
The Urgent Need for Safe Drinking Water Standards in the Absence of Federal Action

Presentation for CHE-Alaska

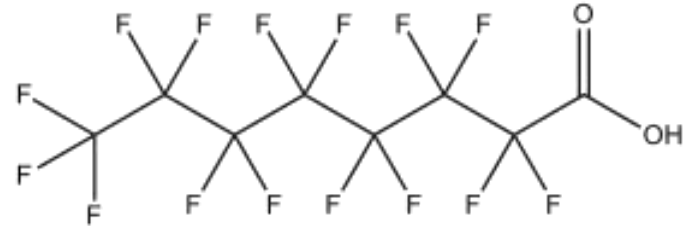
April 24, 2019



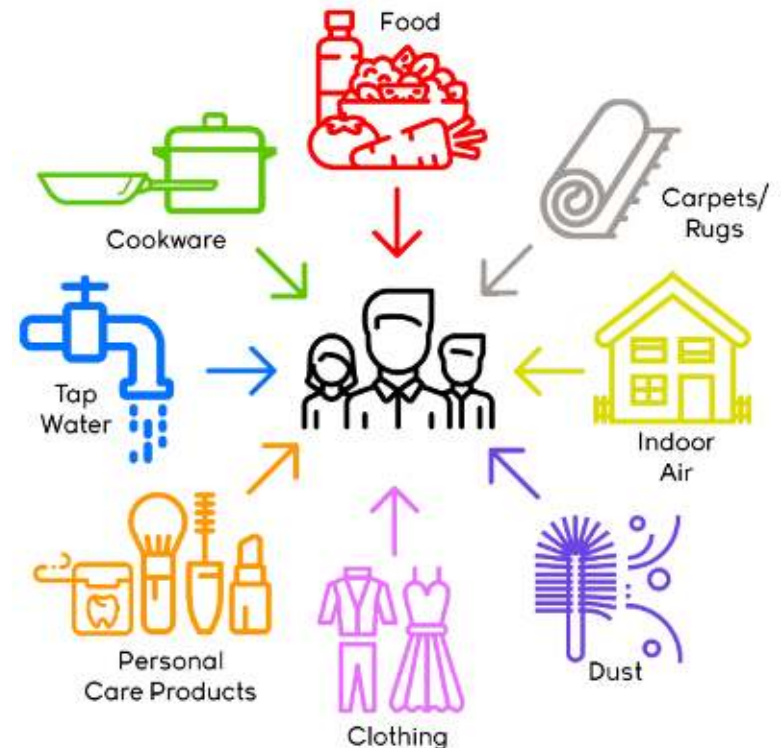
Anna Reade, Ph.D.

Per- and polyfluoroalkyl substances

- Large class of fluorinated chemicals
- Water- and oil-repellant properties
- Well-known examples include PFOA and PFOS
- Found throughout our environment and in nearly all Americans¹



Source: CA Biomonitoring



1. https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

PFAS as a Class

1. Extremely persistent
 2. Highly mobile
 3. Linked to wide variety of adverse health effects
- } PMT

Perspectives | Brief Communication

A Section 508–conformant HTML version of this article is available at <http://dx.doi.org/10.1289/ehp.1509934>.

The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)

<http://dx.doi.org/10.1289/ehp.1509934>

As scientists and other professionals from a variety of disciplines, we are concerned about the production and release into the environment of an increasing number of poly- and perfluoroalkyl substances (PFASs) for the following reasons:

1. PFASs are man-made and found everywhere. PFASs are highly

d.

Chemosphere 114 (2014) 327–332

Contents lists available at [ScienceDirect](http://www.elsevier.com/locate/chemosphere)

