PFAS Update

Michigan Great Lakes SWANA Chapter
September 29, 2020

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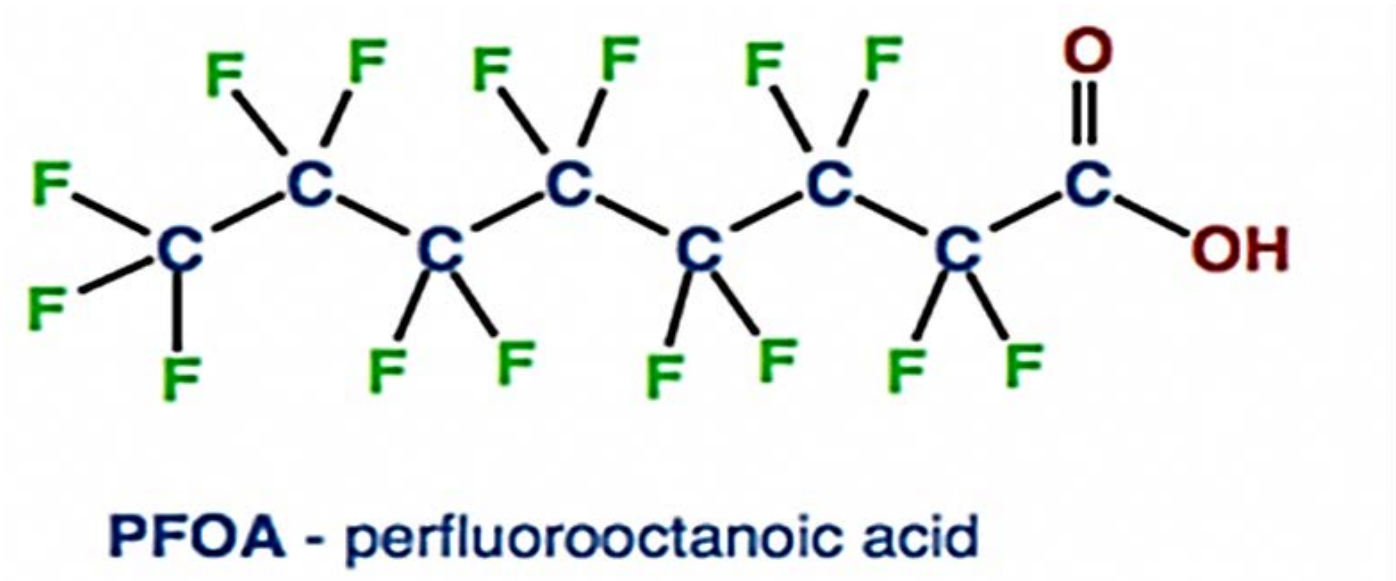
Per- and Polyfluoroalkyl Substances (PFAS)



PFOA - perfluorooctanoic acid

- **Strong Carbon-Fluorine Bonds**
- Surfactants
- Repel Water, Oil, Fat, and Grease
- Began Developing in 1940s
- 5,000 + Compounds Today

