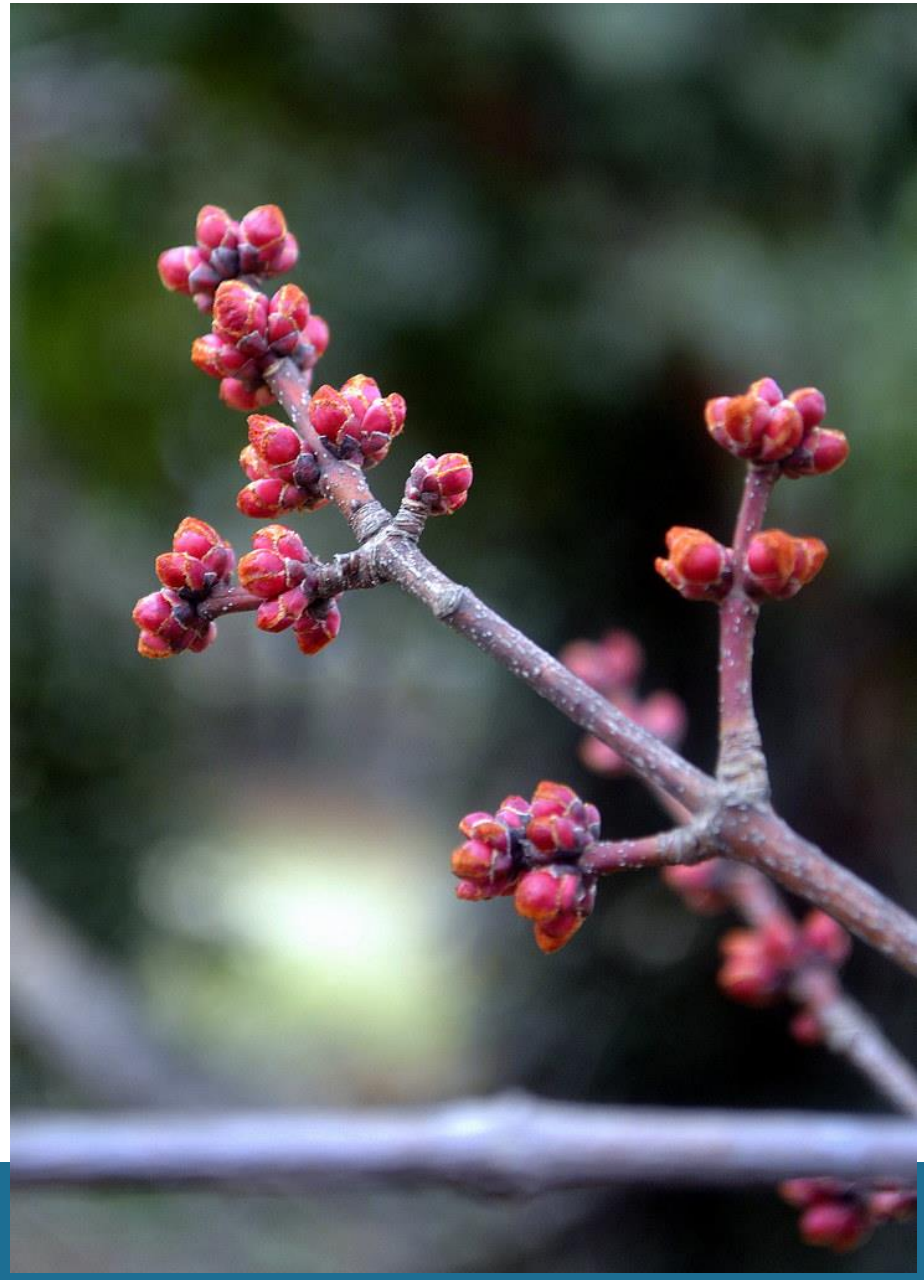
MPART Citizens Advisory Workgroup

March 10, 2026

Agenda

- Roll Call – Community Updates
- PFAS and Agriculture
- Subcommittees Updates
- PFAS Awareness Week Discussion
- MPART Updates



Roll Call and local updates/events/ sharing from communities

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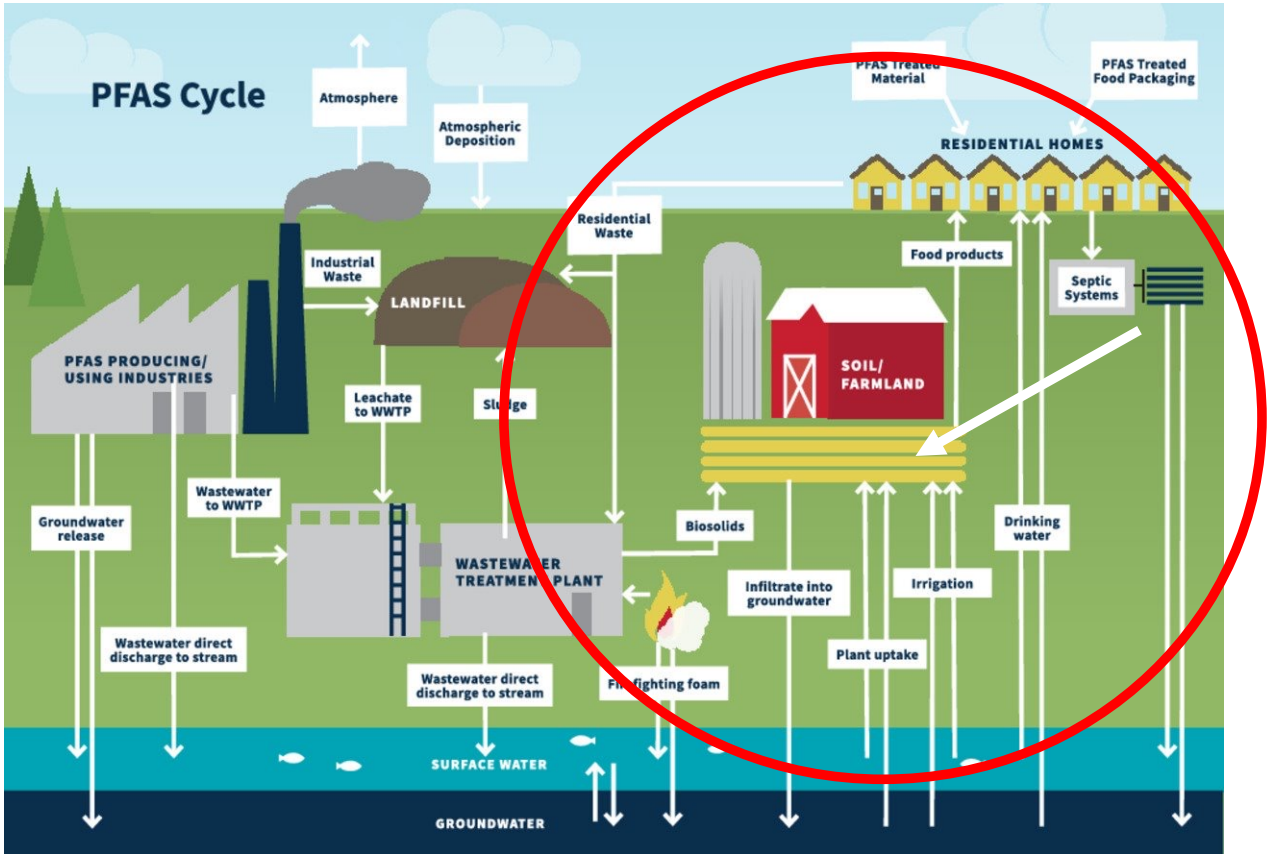
“Forever Chemicals” in Agriculture



