



# PFAS Overview

PER-AND POLYFLUOROALKYL SUBSTANCES

# Content

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BACKGROUND



USES



EXPOSURE



HEALTH  
CONCERNS

# Per- and Polyfluoroalkyl Substances (PFAS)

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## What are they?

Human-made

Strong carbon-fluorine bonds

Surfactants

Highly stable

Repel water, oil, fat, and grease

Began developing in 1940s

Thousands of compounds today

## Why the concern?

Widespread through the ecosystem

Don't break down easily – Hard to get rid of

Bioaccumulate – Build up in our bodies

Some PFAS may affect health

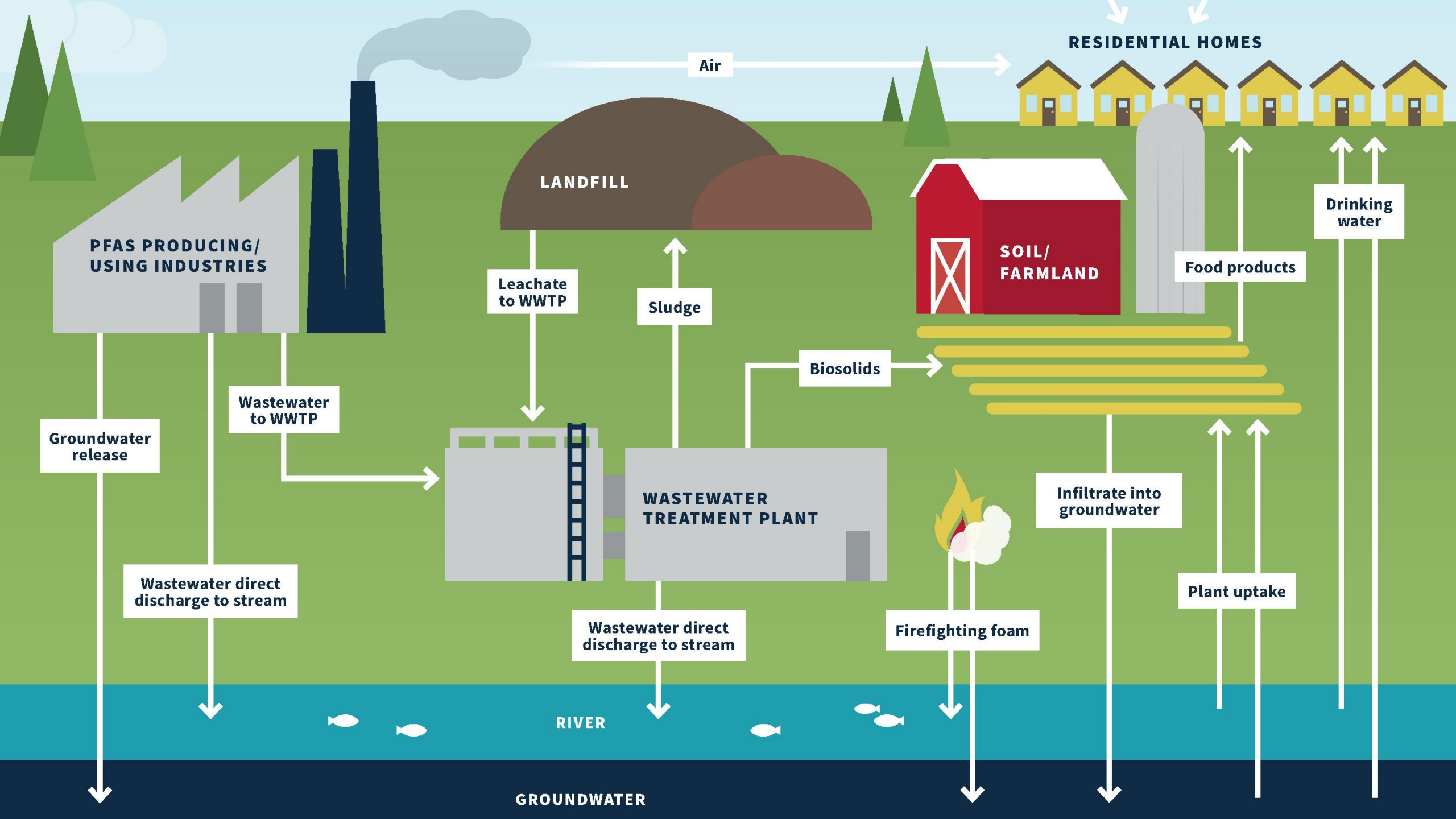
Some emerging science/information

Lack of federal standards

# PFAS Uses



<https://www.sixclasses.org/videos/pfas>



## Michigan PFAS Standards

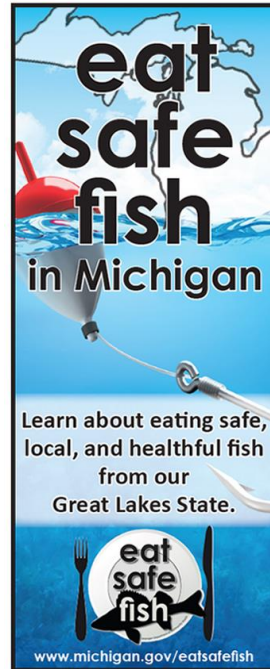
Compound	Michigan Standards
PFNA	6 ppt
PFOA	8 ppt
PFOS	16 ppt
PFHxS	51 ppt
GenX (HFPO-DA)	370 ppt
PFBS	420 ppt
PFHxA	400,000 ppt

\* PPT - Parts per Trillion



# Exposure to PFAS Chemicals

- Drinking contaminated municipal or private well water.
- Eating fish caught from water contaminated by PFAS - PFOS in particular).
  - “Eat Safe Fish” Guidelines.
- Accidentally swallowing of contaminated soil or dust.
- Eating food grown or raised near places that used or made PFAS.
- Eating food packaged in materials containing PFAS.
- Using some consumer products such as stain resistant carpeting and water repellent clothing.
- PFAS absorption through skin is typically not a concern. Think foam.



# PFAS Foam

- **What does naturally occurring foam look like?**
  - Is off-white and/or brown
  - Often piles up in bays, eddies, or river barriers such as dams
  - May have an earthy or fishy smell
  
- **What does PFAS foam look like?**
  - Can be bright white
  - Is usually lightweight
  - Can be sticky
  - Tends to pile up like shaving cream
  - Can blow onto the beach





