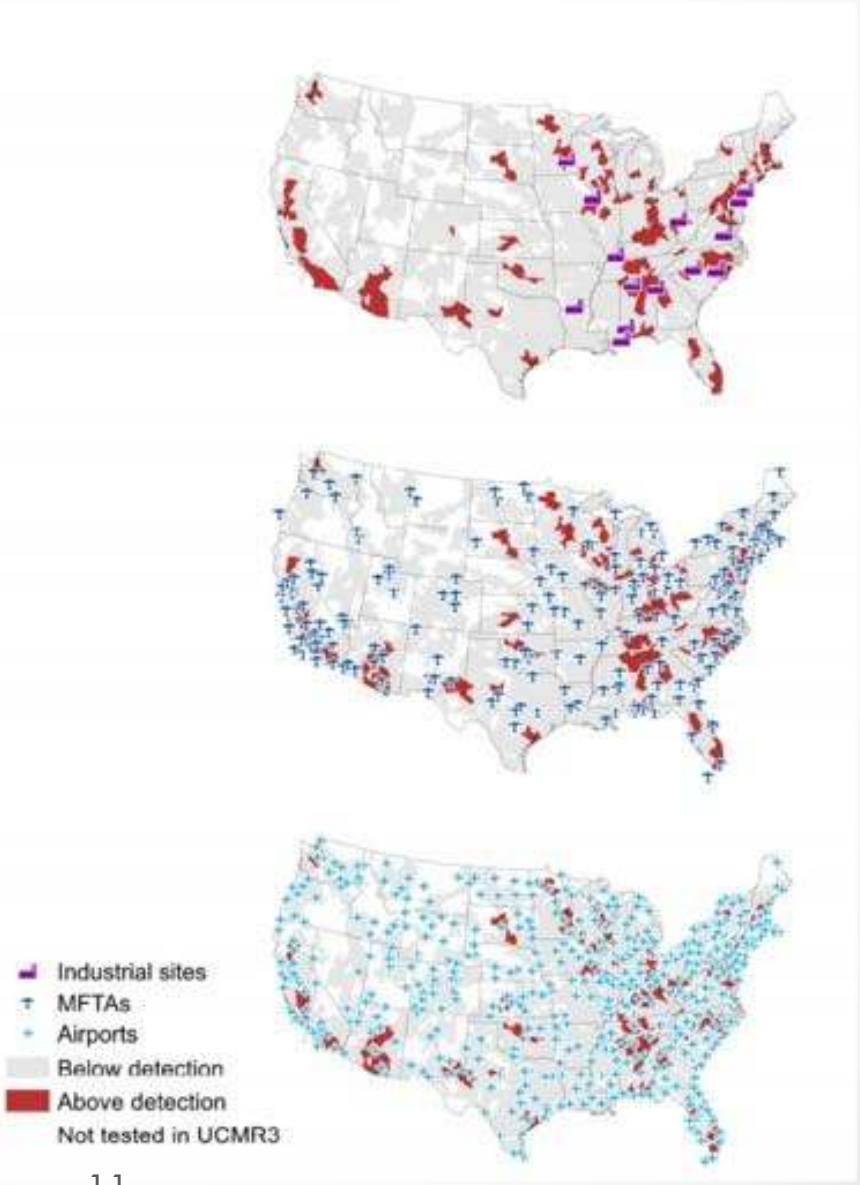
Safe Drinking Water Act Amendments of 1996

- *"The 1996 amendments to SDWA require that EPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards"*
- Initiated the Unregulated Contaminant Monitoring Rule (UCMR) – test for no more than 30 contaminants ever 5 years. Data used to support determination of whether to regulate a contaminant.
- No new MCLs have been set.

EPA UCMR testing for PFAS chemicals 2013-2015



- 6 PFAS
- 194 water systems
- 16 million people served



http://www.ewg.org/interactive-maps/2017_pfa/

SSEHRI

Northeastern University
Social Science Environmental Health Research Institute

Updated: July 30, 2018

Frequency of Detection Comparison by # of Samples

Compound	Official NCOD Database samples with detection (UCMR 3 MRLs)	EEA Subset of Samples with detection using UCMR 3 MRLs	EEA Subset of Samples with detection using 5 ng/L MRL	EEA Subset of Samples with detection using 2.5 ng/L MRL
N	~36,000	~10,500	~10,500	~10,500
PFOS	0.8%	1.3%	11.5%	20.5%
PFOA	1.0%	1.8%	12.5%	23.5%
PFNA	0.1%	0.1%	0.6%	1.9%
PFHxS	0.6%	1.0%	6.0%	12.3%
PFHpA	0.6%	1.5%	3.3%	8.8%
PFBS	<0.1%	0.2%	5.3%	11.9%

DEQ: Harmful PFAS might contaminate more than 11,000 sites statewide

Keith Matheny, Detroit Free Press Published 6:00 a.m. ET July 30, 2018 | Updated 9:18 a.m. ET July 30, 2018