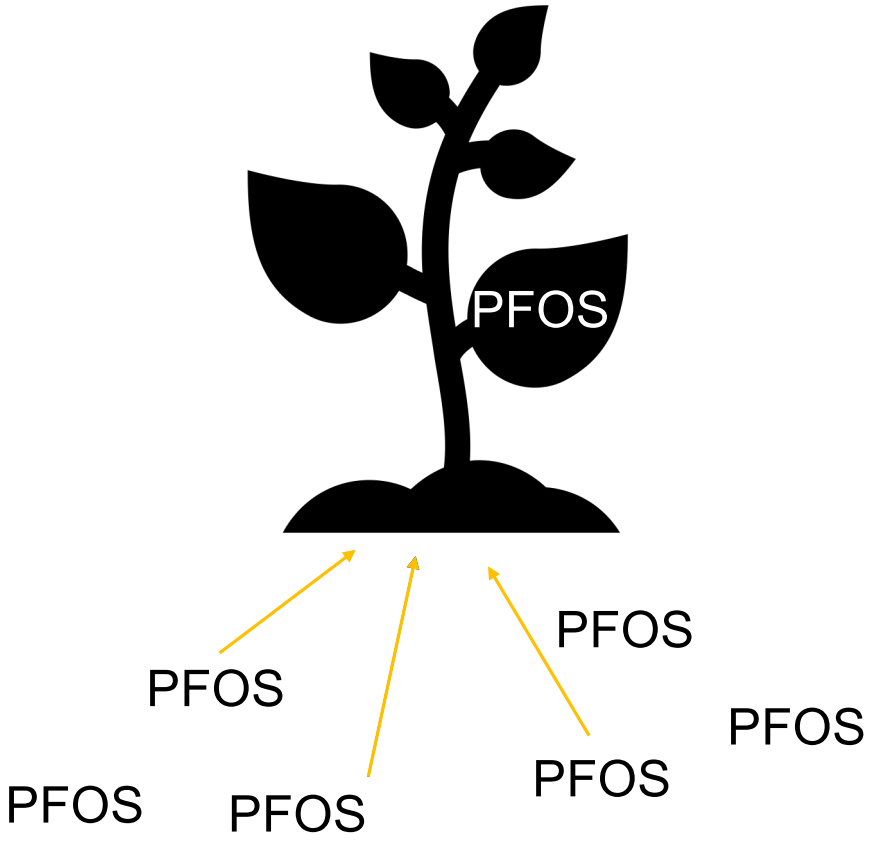
Faith Cullens Nobis
cullensf@msu.edu
517-388-1078



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

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** (some 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)

PFAS Forage Management Trial

Sonora Ortiz and Ellen Mallory, University of Maine Cooperative Extension

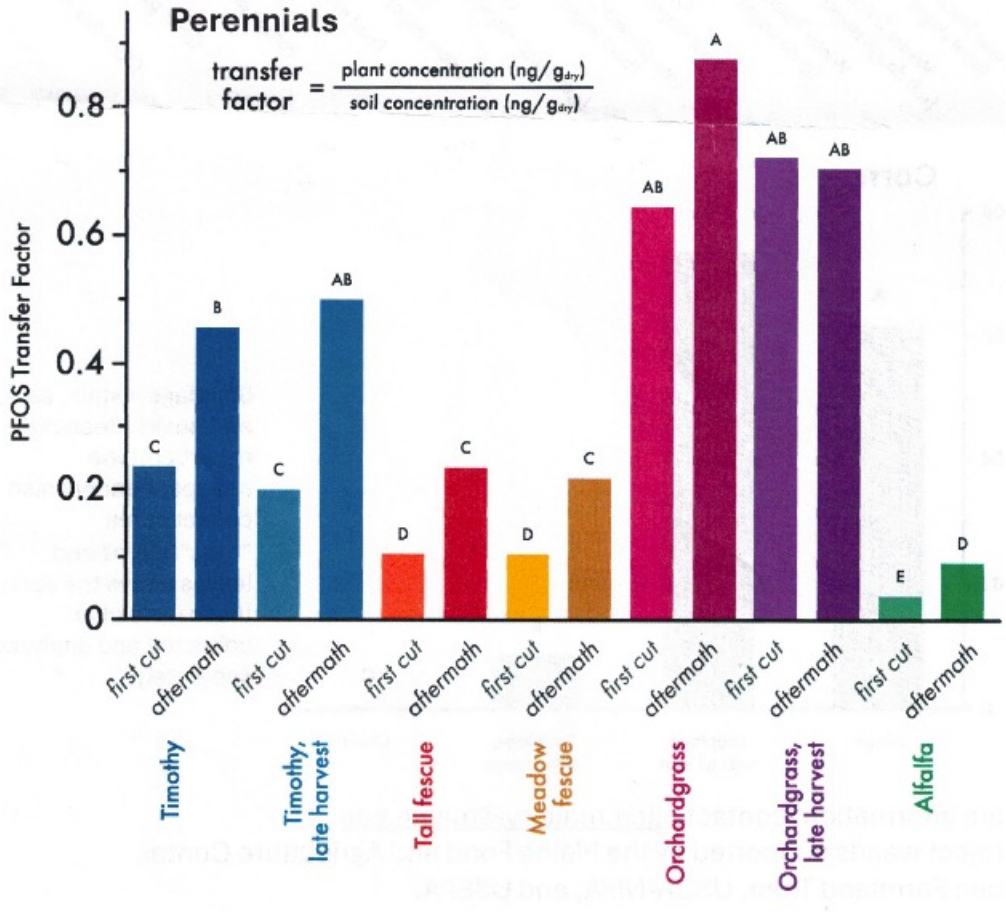
Research Objective - Identify management strategies that reduce PFAS concentrations in harvested forages.

