



Introduction to PFAS in Agriculture



Faith Cullens-Nobis – MSU
Extension

cullensf@msu.edu



Katie King – MSU Center
for PFAS Research

kingka22@msu.edu



Marcus Wasilevich –
MDARD

wasilevichm@michigan.gov



Dan Jones- Dept. of
Biochemistry and Molecular
Biology

jonesar4@msu.edu



PFAS background: persistent environmental chemicals

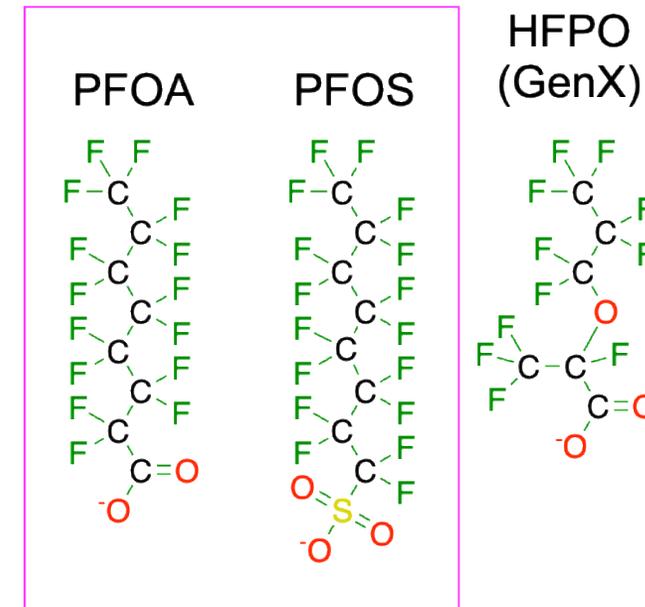
- Chemicals that are not destroyed are released into natural waters, soils, and the air and can migrate around the world within a few years unless...
- Natural or human-driven processes break them down into other chemicals, or, if they do not decompose...
- They are taken up into living things (including us).
- Some chemicals (called PBT chemicals) of importance are:
 - Persistent in living things
 - Bioaccumulative in tissues relative to the surrounding environment
 - Toxic



PFAS is a name given to a class of PBT chemicals

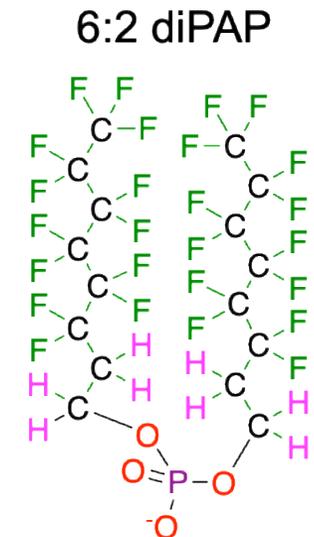
- Per- and poly-Fluoro Aliphatic Substances
- Chains of carbon (and oxygen) atoms of different lengths and end groups
- Heat-stable compounds that **repel both oils and water and resist flames**
- Excellent lubricants and coatings
- More than 10000 different chemical substances, with development of new PFAS products continuing

Per-fluorinated



Most data
Regarding
toxicity

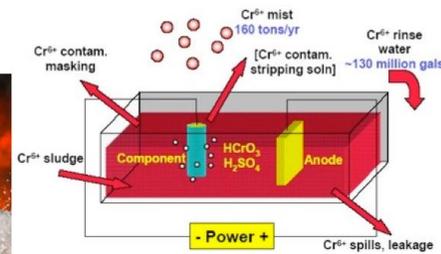
Poly-fluorinated





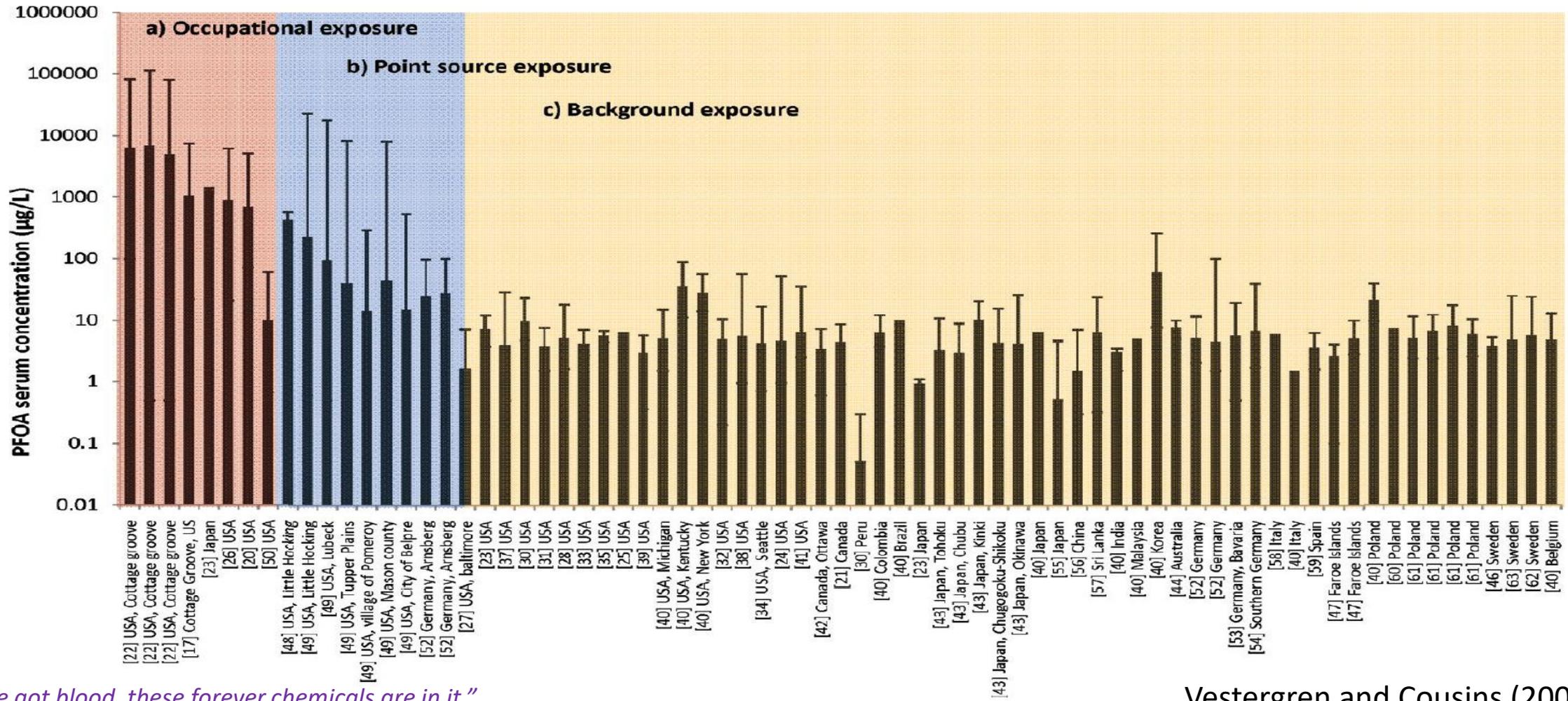
Where are PFAS?

- Many water- and stain-resistant consumer products including clothing and upholstery
- Fire-fighting foams (airports and military bases)
- Food packaging materials
- Some floor waxes and carpet cleansers
- Used in manufacture of fluoroplastics (e.g. Teflon)
- Used in chrome plating





PFAS are already in all of us



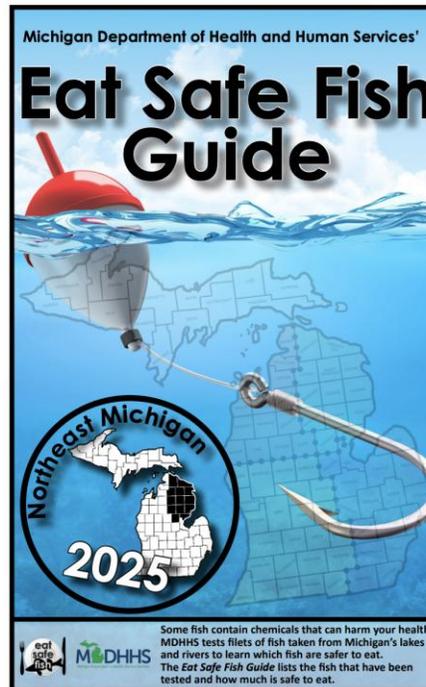
Vestergren and Cousins (2009),
 Env. Sci. Technol. 43: 5565

"If you've got blood, these forever chemicals are in it."
 -- Trevor Noah (https://www.youtube.com/watch?v=DeAu_iF6egE)



How are we exposed to PFAS?

- Consumption (contaminated water, foods—particularly fish, and food packaging)
- Occupational exposures (particularly mining and military; less but above average in agriculture and forestry from NHANES data)
- Inhalation
- Absorption into skin



Contaminated drinking water

Foods (and food packaging)

Household products
(carpets, cleansers)

Other consumer products
(makeup, ski wax, floss)



Persistence of PFAS following exposure

- Some PFAS are:
- Persistent in the environment
- Bioaccumulate in living organisms
- Long half-lives in humans (half of the PFAS you consume today will still be with you several years later)
- Toxic at part-per-trillion (ppt) concentrations for PFOS and PFOA (ng/L or ng/Kg)

PFAS chemical	Chain length	Est. half-life in humans
PFBS	4	28 days
PFBA	4	3 days
PFHxS	6	5.3-8.5 yrs
PFHxA	6	32 days
PFOS	8	3.4-5.0 yrs
PFOA	8	2.1-3.8 yrs
F-53B	9	15.3 yrs

5 yrs = 1826 days

We become ~1000-fold more contaminated with PFOS than the water we drink



What do we still not know about PFAS?

- What agricultural practices offer best solutions for avoiding PFAS contamination?
- How do PFAS chemicals migrate from environments into the food supply?
- Which crops and livestock are most (and least) likely to take up PFAS chemicals?
- Which technologies are cost-effective for removing PFAS?
- Do exposures to PFAS affect the toxicity of other substances we are exposed to?



How do PFAS enter the food supply?