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PFAS Uses

Aerospace

Apparel and Fabrics

Building and Construction

Chemicals and Pharmaceuticals

Electronics

Oil, Gas, and Energy

Industrial

Healthcare and Hospitals

Aqueous Film Forming Foam

Food Packaging

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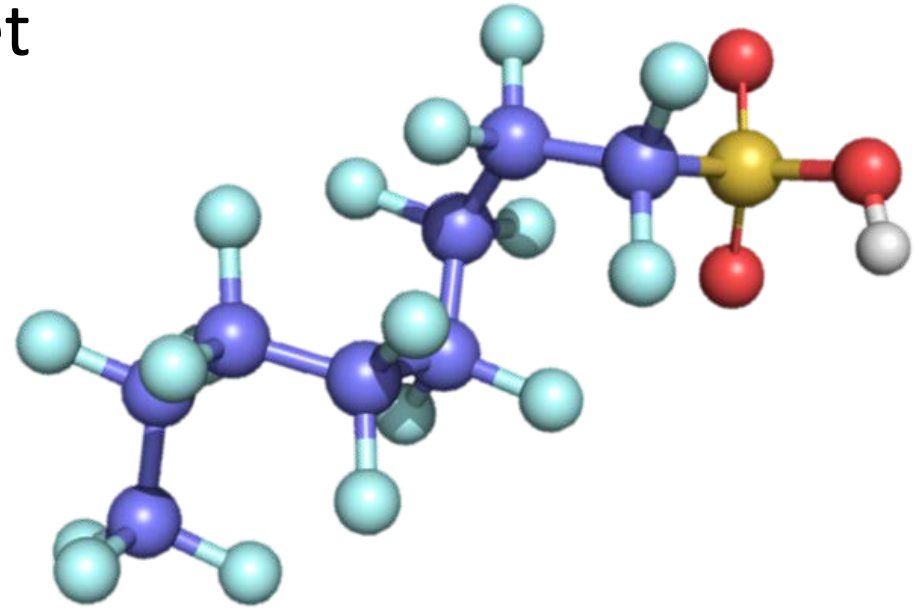
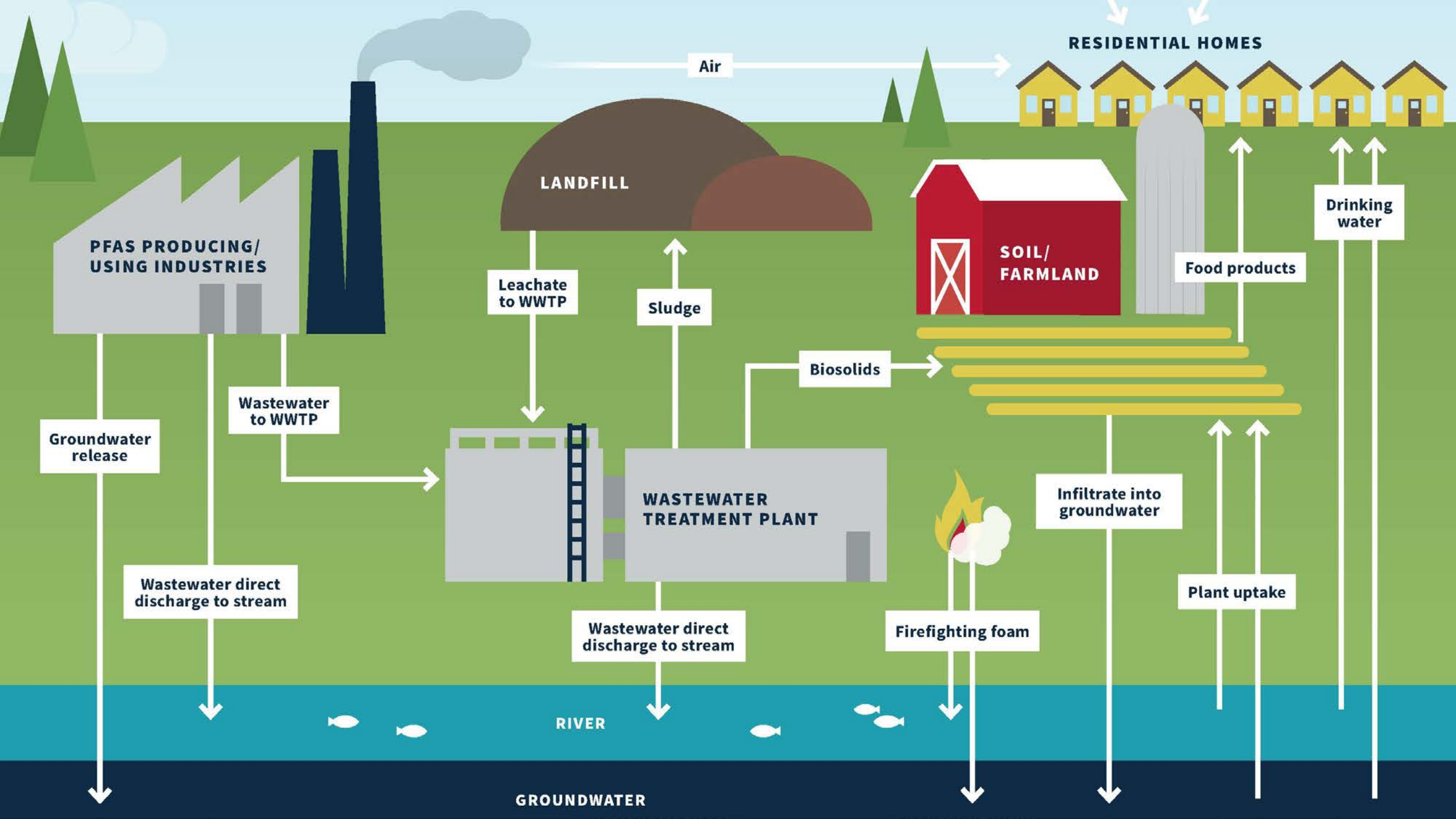
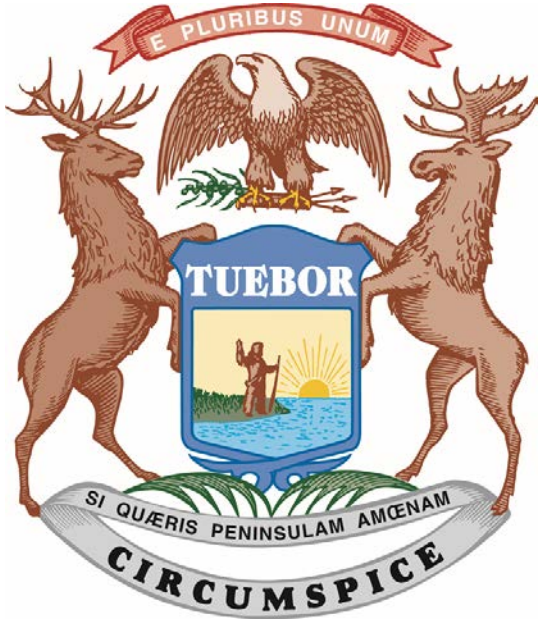
Why the Concern?