Management Strategies Tested

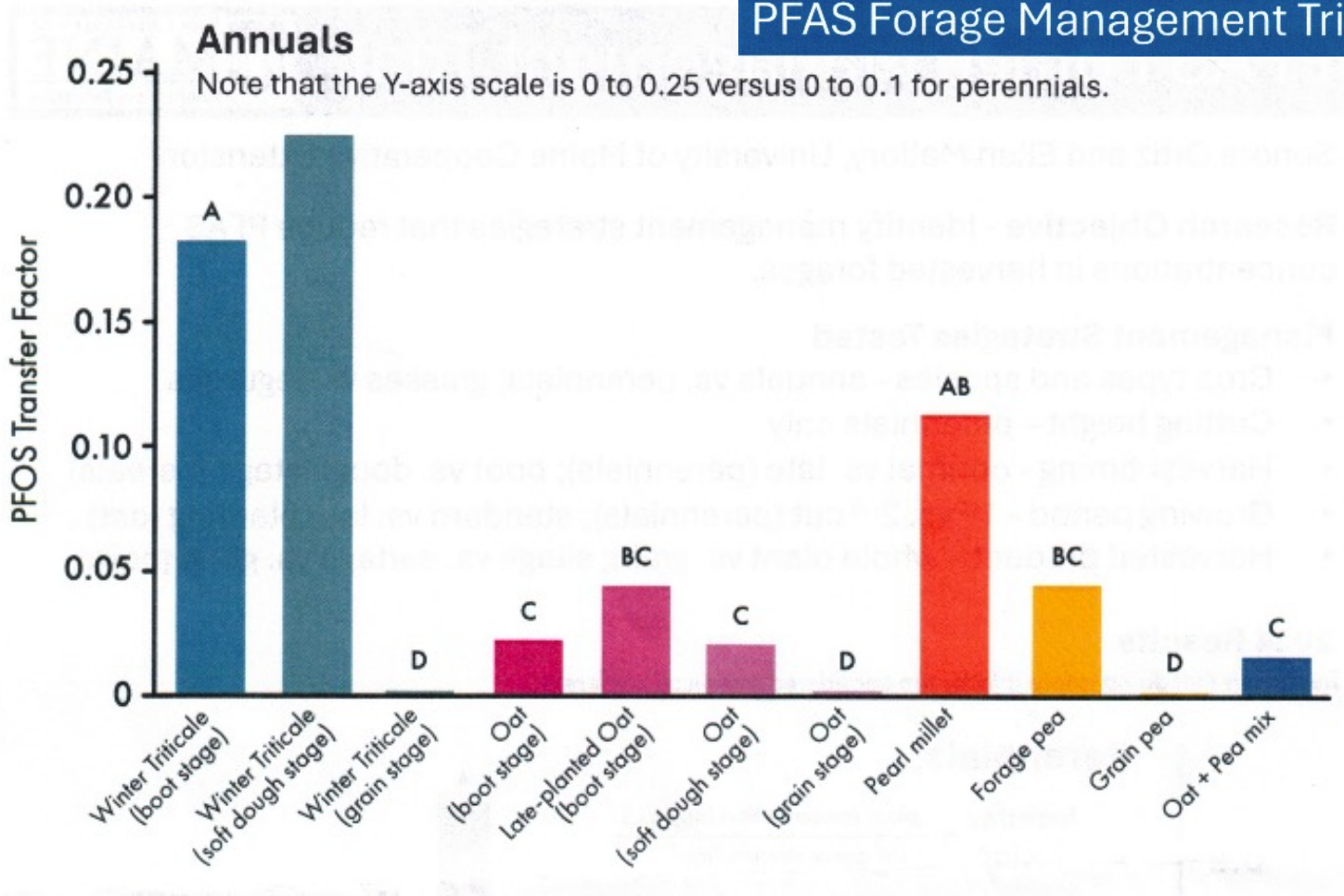
- Crop types and species - annuals vs. perennials; grasses vs. legumes
- Cutting height – perennials only
- Harvest timing - optimal vs. late (perennials); boot vs. dough stage (cereals)
- Growing period - 1st vs. 2nd cut (perennials); standard vs. late planting (oat)
- Harvested product – whole plant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

2024 Results

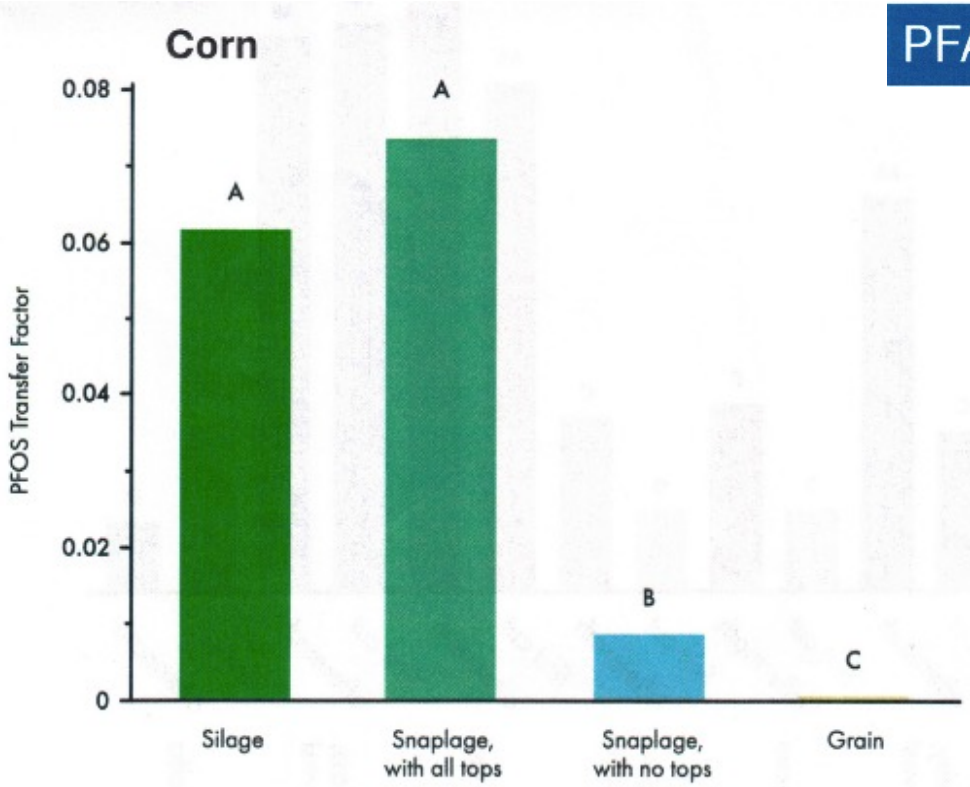
Treatments that do not share a letter are considered statistically different.



PFAS Forage Management Trial



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.