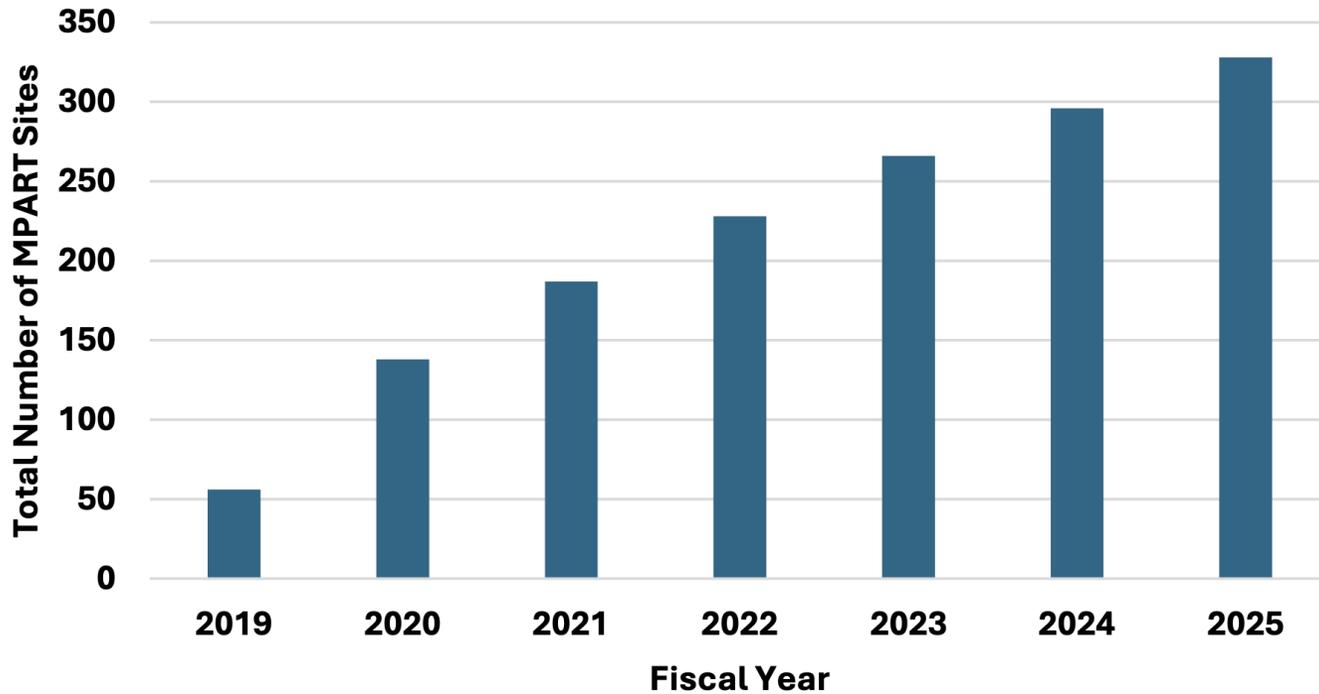
Are newer PFAS chemicals less (or more) risky than the “legacy” PFAS chemicals?



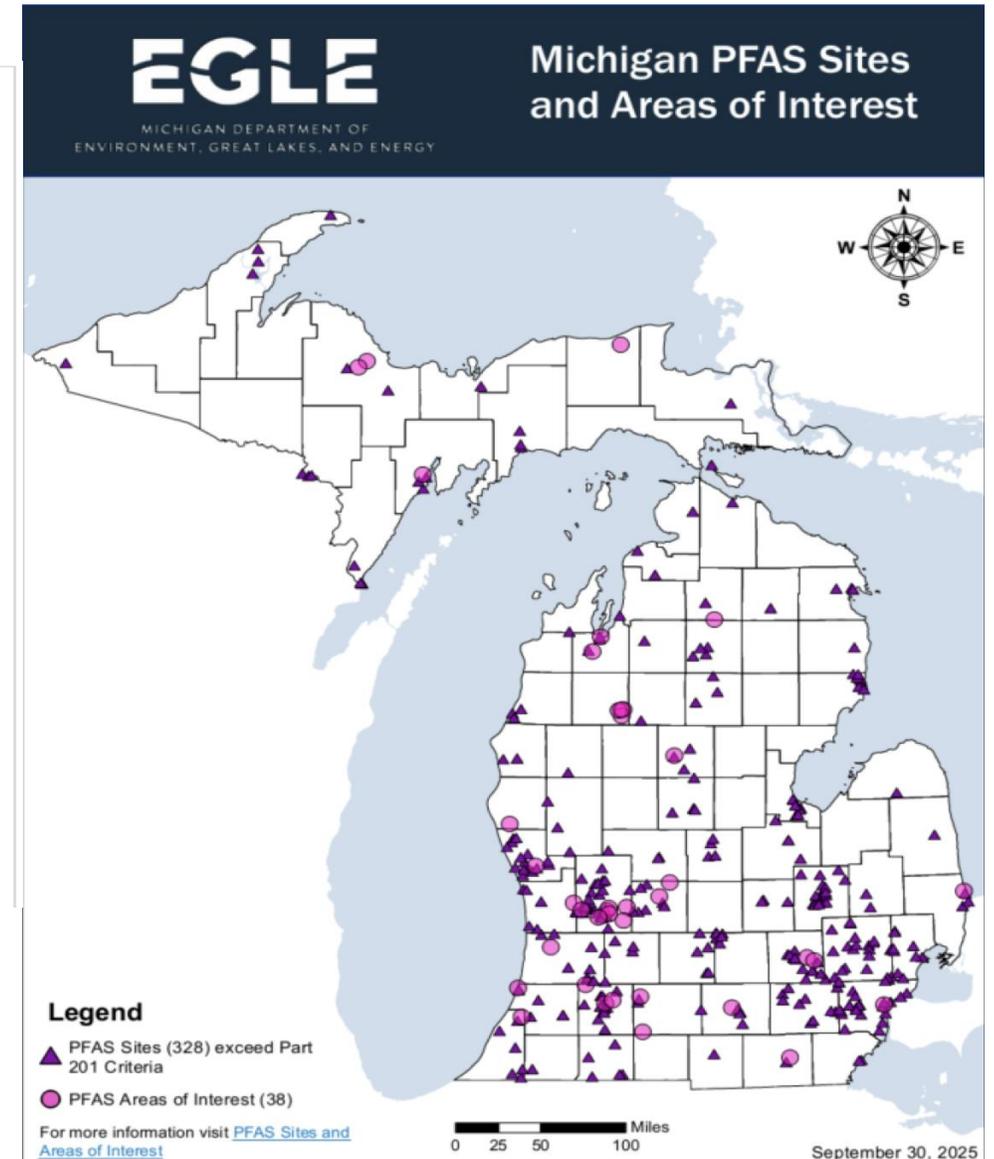
How should producers be compensated for losses resulting from PFAS contamination of farms?



Total Number of MPART Sites by Fiscal Year

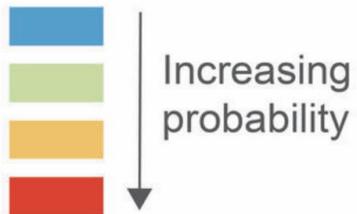
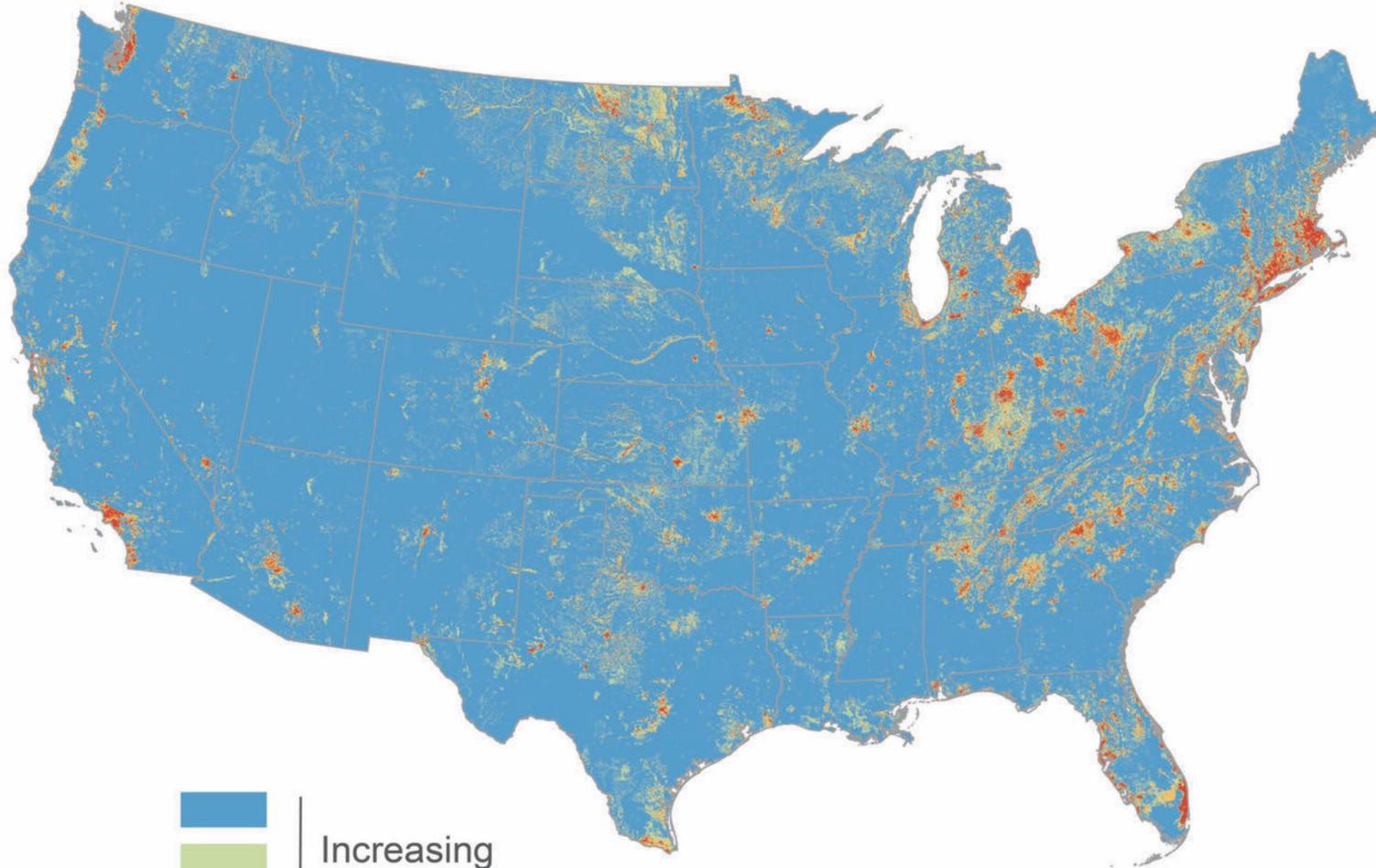


<https://egle.maps.arcgis.com/apps/webappviewer/index.html?id=bdec7880220d4ccf943aea13eba102db>



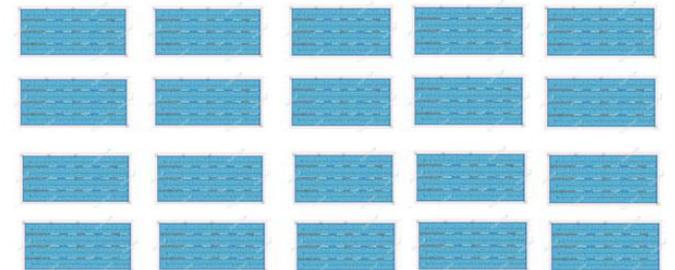


Probability of PFAS in groundwater at the depth of public drinking water supplies