- Widespread
- Don’t break down easily – hard to get rid of
- Bioaccumulative – build up in our bodies
- Some PFAS may affect health
- Lack of information
- Lack of national regulations




RESIDENTIAL HOMES
Air
LANDFILL
PFAS PRODUCING/
USING INDUSTRIES
SOIL/
FARMLAND
Drinking
water
Food products
Leachate
to WWTP
Sludge
Biosolids
Wastewater
to WWTP
Groundwater
release
WASTEWATER
TREATMENT PLANT
Infiltrate into
groundwater
Plant uptake
Wastewater direct
discharge to stream
Wastewater direct
discharge to stream
Firefighting foam
RIVER
GROUNDWATER

Michigan PFAS Action Response Team (MPART)



- Executive Order 2019-03
- Unique multi-agency approach
- Leads coordination and cooperation among all levels of government
- Directs implementation of state's action strategy

Taking Action to Protect the Public's Water

- Drinking water
- Groundwater
- Surface water

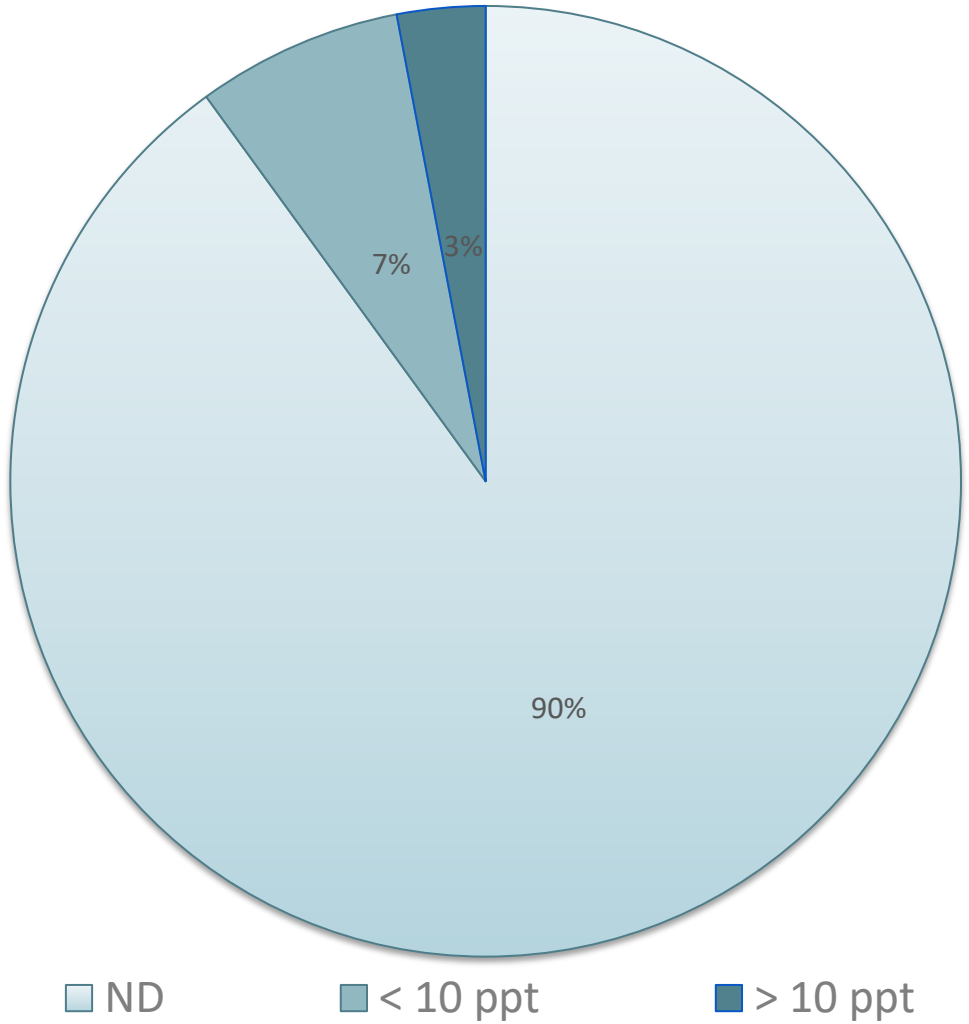
Public Water Supply Testing

- All community water supplies (1,114)
- All tribal systems (17)
- Schools and larger day cares (619)
- Additional select water supplies
- Monitoring
  - All 65 surface water systems
  - 61 systems > 10 ppt total PFAS
- 70 ppt PFOA+PFOS USEPA Lifetime Health Advisory

Total PFAS in MI Public Water Supplies

EPA Method 537 Rev 1.1

NEtFOSA	NMeFOSAA	PFBS
PFDA	PFDoA	PFHpA
PFHxS	PFHxA	PFNA
PFOS	PFOA	PFTA
PFTrDA	PFUnA	



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Drinking Water Standards

- Science Advisory Panel Report, December 2018
  - 70 ppt standard for PFOA+PFOS too high
  - Other PFAS should be considered
- No federal standards to adopt
- Michigan's two-step approach
  - Science Advisory Workgroup provided health-based values
  - EGLE promulgated standards in rule

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Michigan's Drinking Water Standards