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

Open Access

Cite Share J

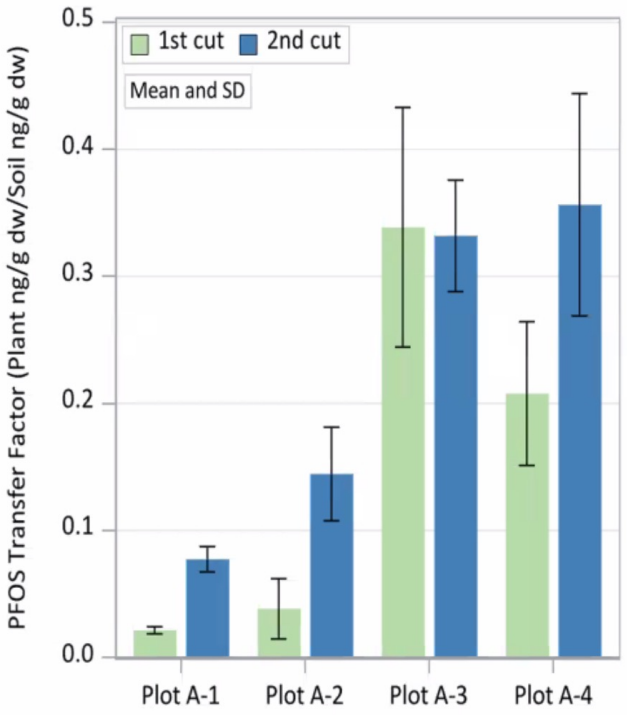
AGRICULTURAL AND ENVIRONMENTAL CHEMISTRY | October 8, 2024

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

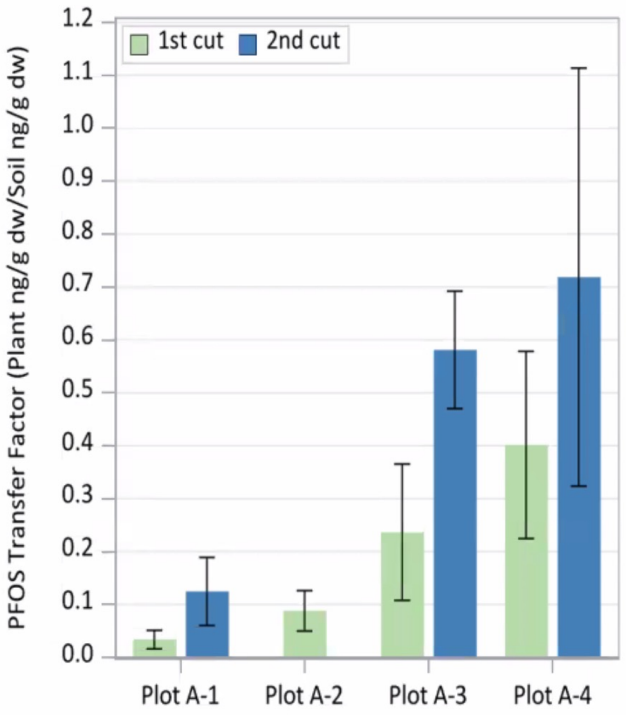
Thomas L. Simones*, Chris Evans, Caleb P. Goossen, Richard Kersbergen, Ellen B. Mallory, Susan Genualdi, Wendy Young, and Andrew E. Smith

Field Plots 1st and 2nd Growth Cuttings

Year 2 Cuttings



Year 3 Cuttings



Whether PFAS bind in the soil vs. move into the ground water vs. uptake into the plant varies due to:

- Specific structure and polarity of PFAS molecule
- Soil carbon (organic matter)
- Growing medium
- Soil mineral content
- Plant protein and lipid content
- pH
- Frequency of watering
- Growing season
- The interaction between all these variables

+ which portion of the plant is being consumed!

Differing PFOS Uptake By Vegetables		
Little	Some	More
Asparagus Bok Choy Corn (kernels) Green Beans Peppers Potatoes Rhubarb Broccoli	Arugula Carrots Kale Swiss Chard	Lettuce Spinach

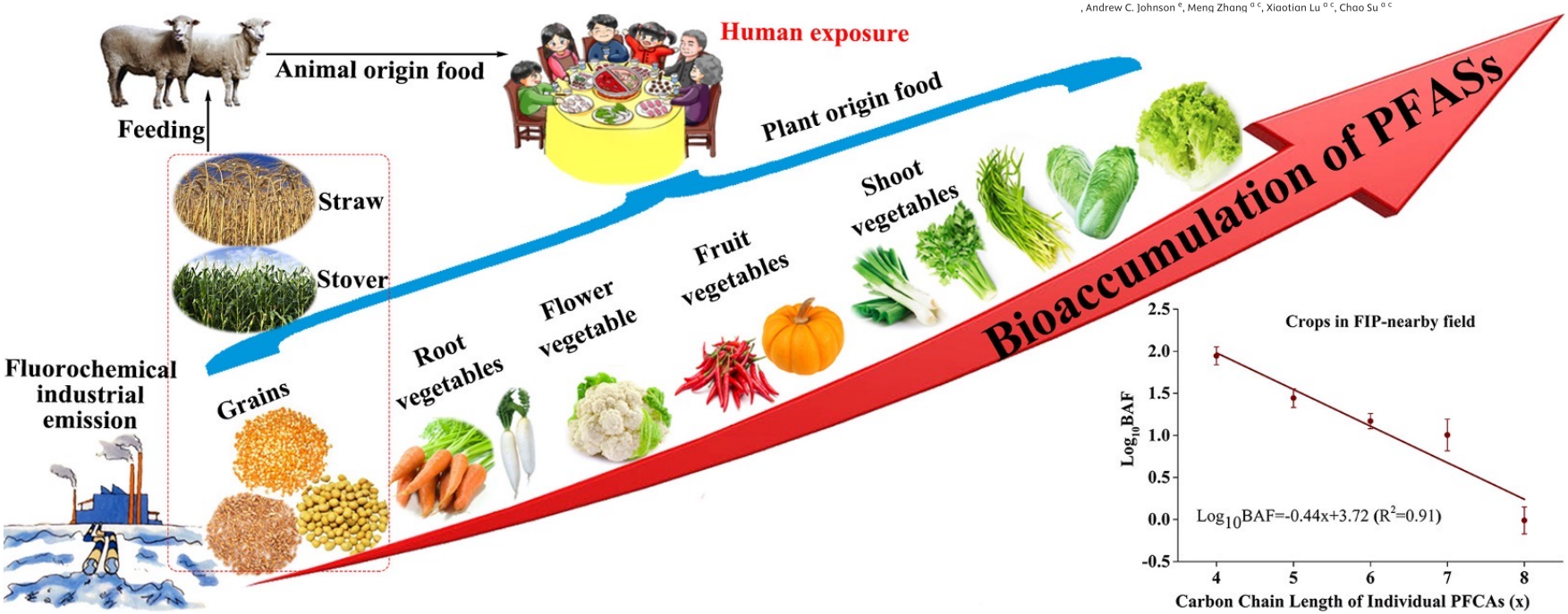
Yet to be published data from Maine

Plant selection

Environment International
Volume 127, June 2019, Pages 671-684

Multiple crop bioaccumulation and human exposure of perfluoroalkyl substances around a mega fluorochemical industrial park, China: Implication for planting optimization and food safety