Estimated 71-95 million people in the lower 48 are drinking contaminated groundwater - October 2024

1 ppt = 1ng/L



20 Olympic Swimming Pools



Michigan Drinking Water Standards

- In 2020, EGLE established maximum containment levels (MCLs) for seven PFAS
- These apply to ~2,700 **public** drinking water supplies in Michigan
- If you have a well, testing and filtration is your responsibility
- Compliance is determined based off of the average sample results each year
- If levels are above the MCL values, they must treat the water to reduce levels, do additional testing and give public notice

Specific PFAS	Drinking water MCL (ppt)
PFNA	6 ppt
PFOA	8 ppt
PFHxA	400,000 ppt
PFOS	16 ppt
PFHxS	51 ppt
PFBS	420 ppt
HFPO-DA	370 ppt

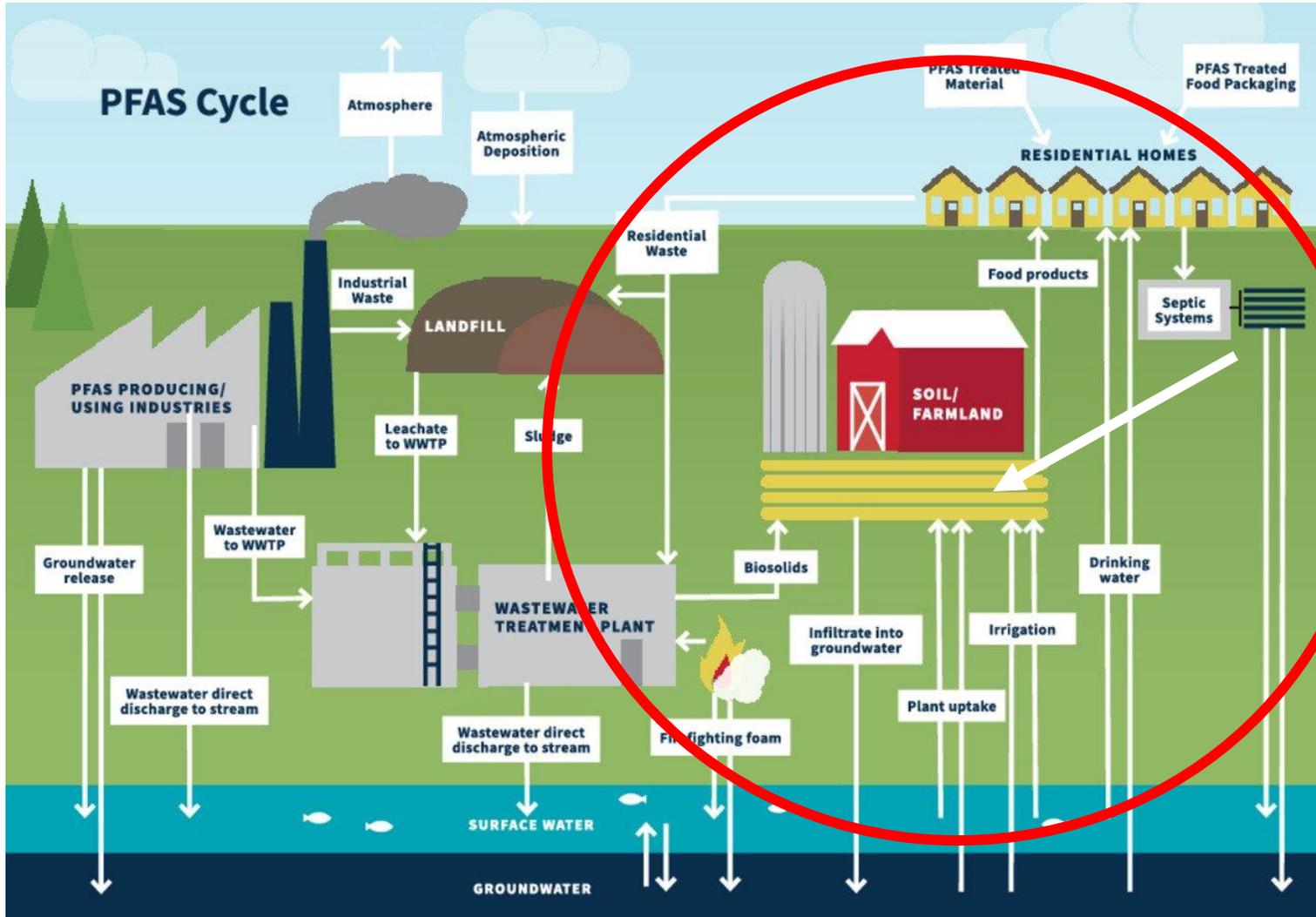
ppt = parts per trillion



National Efforts in Drinking Water

- In April 2024, the EPA:
 - Finalized the first-ever national, legally enforceable drinking water standards for PFAS
 - Maximum Contaminant Levels (MCLs) set at 4 ppt for PFOS and PFOA
 - Designated PFOS and PFOA as hazardous substances
- Some states already had their own standards
 - Others have been waiting for federal guidance





- Estimated 5% (or more) of cropland in US has applied contaminated biosolids?? (EWG)
- Contamination from other land application materials
 - Paper pulp
 - Septage
- Contamination from water supply
 - Groundwater
 - Surface water
 - Rainwater
- Contaminated from legacy pesticide applications??



Calculating the risks of consuming PFAS contaminated food

- What is the total dose of PFAS?
 - Daily? Long term?
 - Water
 - Total food
 - Dust
 - Other exposures
- How much of the food is consumed?
- Child or an adult?
- Underlying health complications?
- What specific PFAS chemicals are being consumed?
 - How toxic is that chemical?

1 ppb = 1 μ g/L



10,000-gallon pool



What is a safe dose?



Regulatory Toxicology and Pharmacology

Volume 145, December 2023, 105502



Range of the perfluorooctanoate (PFOA) safe dose for human health: An international collaboration

Lyle D. Burgoon ^a, Harvey J. Clewell ^b, Tony Cox ^c, Wolfgang Dekant ^{d,1}, Linda D. Dell ^b, James A. Deyo ^e, Michael L. Dourson ^{f, g, h}, Bernard K. Gadagbuli ⁱ, Phillip Goodrum ^e, Laura C. Green ^h, K. Vijayavel ⁱ, Travis R. Kline ^j, Tamara House-Knight ^{k,1}, Michael I. Luster ^l, Therese Manning ^m, Paul Nathanail ⁿ, Frank Pagone ^o, Katie Richardson ^p, Tiago Severo-Peixe ^q, Anurag Sharma ^r, Jackie Wright ^m

Authority	PFOA Safe Dose ng/kg/day (ppb)
European Food Safety Authority, 2020	0.63
Food Standards Australia/NZ, 2017	160
Health Canada, 2018	20
EPA, 2022	0.0015
EPA, 2023 draft	0.03
World Health Org, 2022	20
Alliance for Risk Assessment (this paper)	10-70



PFAS Food Safety Standards in the EU

- Regulatory levels on meats and eggs
- Investigative levels for milk, fruits, vegetables, starchy roots and tubers, wild fungi, baby food
 - Further investigation of the cause of contamination should be carried out when these levels are exceeded
 - Milk = 20 ppt PFOS
 - Fruits, vegetables, starchy roots and tubers

PFOS ppb	PFOA ppb	PFNA ppb	PFHxS ppb
0.01	0.01	0.005	0.015



PFAS Maximum Levels in the EU - Regulatory

	PFOS ppb	PFOA ppb	PFNA ppb	PFHxS ppb	Sum of 4 ppb
Meat of Bovine, Pig, Poultry	0.3	0.8	0.2	0.2	1.3
Meat of Sheep	1.0	0.2	0.2	0.2	1.6
Offal of Bovine, Pig, Poultry, and Sheep	6.0	0.7	0.4	0.5	8.0
Eggs	1.0	0.3	0.7	0.3	1.7



Research Articles

Analysis of per- and polyfluoroalkyl substances (PFAS) in the US meat, poultry, catfish, and eggs

Yelena Sapozhnikova  & Kevin Stroski

Pages 1121-1129 | Received 12 May 2025, Accepted 14 Jul 2025, Published online: 25 Jul 2025

 Cite this article  <https://doi.org/10.1080/19440049.2025.2536262>

- 86 grocery samples in Philadelphia
- Tested for 74 PFAS (MDL 0.002-8 ng/g)
- No PFAS detected in eggs, chicken, pork
- PFOS found in 25% beef samples (5/20 samples)
 - 0.057-0.145 ng/g or ppb
- Catfish -12 different PFAS detections totaling 1.8 ppb

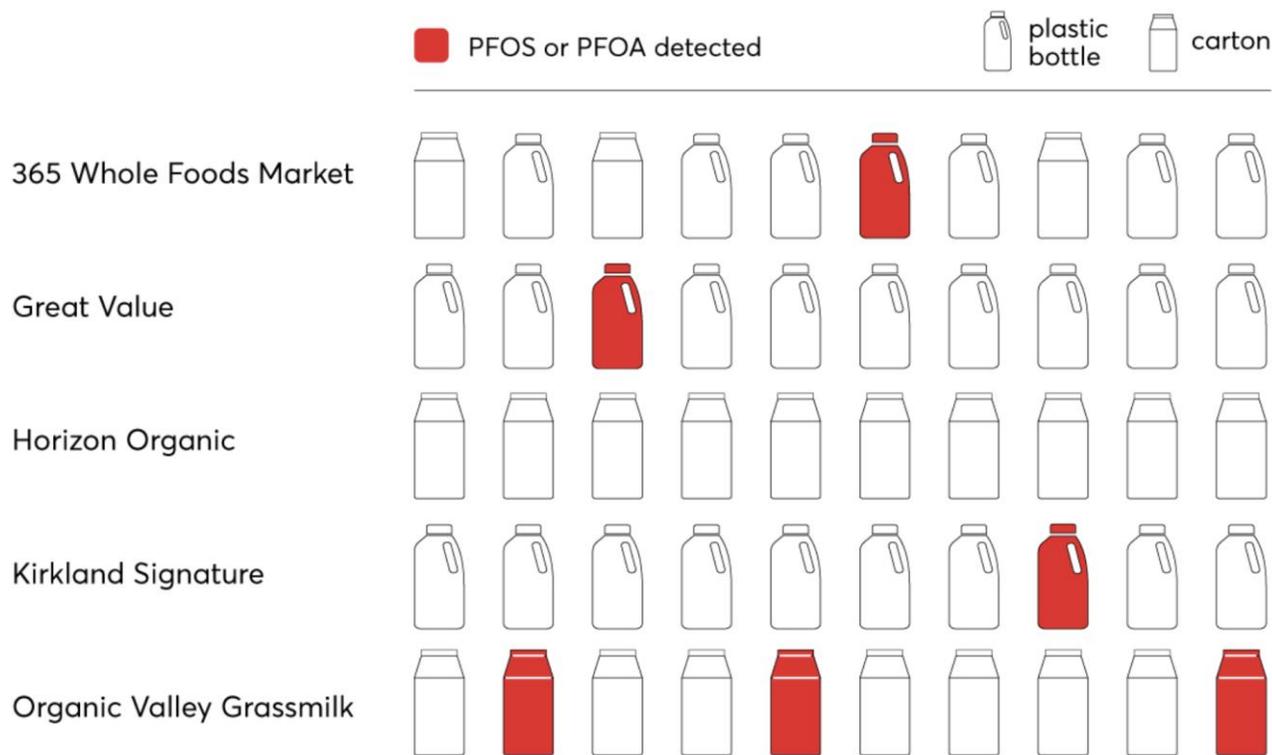
“Detection of PFAS precursors highlights the need to include these PFAS in future monitoring efforts.”