Chemosphere

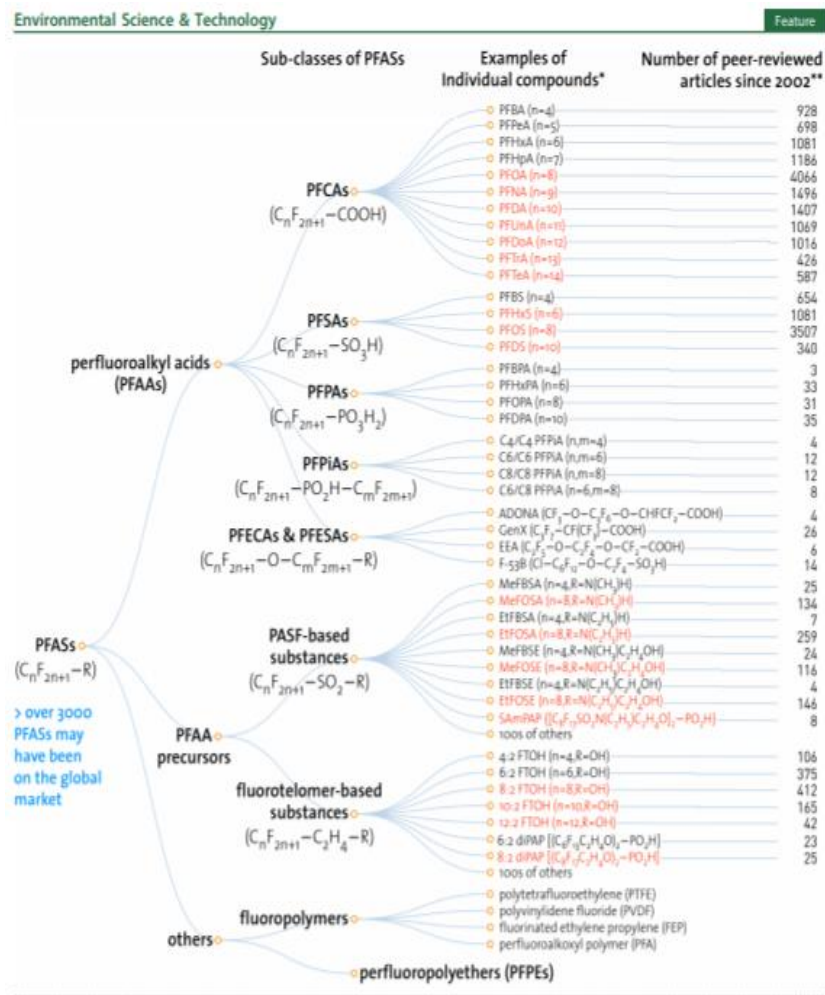
Journal homepage: www.elsevier.com/locate/chemosphere

Helsingør Statement on poly- and perfluorinated alkyl substances (PFASs)