# Associated Human Health Outcomes

## PFOA and/or PFOS

The infographic is divided into two main sections. The top section, titled 'Pregnancy', features a central silhouette of a pregnant woman. To her left, a box lists pregnancy-related health effects: Low birth weight, Early birth, and High blood pressure or a condition called preeclampsia caused by pregnancy. To her right, another box lists effects on the child: Delayed puberty, Immune Response Suppression, and Attention deficit/hyperactivity disorder (ADHD). The bottom section, titled 'What health effects are related to exposure to PFAS in non-pregnant adults?', lists five conditions: Difficulty becoming pregnant, Altered liver function, Chronic kidney disease, Heart disease, and Diabetes. Each condition is accompanied by a small icon representing the affected organ or function.

**Pregnancy**

- Low birth weight
- Early birth
- High blood pressure or a condition called preeclampsia caused by pregnancy

- Delayed puberty
- Immune Response Suppression
- Attention deficit/hyperactivity disorder (ADHD)

**What health effects are related to exposure to PFAS in non-pregnant adults?**

- Difficulty becoming pregnant
- Altered liver function
- Chronic kidney disease
- Heart disease
- Diabetes

- Reduced fertility
- High blood pressure or pre-eclampsia in pregnant women
  - Small decreases in infant birth weight
- Higher cholesterol
  - Especially total cholesterol and LDL cholesterol
- Thyroid disease
- Liver damage
- Decreased immune system response to vaccines
- Developing certain types of cancer
  - In particular, kidney and testicular cancers\*

# Role of MDHHS/ Local Health Department

- Understand the health concerns facing your community.
- Develop a plan to investigate and address health risks.
  - EGLE leads the site investigation.
  - MDHHS and the Local Health Department lead the public health planning and response.
- Evaluate PFAS exposures to residents in the community.
  - Recommend public health actions as needed.