Consumer Reports Investigated Grocery Store Milk- 2024

CR's Milk Testing Results

We tested 10 samples from five different brands of milk for the "forever chemicals" PFOA and PFOS. Neither container type nor organic status were predictive of results.



- PFAS were detected in 6/50 samples
 - PFOS in 1 sample
 - PFOA in 5 samples
 - 84 ppt PFOA (Kirkland, CA)
 - 60 ppt PFOA (365 Whole Foods, CA)
 - The 4 of 6 detections were 'not high enough to report a value, but estimated at 20-50 ppt'

EU investigative levels for milk are 20 ppt PFOS



Livestock Depuration

- PFAS depuration (remediating/clearance) from contaminated livestock/animals
- Time that PFAS clears naturally from the body is dependent on:
 - Species
 - Compound
 - Level of contaminant
 - Half-life
- Requires the provision of clean water and feed
- We need more research in this area!

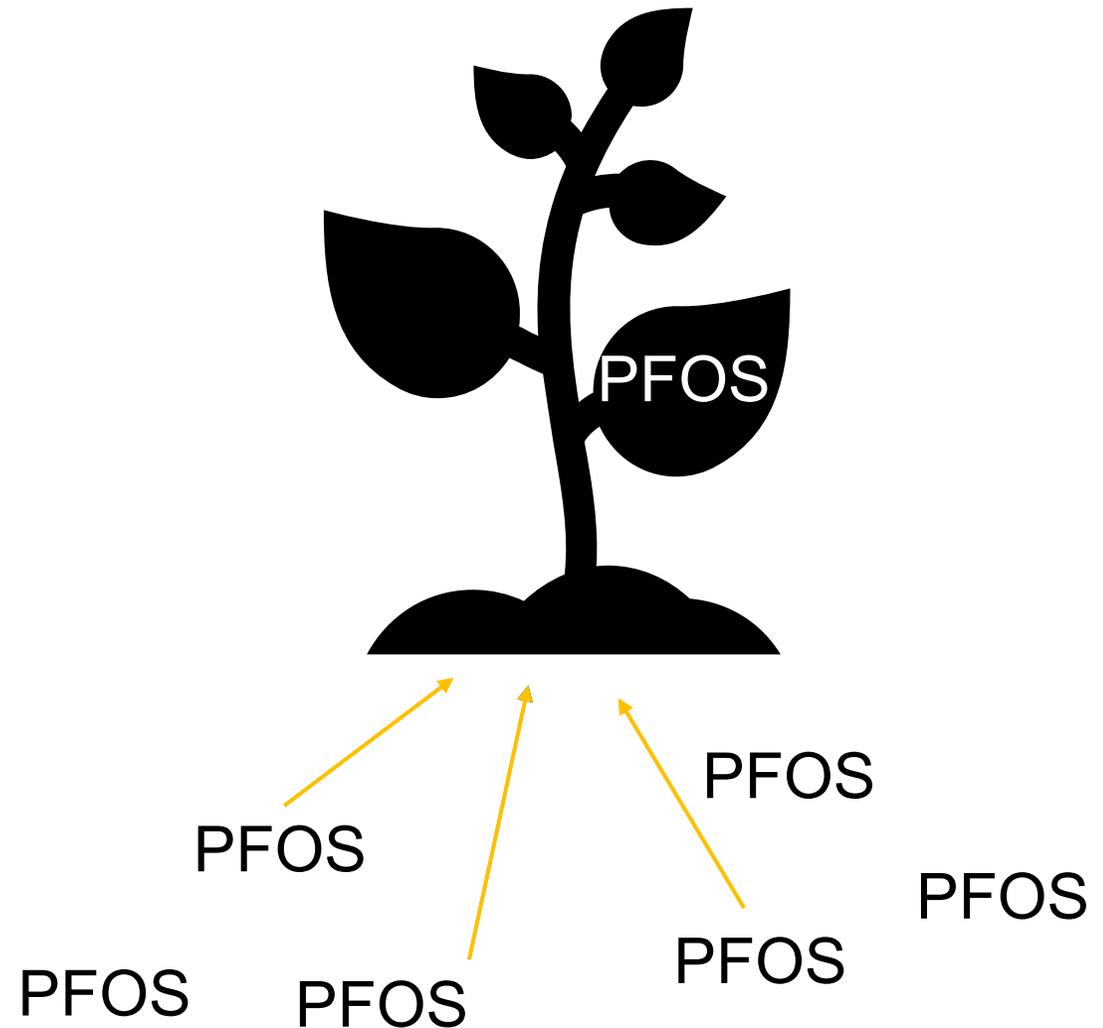
Serum/plasma elimination half lives of PFOS across experimental game and livestock species

	Female	Male
Rabbit	88 days ^a	
Rat	14-83 days ^{b,c}	7.5-82 days ^{d,c}
Mallard duck		13.6 days ^e
Quail		20.7 days ^e
Chicken	3.5-160 days ^{f,g}	
Mouse	31-38 days ^h	36-43 days ^l
Cattle	39-106 days ^j	120 days ^k
Sheep	No data	No data
Monkey	110-200 days ^{h,l}	132-200 days ^{l,l}
Pig	1.7 years ^m	



Crop Uptake

- To better understand risk associated with PFAS entering the food chain we need to know more about PFAS movement into plants
- The numerical value assigned to this movement is known as the **Transfer Factor**





Influence on Transfer Factor

- Movement of PFAS into plants is emerging science
 - **Species** (indication of differential uptake by species)
 - **Location in plant** (edible portions versus plant waste tissue)
 - **Rate of PFAS incorporation** (chain length, annual/perennial crops)
 - **Soil type influence** (organic matter, pH, salinity, temperature)
 - **Property of the chemicals** (chain length, head group functionality, water solubility, volatility)





Field Plots 1st and 2nd Growth Cuttings

Journal of Agricultural and Food Chemistry > Vol 72/Issue 42 > Article



Cite Share

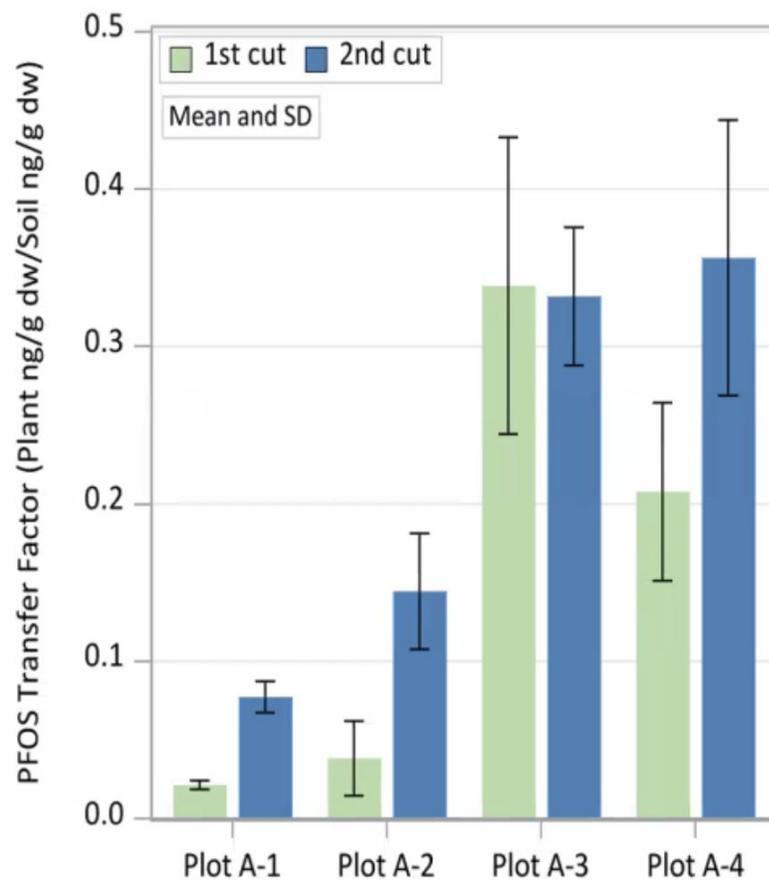
Open Access

AGRICULTURAL AND ENVIRONMENTAL CHEMISTRY | October 8, 2024

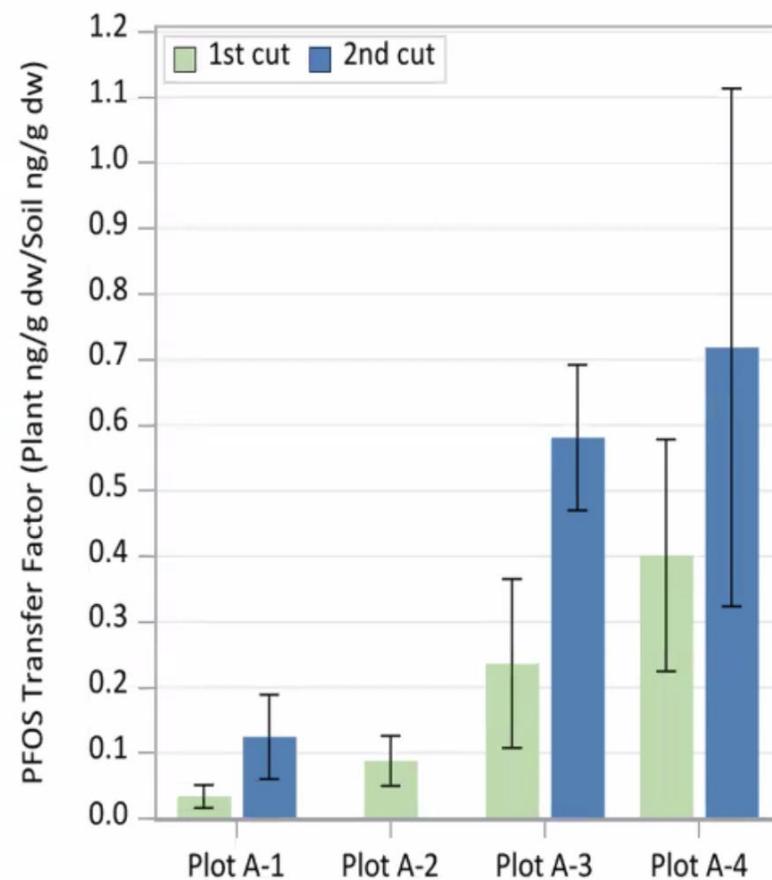
Uptake of Per- and Polyfluoroalkyl Substances in Mixed Forages on Biosolid-Amended Farm Fields