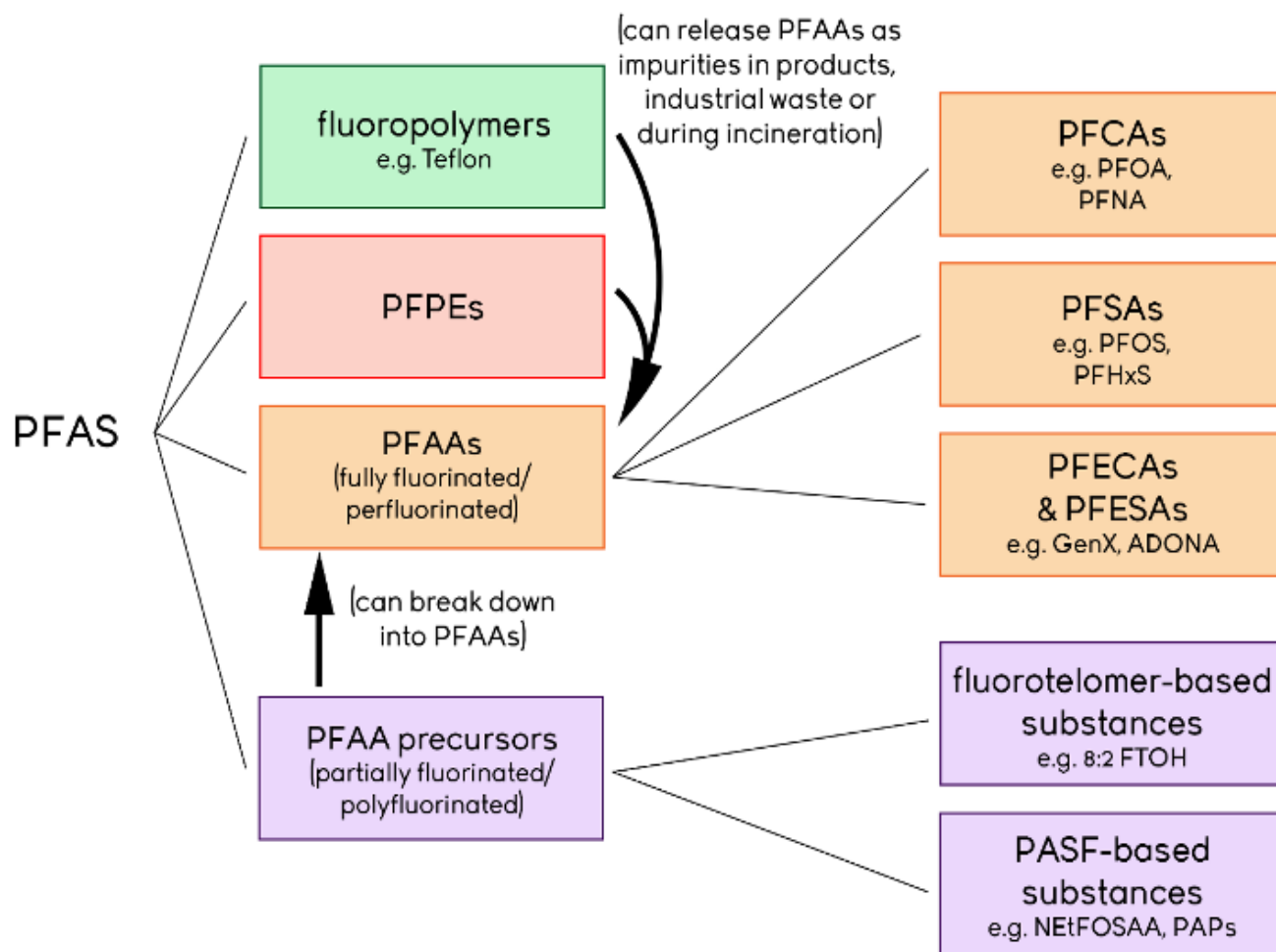
Martin Scheringer^{a,1}, Xenia Trier^b, Ian T. Cousins^c, Pim de Vroeg^d, Tony Fletcher^e, Zhangyun Wang^f, Thomas F. Webster^g

^aMax Planck Institute for Chemistry, 55128 Mainz, Germany; ^bDepartment of Environmental Science, Aarhus University, 8000 Aarhus, Denmark; ^cDepartment of Applied Environmental Science (AARL), Stockholm University, 17021 Stockholm, Sweden; ^dLeiden University Center for Environmental and Earth System Studies, University of Groningen, 3000 CE Groningen, The Netherlands; ^eLondon School of Hygiene & Tropical Medicine, London WC1H 7SL, United Kingdom; ^fSchool of Public Health, Boston University, Boston, MA 02118, USA

PFAS as a Class



PFAS as a Class



Health Effects Linked to PFAA Exposure

Summary of ATSDR's Findings on Health Effects from Perfluoroalkyl Acid Exposure

	Immune	Developmental & Reproductive	Lipids	Liver	Endocrine	Body Weight	Blood
PFOA	x	x	x	x	x	x	x
PFOS	x	x	x	x	x	x	x
PFHxS	x			x			x
PFNA	x		x			x	
PFDeA	x	x	x	x	x	x	
PFDoA	x	x				x	
PFUA	x	x				x	x
PFHxA		x					x
PFBA		x		x	x		x
PFBS		x		x	x		x
GenX	x	x		x			

X ATSDR 2018 Draft Toxicological Profile for Perfluoroalkyls
 X EPA Toxicity Assessments of PFBS and GenX chemicals (HFPO Dimer Acid)



Short-chain PFAS Health Concerns

- Introduced as ‘safer’ alternatives due to their supposed shorter half-lives in humans
 - Found to accumulate in organs, some at concentrations that are higher than long-chain PFAS¹
- Highly persistent, more mobile in the environment and harder to treat in drinking water than long-chain PFAS²
 - Continual exposure - elimination rate may be an inadequate measure of health threat to humans^{3,4}