Zhaoyang Liu [a b], Yonglong Lu [a c], Xin Song [b c], Kevin Jones [d], Andrew J. Sweetman [d e], Andrew C. Johnson [e], Meng Zhang [a c], Xiaotian Lu [a c], Chao Su [a c]



https://www.sciencedirect.com/science/article/pii/S0160412018332069#s0045

Case Study: Maine Dairy Farm

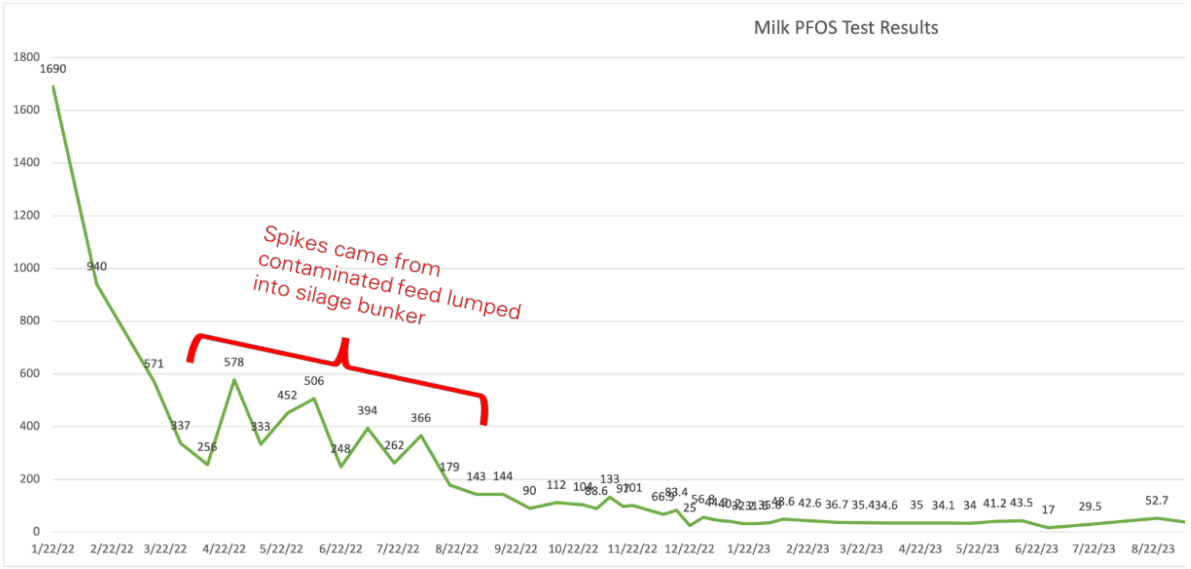
- Organic farm that produces raw dairy products
  - Direct to consumer and source to ~50 stores
- Acquired land after sludge spreading occurred in mid 90s
  - Some contaminated fields on property
  - Also purchased haylage from a different farm that was also contaminated from sludge applications
- All forage, no grain diet
  - Feed dilution with corn grain (low PFAS uptake) was not an option

Case Study: Maine Dairy Farm

- Milk levels (spring 2022) = 1690 ppt
  - 210 ppt is Action Level in Maine
  - Contamination resulted from 40/120 bales
- Pulled products off shelves immediately
- Purchased new herd to milk that were receiving clean feed
  - Maintain operations while they tried to clean old herd
- Decided to stop raising sheep and hogs

Case Study: Maine Dairy Farm

- Farmer kept track of which bales came from which fields
  - Mixed feed sources from clean fields with moderately contaminated fields to depurate cattle
  - Marked bales with different colors to keep track of PFAS levels in feed
- State monitored levels in milk by testing every 2 weeks
- Depurated cattle to below Maine action level within 3 months



Case Study: Maine Dairy Farm

- Farm posts PFAS test results on website to be transparent with customers
  - https://mistybrook.com/pfas/
- Use “PFAS tested” label they created
  - May help push consumers to demand for PFAS testing in other milk brands

Maine Trip: Mitigation Strategies & Takeaways

- Soil levels seem most predictive of impact from feed on cattle
  - Even “non-detect” hay was able to maintain low levels of PFAS in cattle (MDL was 150 ppt)
- Snaplage (stalk, ear and husk) & corn grain have very little PFOS accumulation
- Cholestyramine is being researched to help clear PFAS from people and animals with high concentrations in their blood

Livestock Research

- We know that PFAS can accumulate in livestock
  - We don't know much about health impacts to the animals
  - We don't have a reliable model to predict product PFAS from blood samples
- We need a better understanding of how PFAS chemicals accumulate in animals
  - PFOA doesn't appear to accumulate in beef
- Livestock will depurate when put on clean feed and water
  - Need more data for predicting depuration
- Michigan State University recently finished a beef cattle trial
- Maine has a binder study in sheep in progress
  - Cholestyramine

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

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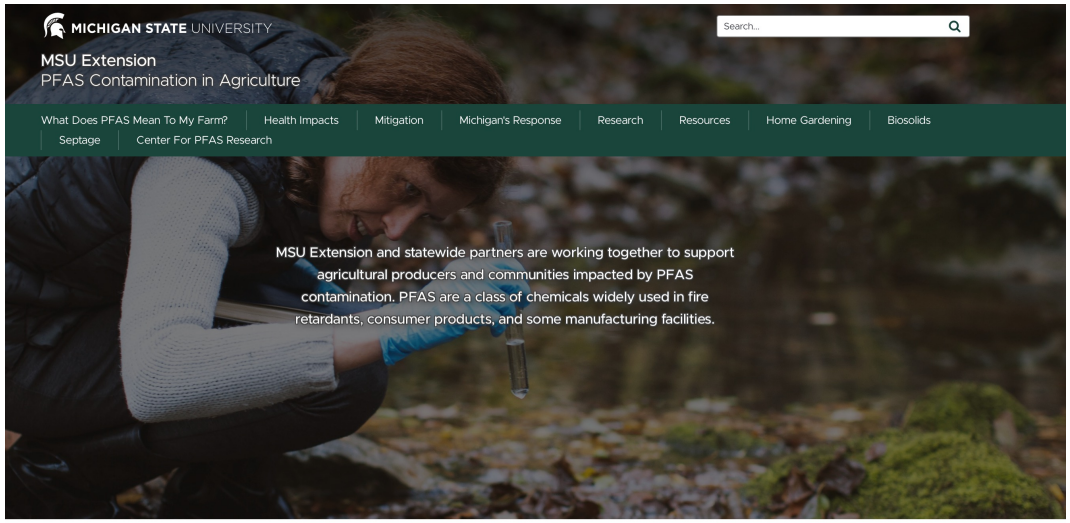
Education