Findings of the C8 Science Panel

Date	Probable link	Not a probable link
Dec. 5, 2011	Pregnancy-induced hypertension & preeclampsia	Birth defects Premature birth or low birth weight Miscarriage and stillbirths
April 16, 2012	Testicular cancer Kidney cancer	Adult-onset diabetes Other types of cancer
July 30, 2012	Thyroid disease Ulcerative colitis	Stroke Asthma or chronic obstructive airways Neurodevelopmental disorders in children Influenza Autoimmune diseases
Oct. 29, 2012	High cholesterol	Parkinson's disease Osteoarthritis Liver disease Chronic kidney disease High blood pressure Coronary heart disease

PFAS health hazards

Article

Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks

Philippe Grandjean[1] and Richard Clapp[2]

NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy
1–17

DOI: 10.1177/1048291115590506
new.sagepub.com
SAGE

While the toxicology database is still far from complete, carcinogenicity and immunotoxicity now appear to be relevant risks at prevalent exposure levels.

Published in final edited form as:
J Steroid Biochem Mol Biol. 2011 October ; 127(1-2): 16–26. doi:10.1016/j.jsbmb.2011.03.011.

Endocrine disrupting properties of perfluorooctanoic acid,*,**

Sally S. White[a], Suzanne E. Fenton[a,*], and Erin P. Hines[b]
[a]National Toxicology Program, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, NC, USA
[b]National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, Research Triangle Park, NC, USA

- Immunotoxicity
- Endocrine disruption – mammary gland development
- Weight gain
- Birth weight
- Time to wanted pregnancy

Is there a safe level of exposure?

- 400 ppt -- EPA Provisional (temporary) Health Advisory (2009) PFOA
- 100 ppt -- EPA Draft of Chronic (long-term) Health Advisory (2014)
- 70 ppt (PFOA and PFOS combined) – EPA health advisory values
- 1 ppt (Grandjean / Clapp) based on immunotoxicity or mammary gland development
- 0

ATSDR 2018

Hi all,

Got a call from a DOD contact expressing some concern about pending HHS rollout on perfluoorooctane sulfonate (PFOS) and perflurooctanoic acid (PFOA) contaminates between HHS, DOD, EPA, and OMB. Sounds like there might need to be some more robust rollout and perhaps policy and budget discussions on this front. Glad to help coordinate further as appropriate.

Background based on feedback from DOD: HHS's Agency for Toxic Substances and Disease Registry (ATSDR) has a draft Toxicological Profile for 4 PFAS (PFOS,PFOA, PFHX, and PFNA) and they are getting ready to publish the draft in the Fed Register for public comment. The Tox. Profile has some very, very low "Minimal Risk Level" (MRL) numbers. There are numbers for adults and children for each compound, ranging from as low as 12 ppt to 516 ppt. But the public and the media are going to go with the lowest number -- 12 ppt. Although the Director of ATSDR, Dr. Breysse, was willing to tell us the numbers, he wouldn't share the detailed draft Tox. Profile with us and could not/would not tell us when they are going to publish in the Federal Register.

The public, media, and Congressional reaction to these new numbers is going to be huge. The impact to EPA and DoD is going be extremely painful. We (DoD and EPA) cannot seem to get ATSDR to realize the potential public relations nightmare this is going to be.

EPA's COS is likely reaching out to HHS COS.

"Furthermore, the Reference Dose (RfD) for mammary gland effects in mice is below the average exposure level in the general population, and other toxicological effects occurred at similarly low doses in animal studies. Therefore, any additional exposure from drinking water may potentially pose some risk of health effects. For this reason, it cannot be concluded that lifetime exposure to a certain drinking water concentration, no matter how low, is protective of sensitive subpopulations with a margin of exposure."

New Jersey draft MCL for PFOA (14 ppt), 2016

Resources

- EWG PFAS contamination map
  - http://www.ewg.org/interactive-maps/2017_pfa/
- ATSDR June 2018 draft toxicological profile for Perfluoroalkyls
  - https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf
- Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants
  - https://pubs.acs.org/doi/10.1021/acs.estlett.6b00260
- New Jersey draft MCL for PFOA
  - https://www.nj.gov/dep/watersupply/pdf/pfoa-hb--mcl-public-review-draftwithappendices.pdf
- Perfluorinated Alkyl Substances, *Emerging Insights Into Health Risks*, Philippe Grandjean & Richard Clapp.
  - http://journals.sagepub.com/doi/abs/10.1177/1048291115590506
- Eurofins Eaton Analytical - PFAS monitoring
  - https://nysawwa.org/docs/presentations/2017/FINAL-PFAS%20Monitoring%20in%20Post%20health%20Advisory%20World-What%20Should%20We%20Be%20Doing-2017.pdf