1. Pérez F, et al., 2013. Accumulation of perfluoroalkyl substances in human tissues. *Environ Int*, 59, 354-362.

2. Wang Z, et al., 2015. Hazard assessment of fluorinated alternatives to long-chain perfluoroalkyl acids (PFAAs) and their precursors: Status quo, ongoing challenges and possible solutions. *Environ Int* 75:172-179

3. Gomis MI, et al., 2018. Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives. *Environ Int* 113:1–9.

4. Brendel S., et. al. (2018) Short-chain perfluoroalkyl acids: environmental concerns and a regulatory strategy under Reach. *Environ Sci Eur*, 30(1): 9



EPA's Health Advisory is Not Health Protective

- Michigan PFAS Science Advisory Panel estimated blood serum levels from exposure to 70 ppt PFOA in drinking water¹
 - Found to be in the range at which health effects are seen in human studies
- Several states have proposed or adopted drinking water standards or guidelines stricter than 70 ppt after conducting their own analysis
 - NJ, NY, VT, MI, MN, CA...

1. Michigan PFAS Science Advisory Panel, 2018. Scientific Evidence and Recommendations for Managing PFAS Contamination in Michigan.



Lessons learned from Michigan



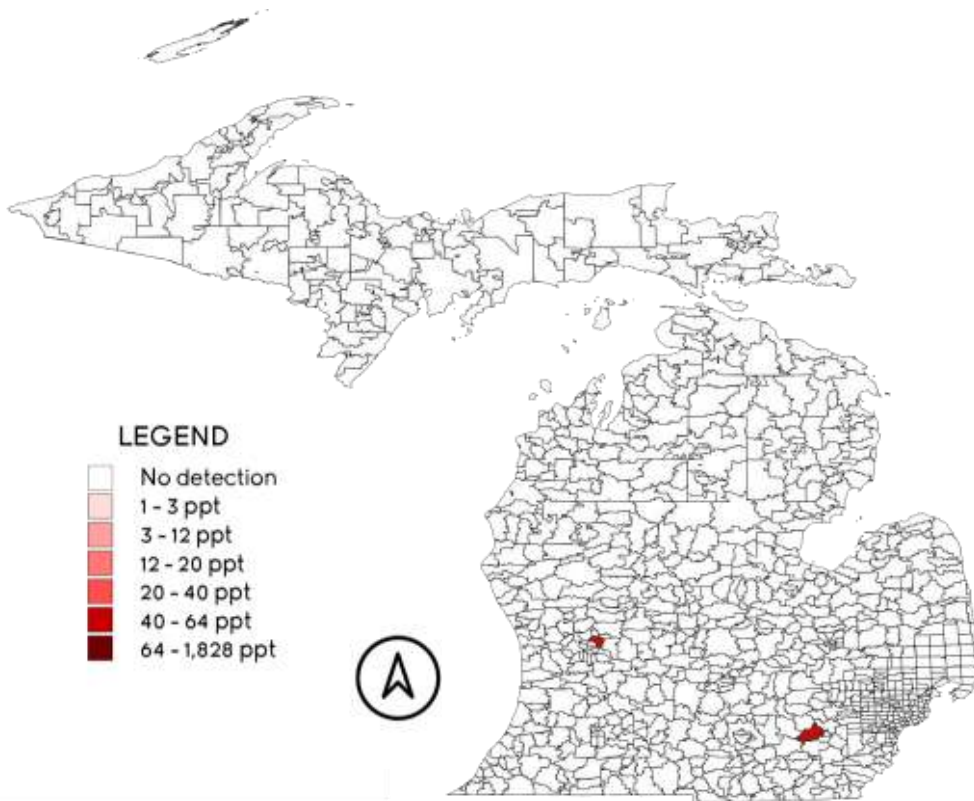


Michigan Moving Forward on PFAS

1. Michigan PFAS Action Response Team (MPART) created - 2017
2. Michigan completes first statewide study of PFAS in water supply - Feb. 2019
3. Screening levels announced - Feb. 2019
 - 9 ppt PFOA, 8 ppt PFOS, 9 ppt PFNA, 84 ppt PFHxS, and 1,000 ppt PFBS
4. Will establish maximum contaminant levels (MCLs) by Oct. 2019

the state “*can no longer wait for the Trump administration to act*” on the issue – Governor Whitmer