- Website
  - https://www.canr.msu.edu/pfas/
- Popular press articles
  - PFAS in Ag
  - Biosolids
  - Tips for collecting water samples
- Multiple interviews for radio, print articles
- Handouts
  - PFAS in Agriculture
  - PFAS and Biosolids
  - PFAS and Septage
  - Tips for collecting water samples
  - Talking to Consumers about PFAS
- PFAS resource fair (Cadillac)
- Summer 2025 webinars for Wexford Co
- Train the Trainer activities within MSU



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Invited talks

- The Meat Industry Conference
- MI Onsite Waste-Water Conference
- MI Shepard's Weekend Conference
- SW MI Hort Days
- MSU's Grazing Group
- Master Gardeners
- Southern MI IPM Update
- Ag for Tomorrow Conference

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“Baseline” PFAS Sampling Project

- To understand what “background” concentrations of PFAS are on traditionally farmed land
  - No previous land applications of septage, biosolids, paper pulp, etc.
  - > 2 miles from PFAS site
  - 15 Samples in 13 counties (Nov 2025)
  - Work to be continued in 2026
- Method 1633 – 40 PFAS chemicals
- Soil OM, pH, type

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Identifying Baseline PFAS Levels in Agricultural Soils in Michigan

Background

Per- and polyfluoroalkyl substances otherwise known as PFAS or "forever chemicals" are a large class of manmade chemicals that are commonly used for their water, oil and stain resistant properties. These chemicals can be found in a wide range of products like firefighting foam, cosmetics, food packaging, non-stick cookware, carpeting, textiles, and more. Due to their widespread use, these chemicals can also be found in water, soil, fish, livestock, pets, wildlife and humans around the world. PFAS chemicals can also be found on agricultural land at varying levels, but more research is needed to identify the extent of this contamination. Research is on-going to understand the health impacts of PFAS. PFAS is considered a systemic toxicant as it effects multiple physiological systems. Some epidemiological studies suggest that PFAS exposure is linked to increased risk of cancer, especially kidney and testicular cancers, diseases in the reproductive system and thyroid, increased cholesterol, and a change in the body's immune response.

How do PFAS get onto farmland?

PFAS can enter farmland through several different pathways including land application of materials containing high levels of PFAS, such as biosolids, paper sludge, and tannery waste. Other pathways include irrigating with contaminated water and potentially though the application of pesticides, fertilizers, septage, and precipitation although more research is needed to understand the extent of soil contamination resulting from these applications. Since 2021, Michigan has implemented a PFAS interim strategy to limit the land application of biosolids with high levels of PFAS. Prior to 2021, some biosolids may have contained high levels of PFAS and have been applied to some farmland across the state. For more information about PFAS in biosolids, farms or septage, please visit: https://www.canr.msu.edu/pfas/ .

What is this study?

This is an exploratory soil sampling study to identify what levels of PFAS to expect on typical Michigan farms that do not have risk factors for PFAS contamination.

Why is MSU doing this study?

In the near future, MSU will be working with state partners to develop a PFAS Farmer Assistance Program where farmers can work with MSU staff to test their land for PFAS chemicals. In this program, MSU will help with data collection and interpretation and will provide farmers with recommendations for mitigation to reduce contamination getting into their products and animals. This study will provide us with information on what levels of PFAS we can expect to find on agricultural land without any risk factors for contamination. It will also provide context for how many farms may want to use this program in the future.

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January 13, 2026

Thank you for participating in MSU Extension's project to quantify baseline PFAS levels in agricultural soils with low risk. This data is very important to the state and the country. It is imperative to understand what PFAS levels from precipitation and general farming practices are in the soil. In 2025, we took 17 samples from low risk fields over 15 counties.
We anticipate continuing this project in 2026 to include more areas of the state. To be included in this project, fields needed to be at least 2 miles from an identified PFAS site and have no history of application of biosolids, paper sludge, tannery waste or unknown soil amendments.

In this report you will find introductory information about PFAS basics, the sampling methods used on your farm, information on how to interpret the PFAS report from the laboratory, along with helpful resources for more information. For confidentiality purposes, we will not include any data about the PFAS concentrations found on your farm in this report. Those results will be sent in a separate file. If you have any questions about this report or your PFAS results, please contact Faith Cullens-Nobis (cullensf@msu.edu) or Katie King (kingka22@msu.edu) and we are happy to assist you.

These data will be shared widely, however the location and any other identifying factors related to your farm will be confidential. To help protect privacy, data is coded by region, using the Michigan Emergency Preparedness Regions as shown below.

Regions used to describe location of sample collection.

Background sampling project

- Privacy of producers was ensured
- Several MSUE educators helped us line up farms
- Also sampled irrigation water and drinking water for dairy cattle (and people)
- Walked off roughly 1 acre at least 50m from the field edge, took 30 increments and combined

- Funding for this project was provided by MDARD
  - Travel
  - Sample analysis

- Want to sample 10-15 more farms this spring

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Baseline PFAS in Agricultural Soils in Michigan- ongoing project

- 2025/2026 project – sampled 17 low risk fields in 16 counties
- 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

- 6 different chemicals were detected (max 5 in one sample)
  - PFOS, PFOA, PFDA, PFHxA, PFNA, PFBA

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Higher Risk Soil Results

- 3 biosolid fields sampled – not known to be industrially impacted
- All three had detections of PFAS
  - 5 PFAS compounds detected in 2/3 samples (PFOA, PFOS, PFDA, PFHxA and PFNA)
  - PFOS was the only detection for 1/3 fields
- Highest total PFAS concentration was 0.89 ppb
  - All three were slightly elevated compared to neighboring field with no biosolid history

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Risk Assessments and Sampling

- Working directly with farms that have come to MSU with concerns
- Working jointly with MPART on farms they have concerns about

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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 (linked below).
https://www.canr.msu.edu/pfas/resources