Thomas L. Simones*, Chris Evans, Caleb P. Goossen, Richard Kersbergen, Ellen B. Mallory, Susan Genualdi, Wendy Young, and Andrew E. Smith

Year 2 Cuttings



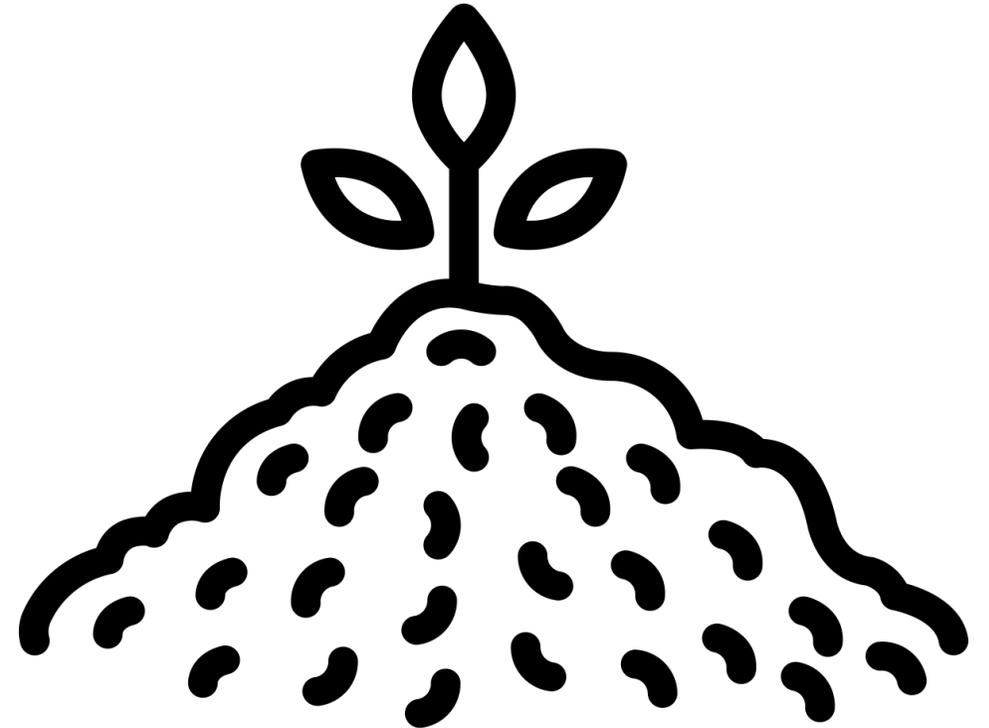
Year 3 Cuttings





PFAS in Soil

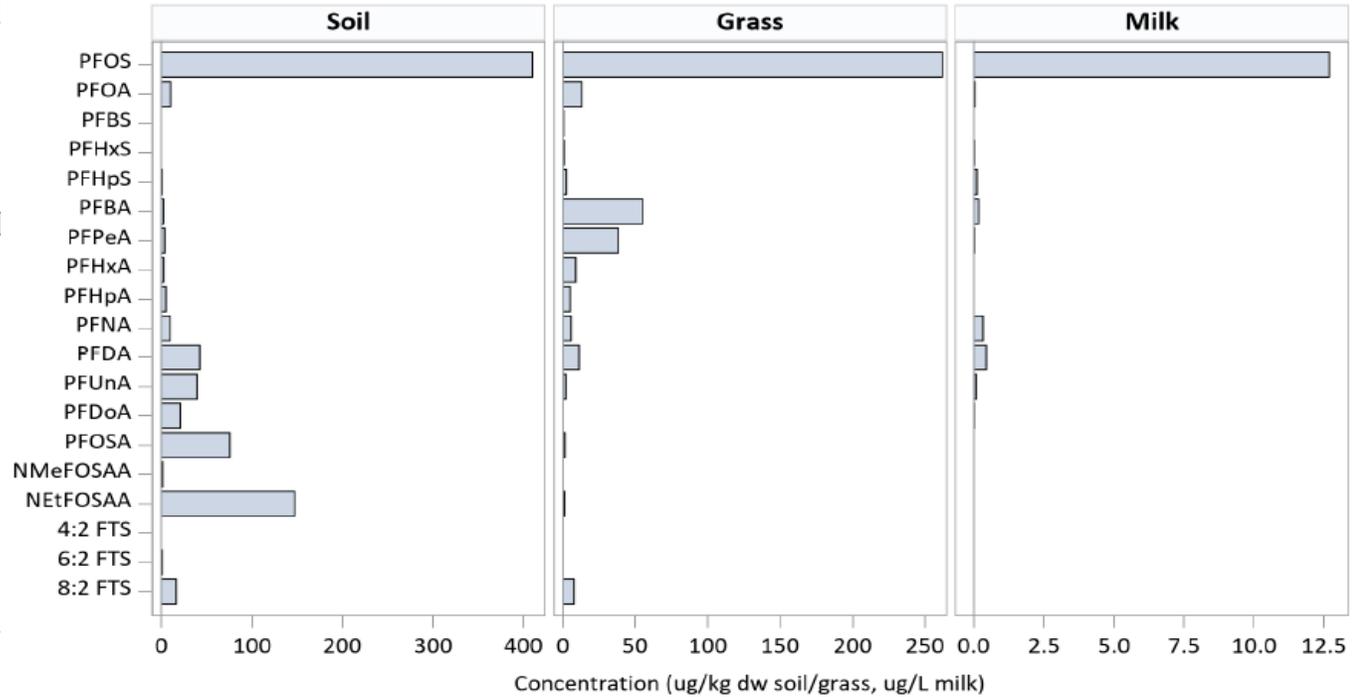
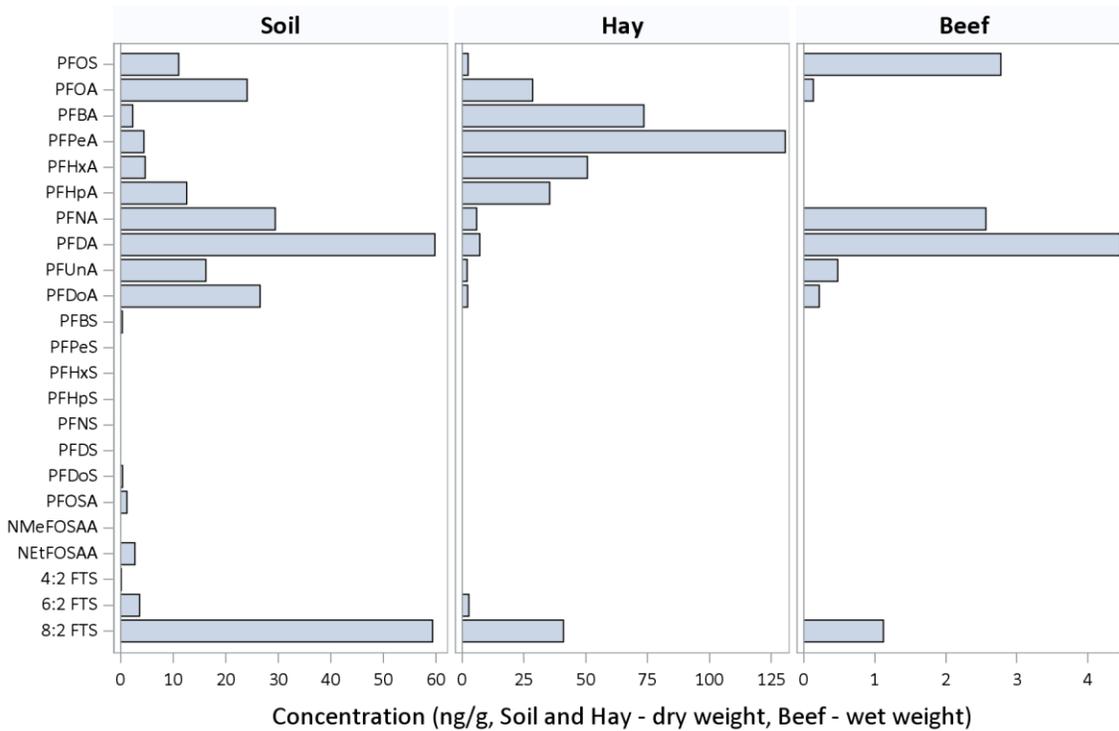
- Work on farms in Maine suggests that PFAS concentrations in the soil is the most reliable predictor of risk
- Little, if any, federal guidance for PFAS in soils
- States are left to consider the development of screening values for themselves
- Michigan – MDARD and MSU Extension are working together to provide guidance on PFAS concentrations in the soils that should prompt further attention