National UCMR3 vs. Michigan Testing

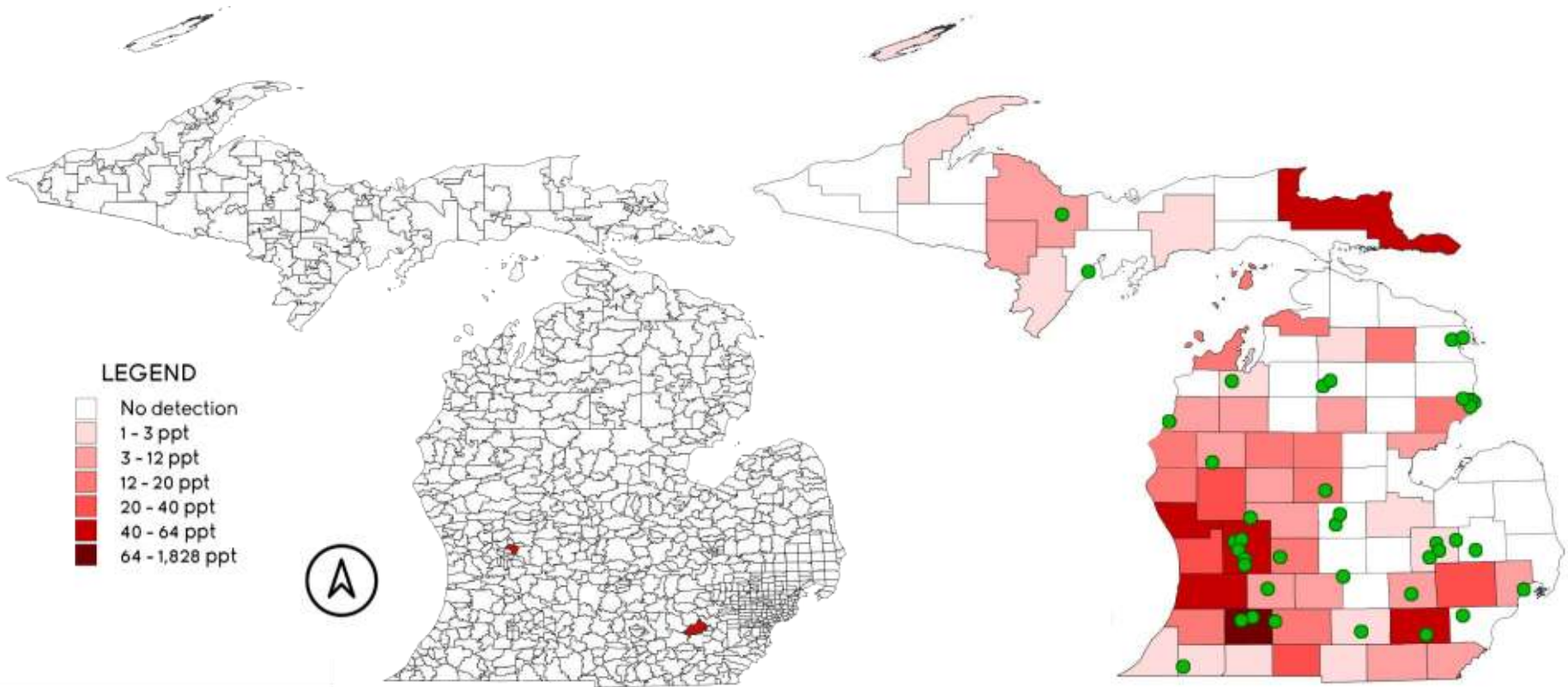


<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3>

<https://www.michigan.gov/pfasresponse/0,9038,7-365-86511---,00.html>