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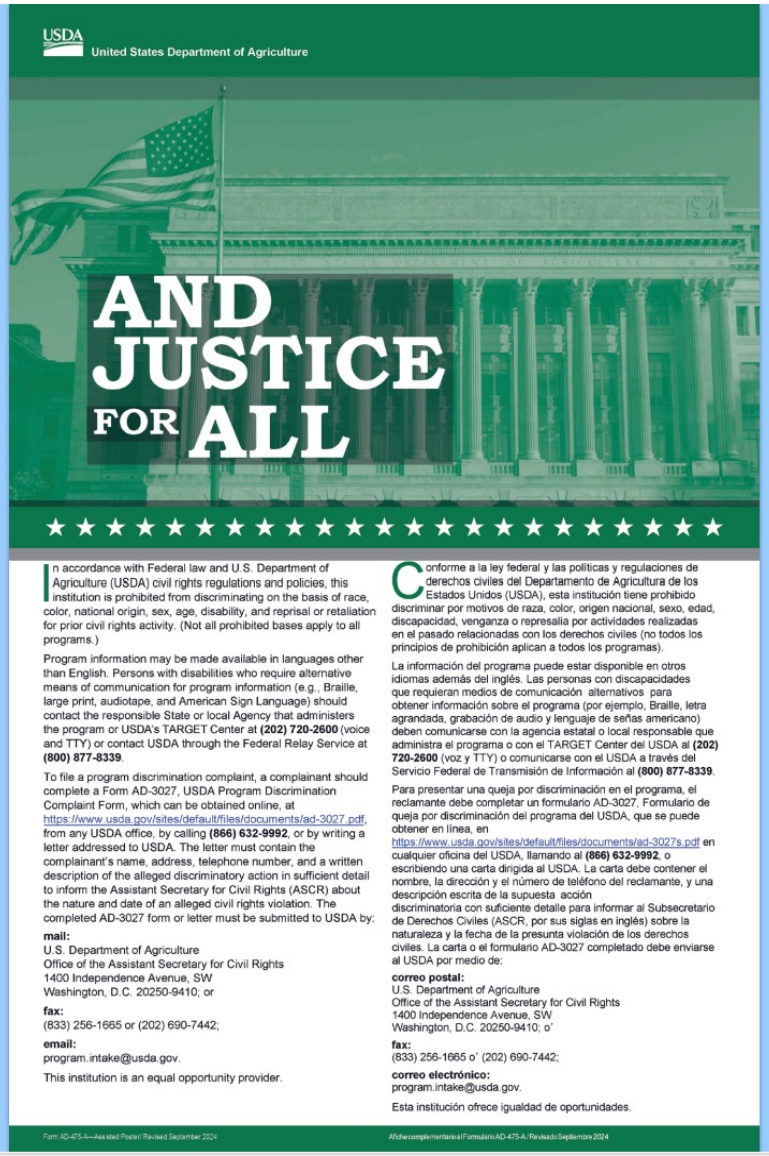

USDA United States Department of Agriculture

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

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

correo electrónico:
program.intake@usda.gov.

Esta institución ofrece igualdad de oportunidades.