PFAS move differently between media

Migration to beef and milk on farms





PFAS Forage Management Trial



Sonora Ortiz and Ellen Mallory, University of Maine Cooperative Extension

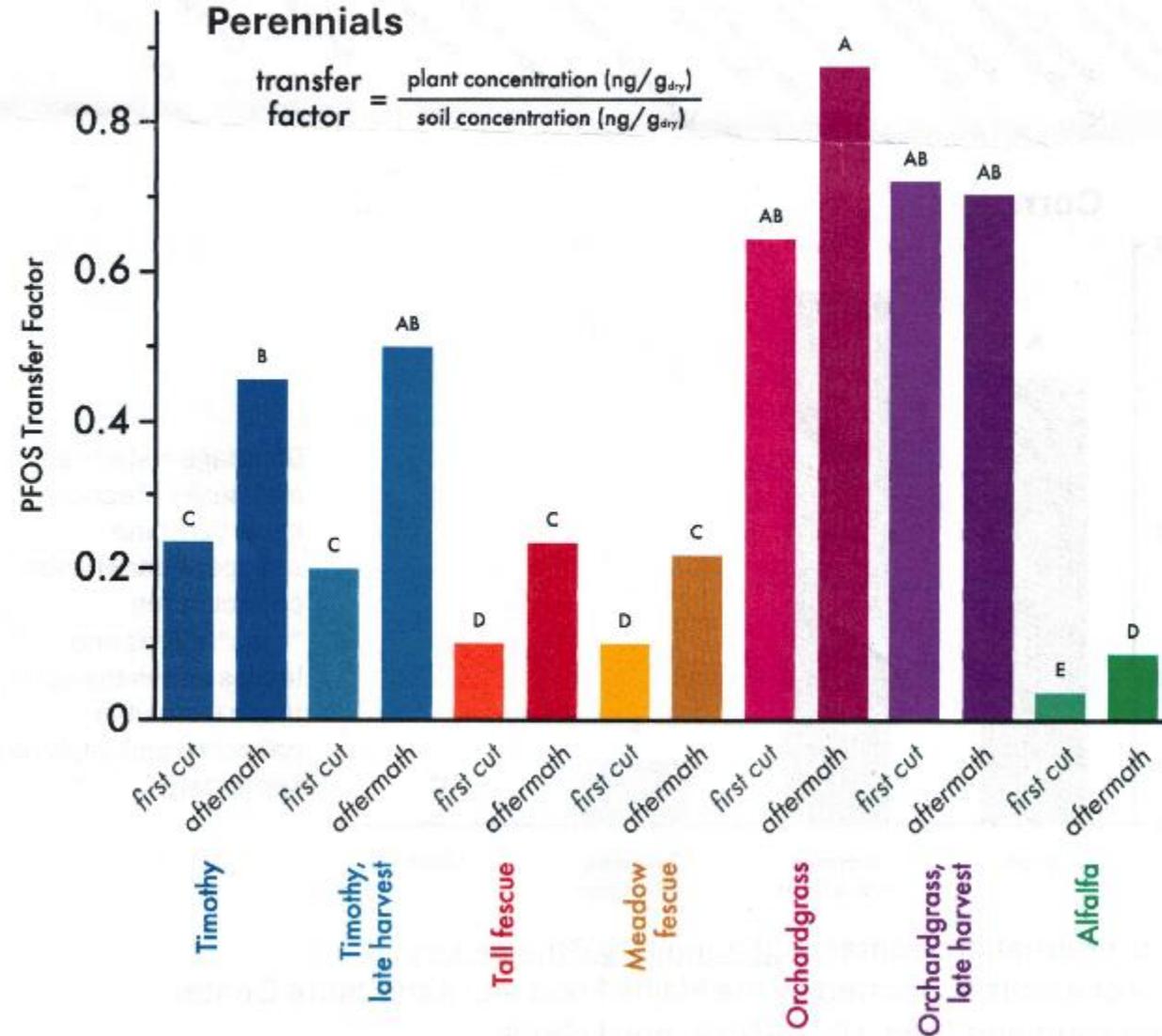
Research Objective - Identify management strategies that reduce PFAS concentrations in harvested forages.

Management Strategies Tested

- Crop types and species - annuals vs. perennials; grasses vs. legumes
- Cutting height – perennials only
- Harvest timing - optimal vs. late (perennials); boot vs. dough stage (cereals)
- Growing period - 1st vs. 2nd cut (perennials); standard vs. late planting (oat)
- Harvested product – whole plant vs. grain; silage vs. earlage vs. grain (corn)

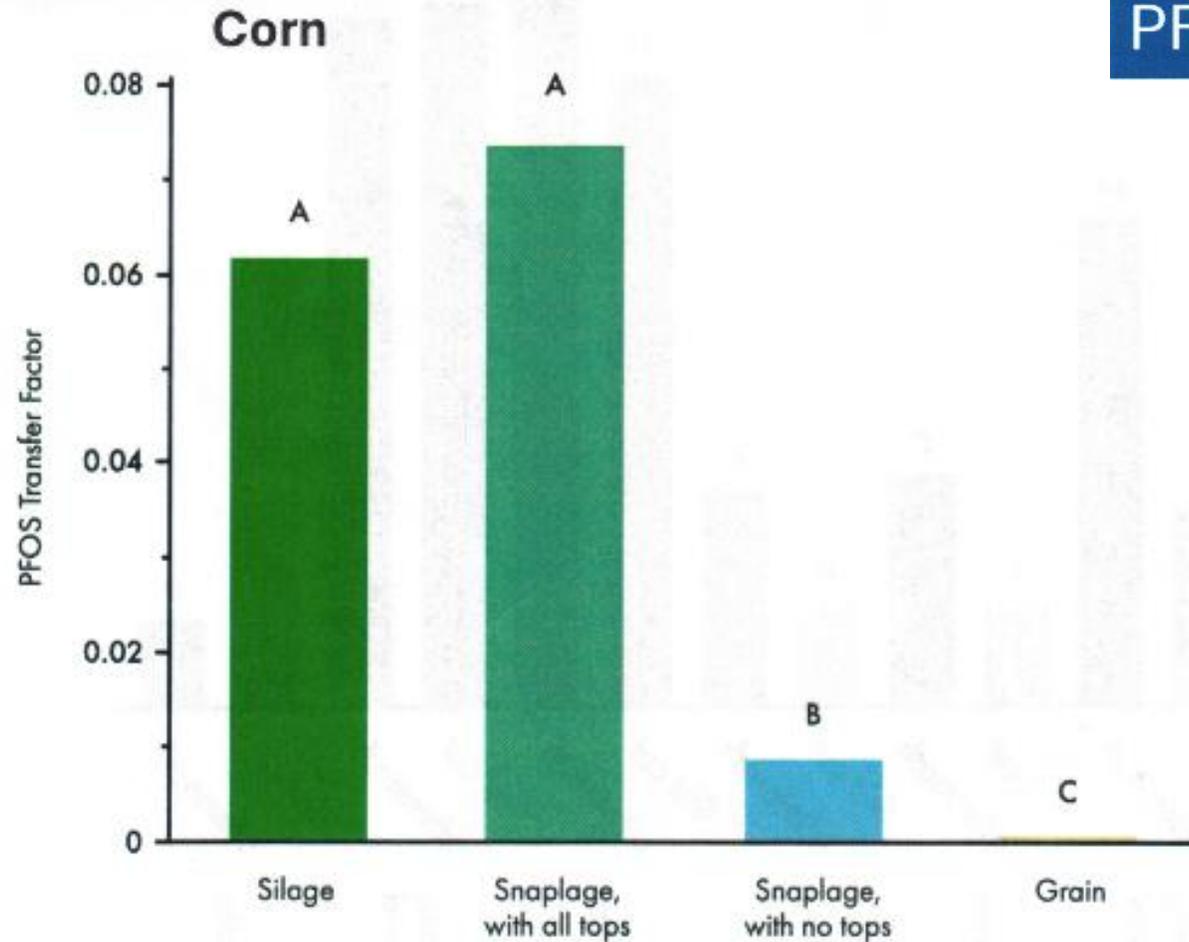
2024 Results

Treatments that do not share a letter are considered statistically different.





PFAS Forage Management Trial



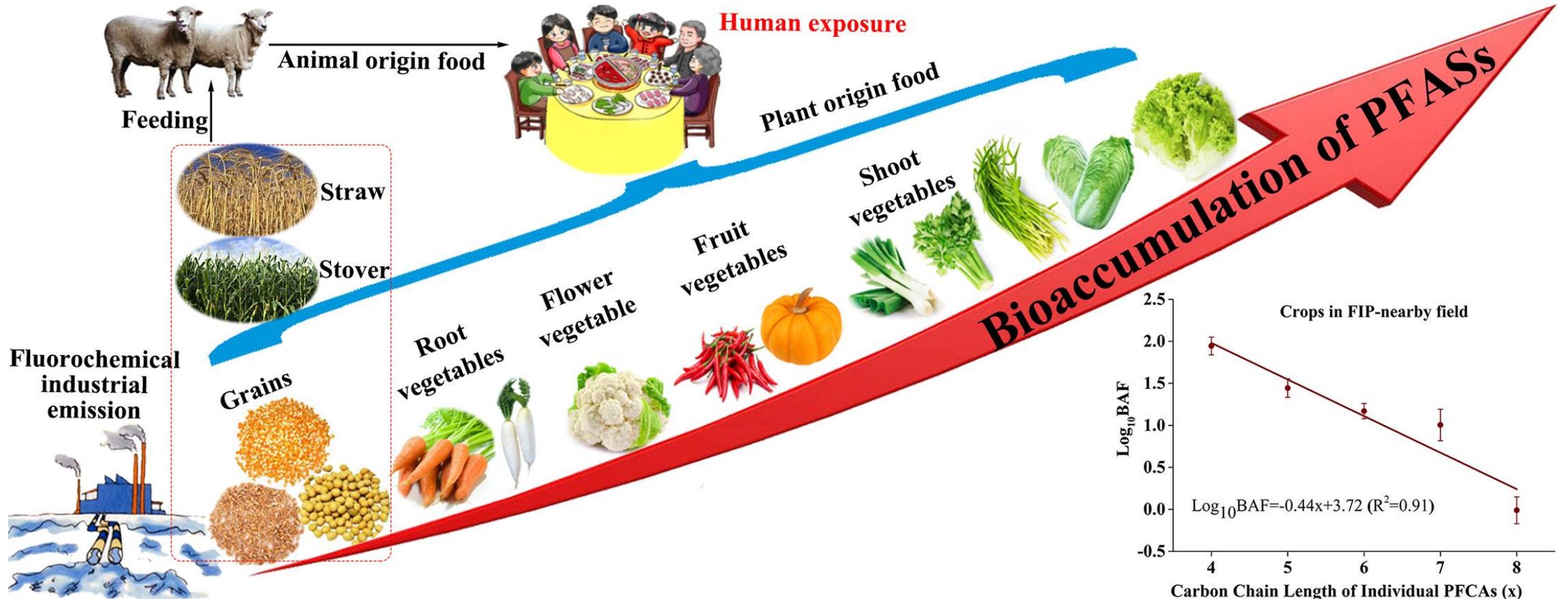
Snaplage = stalk, ears, and husks. Because most combine snapper headers also collect some "tops" (stems and leaves above the ears), these were also collected and analyzed separately.

For more information, contact ellen.mallory@maine.edu.

This project was/is supported by the Maine Food and Agriculture Center, American Farmland Trust, USDA-NIFA, and USEPA.



Plant Selection/ Crop Uptake





Mitigation



There is no one-size-fits-all solution.

- Crops
 - Grow crops with lower uptake on contaminated soil
 - Higher uptake (generally)
 - Leafy greens, grasses, forage
 - Lower uptake (generally)
 - Grains (corn)
 - Sell crops for non-consumption purposes (fiber, fuel, etc.)
 - Use contaminated land for flowers, trees or for solar panels



Mitigation



There is no one-size-fits-all solution.

- Livestock
 - Beef and dairy cattle can depurate PFAS from milk and muscle
 - Must receive clean feed and water
 - Switching from grass/ forage-based diet to corn grain & snaplage (stalk, ears and husk)
 - Purchasing animal feed from other non-contaminated sources
 - Research being done on feed binders to help increase PFAS excretion through feces to speed up depuration



Mitigation



There is no one-size-fits-all solution.