https://www.michigan.gov/pfasresponse/0,9038,7-365-86510_87918-464299--,00.html

National UCMR3 vs. Michigan Testing



3 detects in 2 zip codes

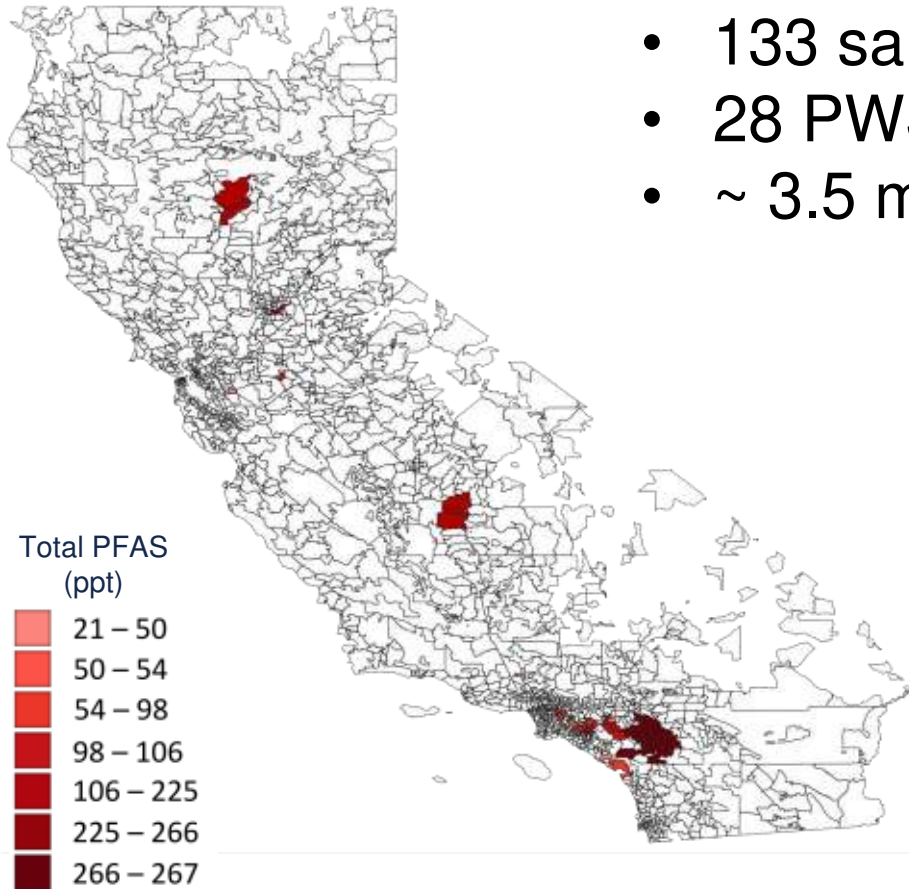
40+ contamination sites
100+ public water systems