Form AD-475-A—Assisted Postal | Revised September 2024

Aficheo complementario al Formulario AD-475-A | Revisado Septiembre 2024

CAWG Subcommittee's

WEBSITE REVIEW SUBCOMMITTEE

PREVENTATIVE MEASURES SUBCOMMITTEE

ENGAGING THE PUBLIC SUBCOMMITTEE

MEMBERSHIP SUBCOMMITTEE

PFAS Awareness Week

September 21-25, 2026

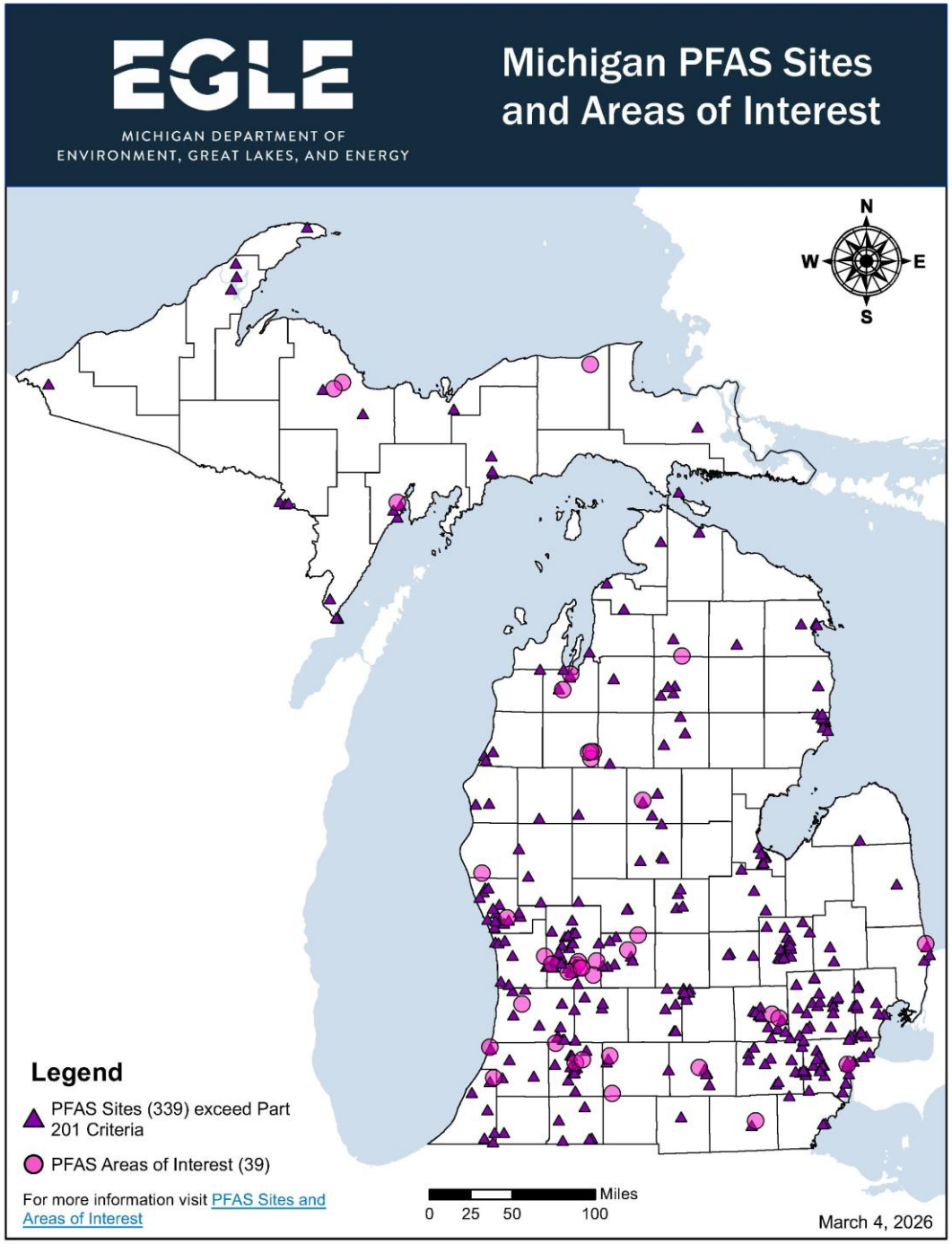
Rick Rediske

MPART

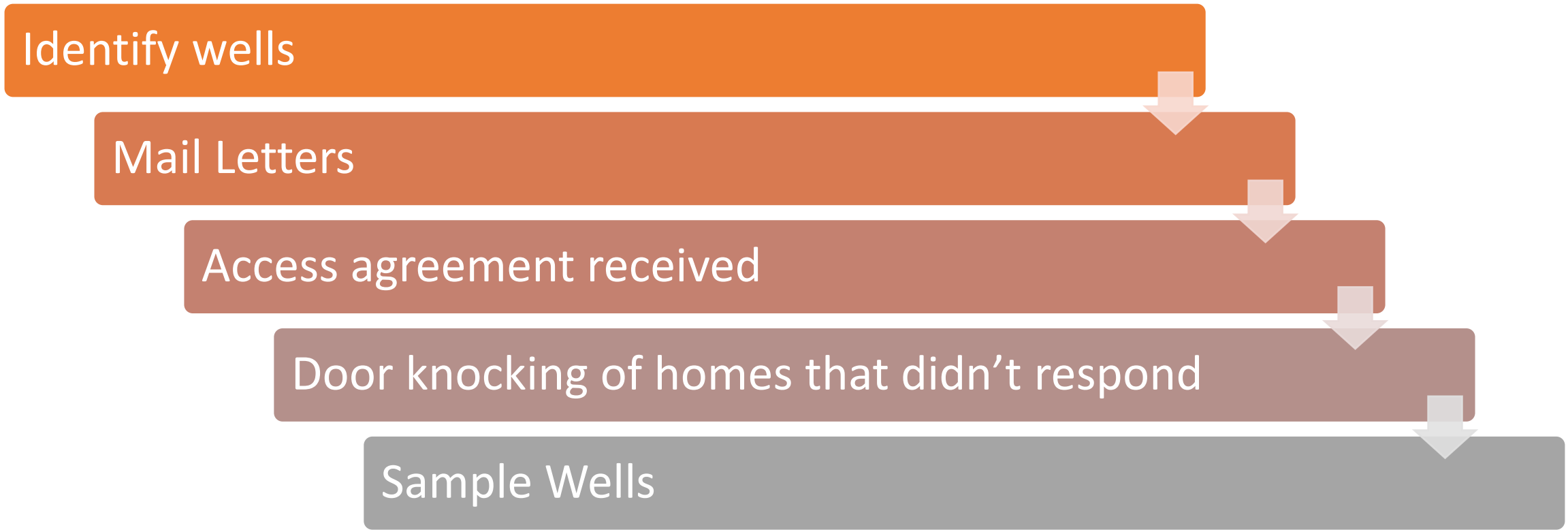
MICHIGAN PFAS ACTION RESPONSE TEAM

New MPART Sites / Areas of Interest

- Sanico North Landfill
  Nunica, Ottawa County
- Former Fennville City Dump
  Fennville, Allegan County
- 5860 Ford Road
  Superior Twp, Washtenaw County
- Dexter Lock
  Grand Rapids, Kent County
- Ford Milan
  Milan, Monroe and Washtenaw County
- 3390 South West Bay Shore Drive
  Traverse City, Leelanau County
- 225 Coats Avenue
  Reed City, Osceola County



Residential Well Sampling Process



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

EGLE

PHILLIP D. ROOS
DIRECTOR

<Insert Date>

<insert first name> <insert last name>
<insert Street Address>
<insert City, State, Zip Code>

Dear <insert first name> <insert last name>:

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is offering to test your well water for PFAS—**at no cost to you**.

Your home was selected because it's near a location where PFAS may have been used or released. PFAS are a group of man-made chemicals that stay in the environment for a long time and may affect your health if you're exposed to high levels over time.

Why We Want to Test Your Water

Testing your well helps us understand if PFAS are present and if any action is needed to protect your health.

How to Get Your Water Tested

To have your well tested for free, we need your permission. Please fill out the enclosed **Access Agreement Form** and return it to EGLE's contractor AECOM by add date in one of these ways:

- **Take a photo** of the signed form and email it to: Emily.Daniels@AECOM.com
- **Mail the signed form** to:
  AECOM
  3950 Sparks Drive SE, Suite 200
  Grand Rapids, MI 49546

Once we receive your form, our contractor will contact you to schedule a time to collect a water sample. If you have an outdoor spigot, you don't need to be home for the sampling.

What Happens Next

You'll receive your test results along with an explanation. If the results show a potential concern for your health, we'll call you right away. If needed, we'll discuss alternative water options at no cost until a long-term solution is in place.

Want to Learn More?

Visit: Michigan.gov/PFASResponse

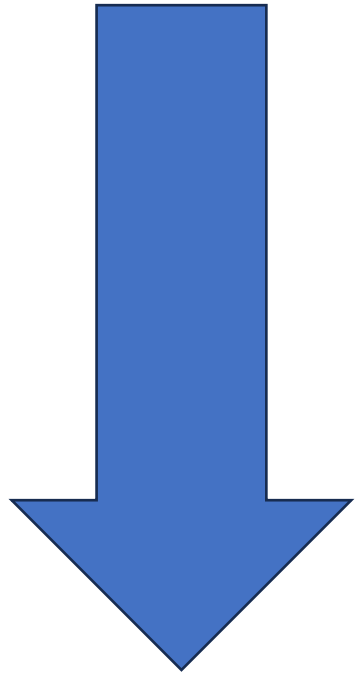
If you have questions, feel free to contact any of the team members listed below:

- **EGLE Site Lead:** EGLE Site Lead Name, EGLE District Office, email and phone number
- **MDHHS Toxicologist:** MDHHS Toxicologist Name, MDHHS, email and phone number
- **Local Health Department Contact:** LHD rep name, title of local health department, email and phone number

Sincerely,

(EGLE Site Lead)

Poor Response Rate



Sampling initiatives:

- Hartland Fire Training Center
  - 14 letters sent to residents – 3 responded (~ 21%)
- Milton Township Fire Department
  - 16 letters sent to residents – 1 response (~ 6%)
- National Airport site
  - 5 letters sent to residents and one commercial property – 0 response (0%)
- Broomfield Valley MHP area
  - 17 letters sent to residents – 1 response (~ 6%)

Poor Response Rate

Concerns we've heard:

- Government untrust
- Apathy / don't open mail
- Fear results may impact property values
- Some areas targeted for sampling may be seasonal
- Already has a filter or is going to purchase
- Others concerns not included…?

Ideas to Improve Response Rate

- Postcard vs. letter
- QR code
- Electronic fillable form
- Other ideas?

Next Meeting:

April 14, 2026

Michigan PFAS Action Response Team (MPART)

www.Michigan.gov/PfasResponse

EGLE
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Michigan Department of Agriculture & Rural Development

MDHHS
Michigan Department of Health & Human Services

MDOT
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