- Water
 - Short term solution
 - Above ground storage tank
 - Costly to refill
 - Longer term solution
 - Dig a new well on the property
 - Deepen existing well
 - Filtration?
 - Depends on the volume of water being used at the farm
 - Difficult for large scale farm operations
 - Maintenance costs



Baseline PFAS in Agricultural Soils in Michigan-ongoing project

- 2025/2026 project – sampled 17 low risk fields in 16 counties
 - Regular fertilizer and pesticides were used on the fields, but no biosolids/septage/pulp
 - Over 2 miles away from closest PFAS site
 - 40 PFAS chemicals tested (not TFA)
- 4 samples had no detections of PFAS
 - Range of total PFAS= ND - 1.16 ppb
- 8 samples had no detections of PFOS
 - Range of PFOS= ND – 0.51 ppb
- 10 samples had no detections of PFOA
 - Range of PFOA= ND – 0.19 ppb

**PRELIMINARY
DATA**



Focus Groups- Michigan Farmer's Understandings and Risk Perception around PFAS (2025)

Trust for MSU, commodity organizations

Distrust for government

Desire for more education

Desire for more research

Belief that regulations should focus on the industrial users of PFAS

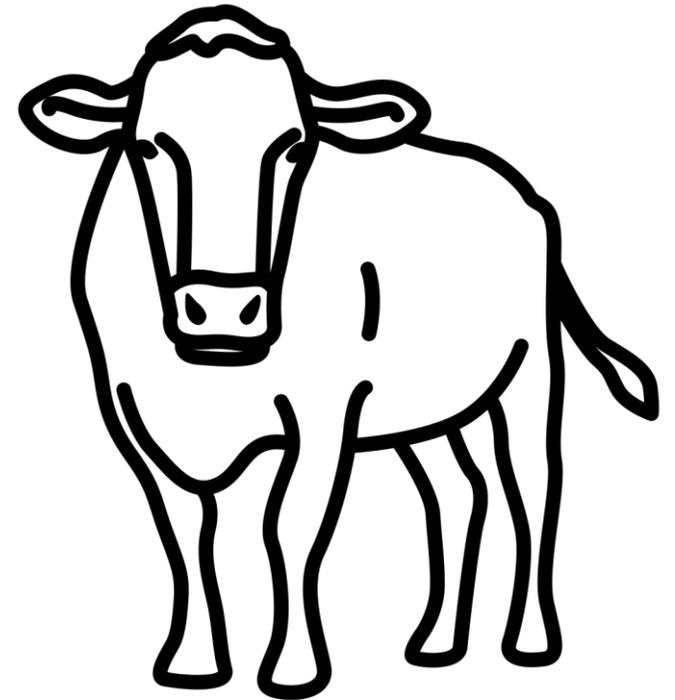
Producers are interested in testing soil, water, crops and/or products for PFAS if it is **voluntary** and **confidential**





Highlights of Focus Groups

- Producers have concerns about:
 - Backlash from testing
 - Regulated too harshly without scientific basis
 - Finding PFAS and not being able to mitigate
 - Consumers health if they are producing contaminated products
 - Their own health from PFAS exposure
 - Their land values if contaminated with PFAS
 - Food production being outsourced to other countries if overregulated in the US





MSU and MPART are working to develop a strategy for working with farms

- Education
- Risk assessment
- Sampling
 - Soil
 - Water
- Follow up discussions
- Mitigation strategies
 - Funding for infrastructure changes





PFAS and Agriculture Policy Workgroup

The PFAS and Agriculture Policy Workgroup, led by American Farmland Trust, consists of 16 organizations representing the breadth of the agricultural sector. Brought together to address PFAS contamination of farmland, the Workgroup urges Congress and the executive branch to protect farmers and their families from the health impacts of PFAS, keep farms and ranches in business, maintain a safe national food supply, and safeguard our nation's farmland for future generations.

The recommendations aim to advance a range of nonpartisan, pragmatic solutions while centering the needs of farmers and farm families:



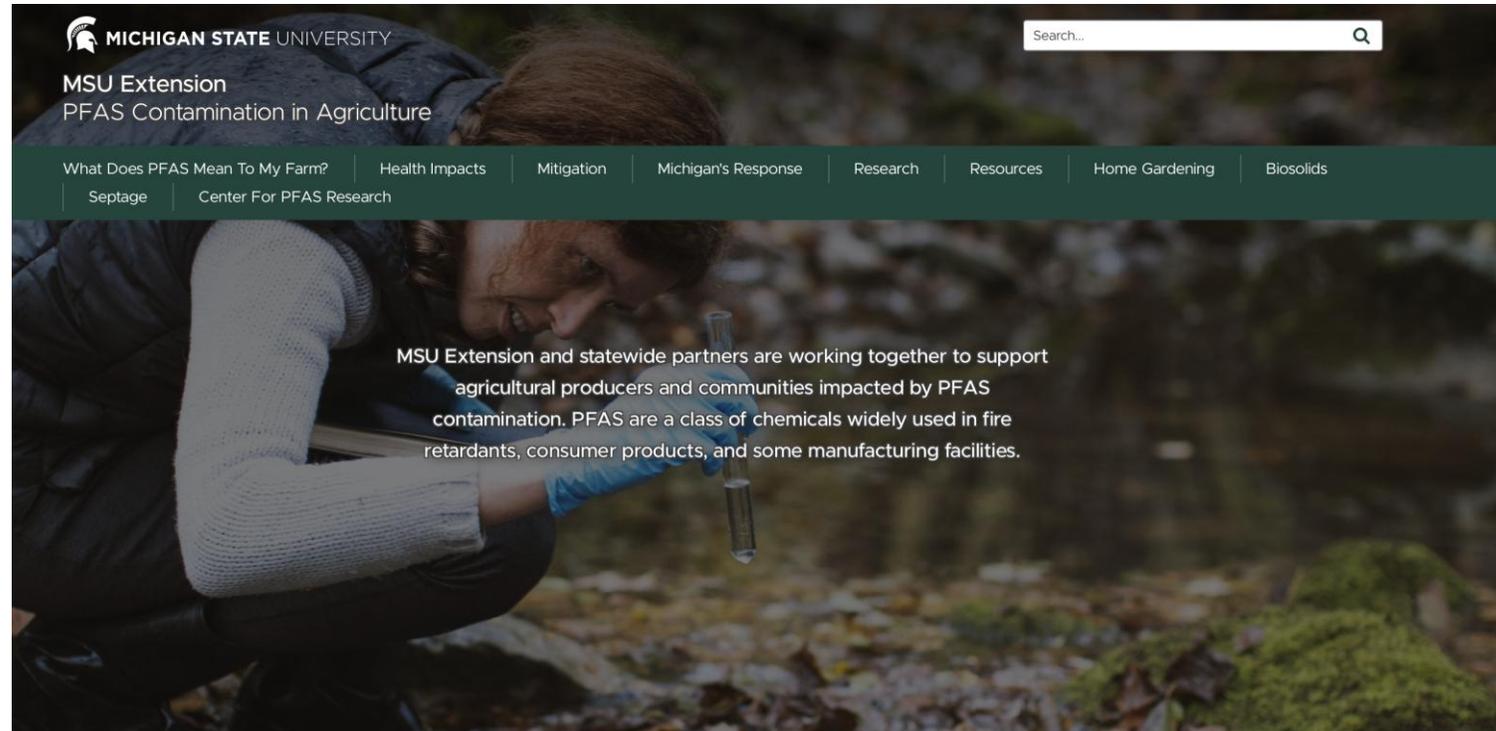
Congress, USDA, and DoD should provide health, financial, and technical support to PFAS-impacted farmers and ranchers



- Federal Policy Recommendations
- Sept 18, 2025
- Provide Relief and Long-term Support for Impacted Farmers
- Protect Farmers from Unreasonable Liability under CERCLA
- Reduce Additional PFAS Contamination of Agricultural Land
- Coordinate and Invest in PFAS Research
- Implement a Coordinated Education and Risk Communication Strategy



Educational Materials



What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that are resistant to heat, water and oil. Since the 1940's,

<http://www.canr.msu.edu/pfas>



MICHIGAN STATE UNIVERSITY | Extension

PFAS in Agriculture

Understanding the 'forever chemical' problem

So, what are PFAS?

PFAS, or per- and polyfluoroalkyl substances, are man-made chemicals used in things like non-stick cookware, water-resistant clothing, and firefighting foam. These chemicals don't break down easily, so they can stay in the soil, water, and even in plants and animals for a long time. This makes them a concern to farms because they can stick around and affect the environment and the safety of what you grow and raise.

Potential impact of PFAS

Human Health Implications

Research has shown that PFAS exposure can cause serious health problems, including an increased risk of cancer, developmental defects, immune system disruption, among others.

Economic Impact

PFAS contamination may render farmland unusable for traditional agriculture, reducing land value and productivity. Farm products may also be deemed unfit for human consumption.

Environmental Impact

When PFAS-contaminated water or soil from farms enters local ecosystems, it can pollute rivers, lakes, and groundwater, harming wildlife and plants. Aquatic life, like fish, can absorb PFAS, which then enters the food chain, affecting both animals and humans.

How do PFAS get to Farms?

PFAS have unintentionally entered farm soil and water through various sources, including biosolids from wastewater treatment plants, which are used as fertilizer. These chemicals can also come from contaminated groundwater, surface water, septic fields, paper sludge, and other soil amendments.

Once on the farm, PFAS can build up in crops, livestock, soil, and water supplies, potentially affecting food safety and public health.

What can Farmers do?

Water and Soil Testing

Especially if biosolids were applied to the farm or if it is located near known PFAS sources, such as airports or manufacturing facilities.

Identify the Source of Contamination

Understanding how PFAS got onto your farm is essential for addressing the problem.

Modify Farming Practices

Move animals to clean water sources and feed from uncontaminated areas.

Collaborate with MSU

Michigan State University can provide guidance on navigating the contamination problem.

How do PFAS affect Crops and Livestock?

Crops may uptake PFAS from contaminated soil and water. Some crops, like leafy greens, may accumulate more PFAS than others. Livestock can consume PFAS through contaminated feed or water, leading to accumulation in their bodies. This can contaminate the meat, milk, or eggs produced.

Resources and Support

PFAS can significantly impact farm productivity, product safety, and long-term land health. Managing contamination may be complex and challenging, but with the right support and strategy, farmers can effectively reduce its effects. Below are useful resources to help farmers better understand and address PFAS:

<https://www.canr.msu.edu/pfas>

<https://www.canr.msu.edu/pfas-research>

<https://www.michigan.gov/pfasresponse>

For more information, contact:
Faith Cullens-Nobis
 cullensf@msu.edu



Talking to Consumers about PFAS Contamination

If you've discovered that your farm has PFAS contamination, having open and honest conversations with your customers is an important step. Many consumers may not know what PFAS are, or they might hear exaggerated rumors and feel concerned about their health. Being informed and transparent can help ease fears and build trust. Here are some key points to stress when talking with consumers:



1

PFAS Contamination Was **Not Intentional**

PFAS chemicals can unintentionally enter farmland through sources that farmers may not be aware contain PFAS. These chemicals have been used in industrial processes, firefighting foams, and consumer products for decades, and they persist in the environment. Farmers are not responsible for this contamination.



Health Effects Come from **Long-Term Exposure**

Studies show that health risks are linked to chronic (long-term) exposure to PFAS. Short-term, infrequent, or low-level exposure is unlikely to cause harm. Sharing this context with consumers helps ensure accurate understanding and informed discussions.