<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3>

<https://www.michigan.gov/pfasresponse/0,9038,7-365-86511---,00.html>

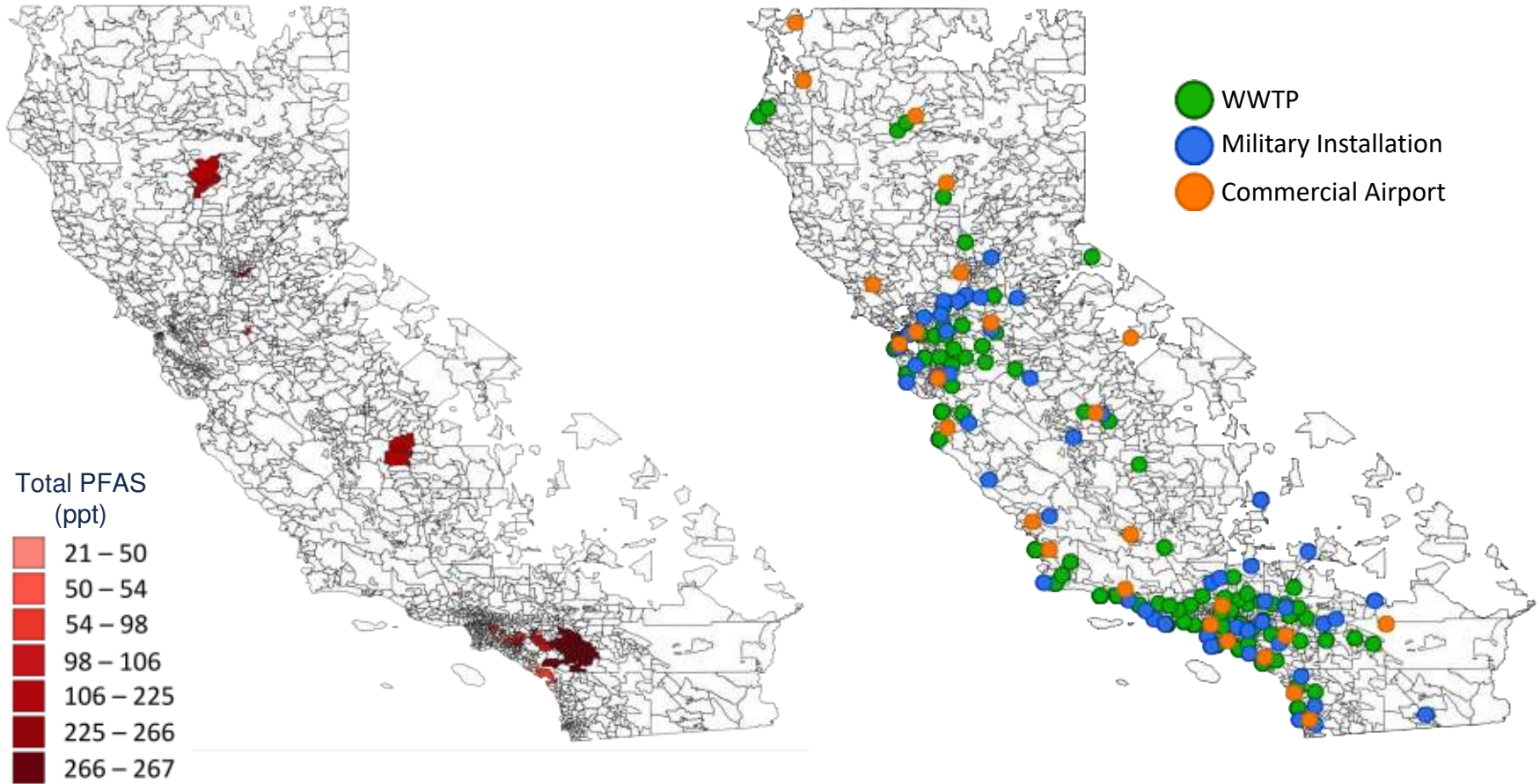
https://www.michigan.gov/pfasresponse/0,9038,7-365-86510_87918-464299--,00.html

CA PFAS Contamination - UCMR3



- 133 samples above reporting limits
- 28 PWS, 98 zip codes affected
- ~ 3.5 million people

Potential PFAS Contamination in CA



<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3>

Hu XC, et al., 2016. Detection of PFASs in US drinking water linked to industrial sites, military fire training areas, and waste water treatment plants. *Env Sci and Tech Letters* 3(10):344–350



NRDC's PFAS Report for Michigan

Includes:

1. Most critical health effects associated with PFAS exposure
2. The risk of additive/synergistic effects and the need for a class-based approach to regulating PFAS
3. An analysis of existing or proposed standards and advisories
4. Review of detection and treatment technologies available
5. Recommendations on monitoring and drinking water standards

Blog: <https://www.nrdc.org/experts/anna-reade/michigan-should-set-precedent-setting-pfas-water-standards>

Report: <https://www.nrdc.org/resources/michigan-pfas-2019-scientific-and-policy-assessment-addressing-pfas-chemicals-drinking>



NRDC's Recommendations

1. Comprehensive monitoring
2. Maximum contaminant level goal (MCLG) of zero for total PFAS
3. Immediately set a combined maximum contaminant level (MCL) of 2 ppt for PFOA, PFOS, PFNA, PFHxS and 5 ppt for GenX
4. Within the near future, set a Treatment Technique standard for total PFAS of reverse osmosis or equivalent



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- Judith S. Schreiber, Ph.D.,
Schreiber Scientific, LLC

Reviewers:

- Katie Pelch, Ph.D., Senior Scientist
- The Endocrine Disruption
Exchange
- Sonya Lunder, Ph.D., Senior Toxics
Advisor for the Gender, Equity &
Environment Program - Sierra Club
- Christina Swanson, Ph.D., Director
of the Science Center - Natural
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