2

3

Michigan Leads the Nation in PFAS Testing and Research

Michigan is one of the most proactive states in testing for PFAS, researching its effects, and working on solutions. It was also one of the first states to implement enforceable drinking water standards for 7 PFAS compounds. Buying local food remains one of the best ways to know where your food comes from and support your community.



There Are **No National Food Safety Standards for PFAS**

Currently, there are no official food safety standards or reporting requirements for PFAS in food. Just because a product is not tested for PFAS does not mean it is free of contamination, but transparency and ongoing research are crucial in addressing this issue.



4

5

Labeling Can Be **Misleading**

Some products may be labeled 'PFOA-free' or 'PFOS-free,' but this does not mean they are entirely free of PFAS. With thousands of different PFAS compounds in existence, testing for all of them is not currently possible.



Food Is **Not the Only Source** of PFAS Exposure

Food is not the only source of PFAS—these chemicals are found in many aspects of daily life. However, you can take steps to reduce your exposure by testing your water, following fish advisories, avoiding stain-resistant products, using stainless steel, ceramic or cast iron cookware, and supporting companies with a PFAS-free commitment.



6

By having transparent discussions and providing accurate information, farmers can reassure consumers and strengthen trust in local agriculture. Educated consumers are more likely to continue supporting their local farms, even in the face of PFAS-related challenges.



TIPS FOR COLLECTING WATER SAMPLES FOR PFAS ANALYSIS

PFAS are used in a variety of different products we use everyday. It is important to understand how to avoid cross contamination when collecting and handling samples intended for PFAS analysis.



WASH HANDS AND WEAR POWDERLESS NITRILE GLOVES

Make sure to use PFAS-free hand soap to wash hands thoroughly and then put on powderless nitrile gloves. PFAS contamination during sampling can occur from a number of common sources, such as food packaging, clothing, dust, personal care products, and certain foods and beverages. Replace gloves if they come in contact with anything that may contain PFAS. Proper hand washing and glove use will minimize accidental contamination of samples.

ENSURE RESULTS REPRESENT THE WATER SOURCE ITSELF

It is recommended that water is flushed from the faucet/ spigot until the water temperature stabilizes prior to sample collection (this may take several minutes) and that samples are collected from the location that is closest to the well. These recommendations help to identify if the water source itself is contaminated without interference from plumbing infrastructure that may contain PFAS.



MINIMIZE THE USE OF THESE PRODUCTS

Avoid using synthetic water-resistant and/or stain-resistant materials (e.g., Gore-Tex™, Scotchgard™, etc.) cosmetics, moisturizers, sun-blocks, insect repellants, fragrances, creams, Teflon® and other fluoropolymer-containing materials, paper packaging for food, new or unwashed clothing, clothing washed with fabric softeners, or waterproof notebooks. Do not use markers other than Fine or Ultra-Fine point Sharpies®, which have been proven to be PFAS-free.



KEEP SAMPLE BOTTLE CLOSED BEFORE AND AFTER COLLECTION

To avoid cross contamination, avoid any contact with the inside of the lid/cap. After filling the container, cover the sample with the lid or cap immediately. Be cautious of activities like vacuuming, cooking, applying personal care products, etc. while collecting samples. Make sure to use the correct sample bottle and follow all instructions provided by the laboratory or supplier of your test kit to ensure accurate results.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY'S SAMPLING GUIDE



Scan this QR code for a full guide on how to collect water samples for PFAS analysis.

LABORATORIES IN MICHIGAN THAT DO PFAS TESTING



Scan this QR code for a full list of laboratories that analyze samples for PFAS compounds.



For more information, contact Faith Cullens-Nobis (cullensf@msu.edu) or Katie King (kingka22@msu.edu).



Upcoming Webinars

MICHIGAN STATE UNIVERSITY | Extension

MSU Center for PFAS Research

PFAS IN AGRICULTURE WEBINAR SERIES 2026

Register for this free webinar series to get your questions answered about PFAS in agriculture.



TUESDAY, MARCH 17TH
 Introduction to PFAS in Agriculture

THURSDAY, MARCH 19TH
 PFAS in Crops (Row Crops and Produce)

TUESDAY, MARCH 24TH
 PFAS in Livestock

THURSDAY, MARCH 26TH
 PFAS in Biosolids and Septage

 **TUESDAYS & THURSDAYS FROM 10-11 AM**

 **FEATURED SPEAKERS**
Faith Cullens Nobis- MSU Extension
Katie King- MSU Center for PFAS Research
Marcus Wasilevich- Michigan Department of Agriculture and Rural Development

 **CULLENSF@MSU.EDU**
Contact Faith with any specific questions you would like to have answered in this series.

 **ZOOM (REGISTER BELOW)**



<https://events.anr.msu.edu/PFASinAg/>

CAN'T MAKE IT?

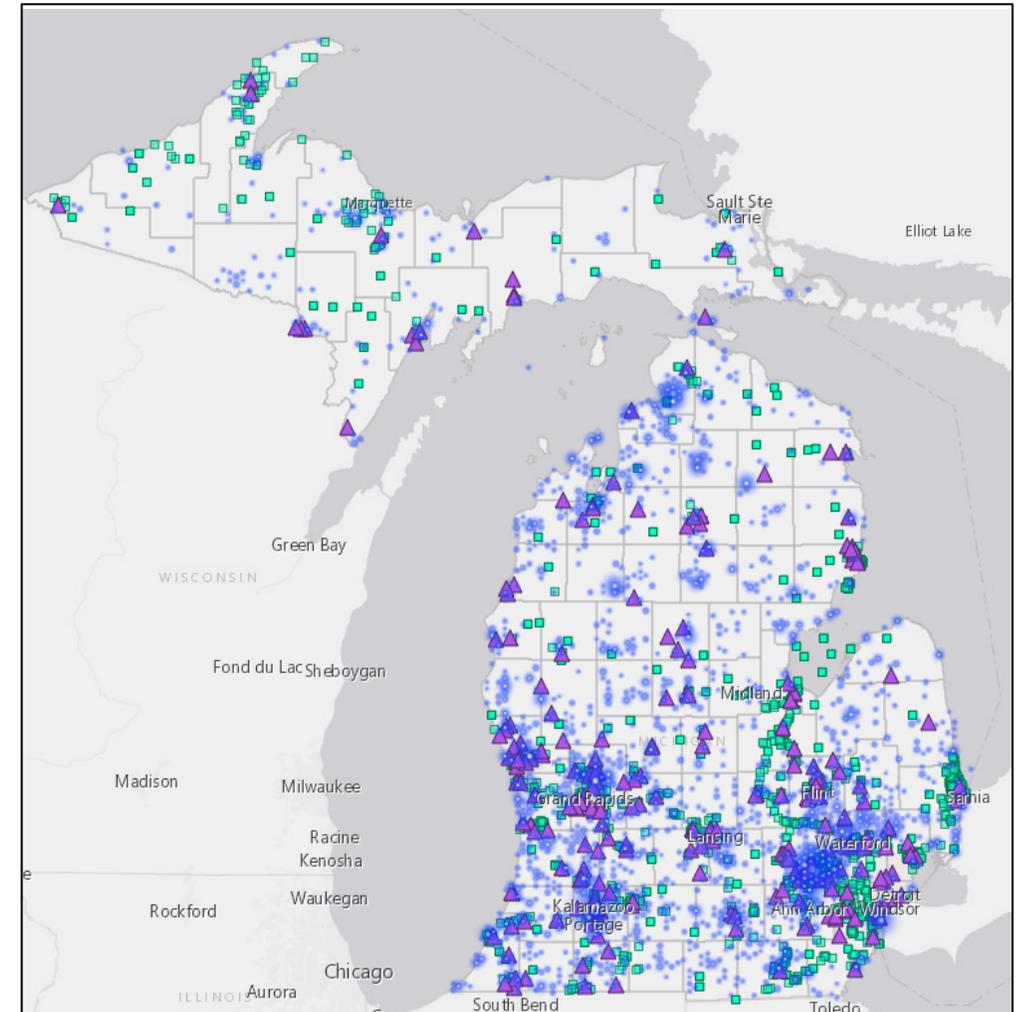
Zoom recordings will be available on our website:
<https://www.canr.msu.edu/pfas/resources>

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Resources

- MSU Center for PFAS Research
 - <https://www.canr.msu.edu/pfas-research/>
 - Keep up to date on PFAS Research at MSU and upcoming events and webinars
- MSU Extension
 - <https://www.canr.msu.edu/pfas/pfas-research>
- Michigan PFAS Action Response Team
 - <https://www.michigan.gov/pfasresponse>
 - Interagency collaboration to deal with PFAS contamination in Michigan
- PFAS and Agriculture Policy Workgroup
 - <https://farmland.org/pfas>
- MPART PFAS Map
 - [MPART: PFAS Geographic Information System](#)





Faith Cullens-Nobis

Michigan State University Extension

cullensf@msu.edu

Katie King

MSU Center for PFAS Research

KingKa22@msu.edu

Marcus Wasilevich

MDARD

wasilevichm@michigan.gov

Dan Jones

Michigan State University Dept. of Biochemistry and
Molecular Biology

jonesar4@msu.edu



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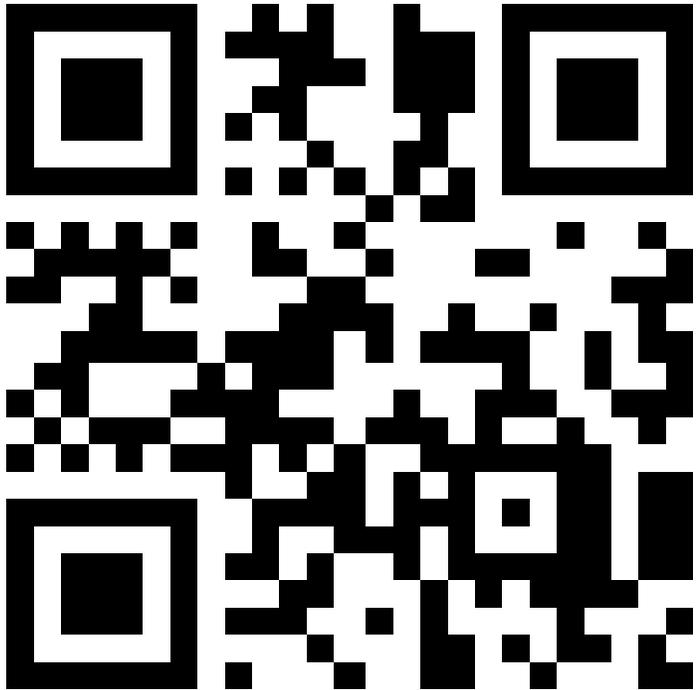


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Evaluation Survey – Please!!



- <https://bit.ly/4sFvDiY>

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To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online, at <https://www.usda.gov/sites/default/files/documents/ad-3027.pdf>, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

mail:
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:
(833) 256-1665 or (202) 690-7442;

email:
program.intake@usda.gov.

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