- Maximum Contaminant Levels (MCLs)
- August 3, 2020
- 2,700 water systems

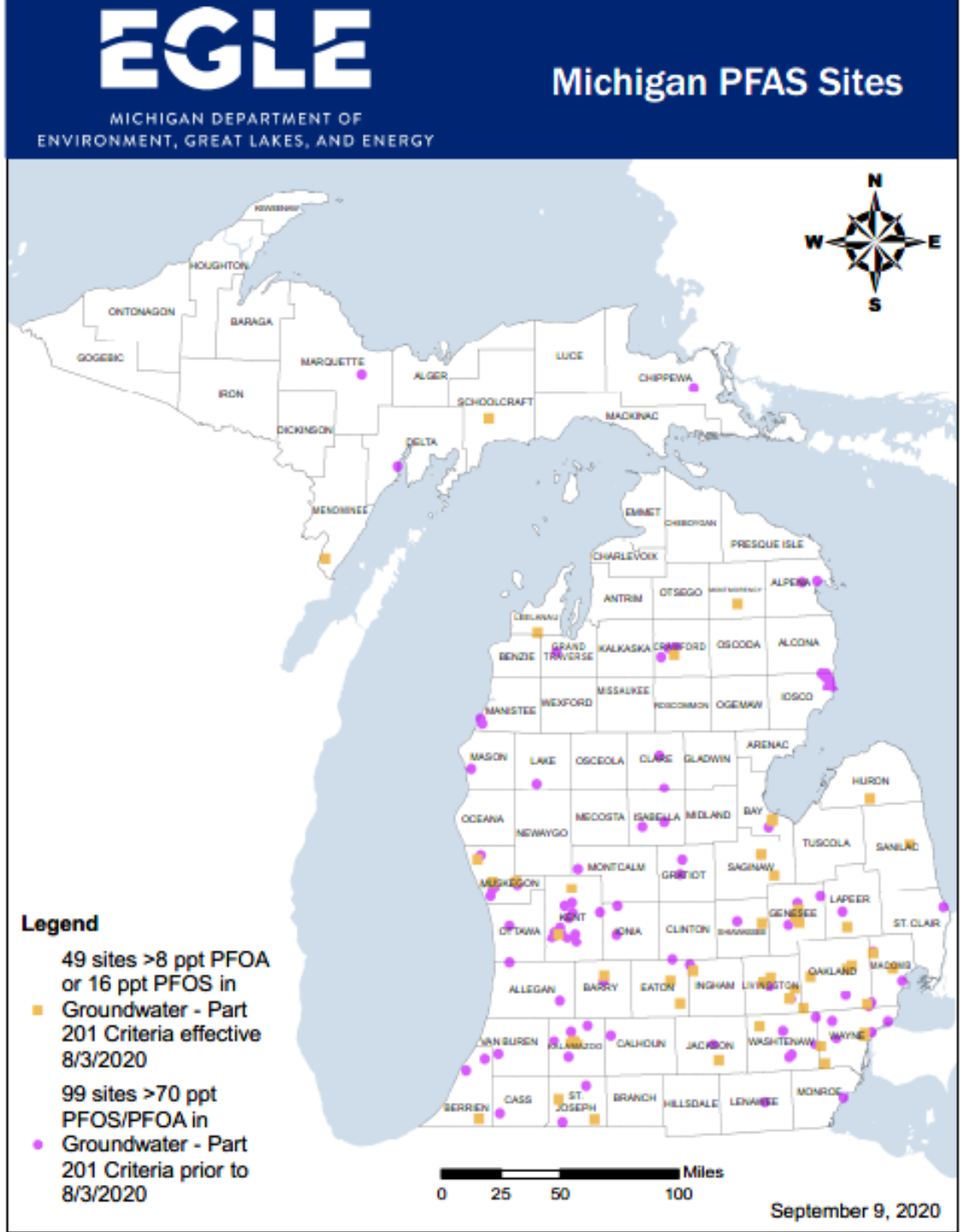
Compound	MCL	EPA Recommendation
PFNA	6 ppt	NA
PFOA	8 ppt	70 ppt combined
PFOS	16 ppt	
PFHxS	51 ppt	NA
GenX (HFPO-DA)	370 ppt	NA
PFBS	420 ppt	NA
PFHxA	400,000 ppt	NA

7 MCLs ≠ 7 Cleanup Criteria

- Groundwater cleanup criteria already in rule

Compound	Prior to 8/3/20	After 8/3/20
PFOA	70 ppt combined	8 ppt
PFOS		16 ppt

- Rulemaking necessary for other 5 MCLs to become groundwater cleanup criteria
- Important for how we define a PFAS site



PFAS Sites

- Exceed groundwater cleanup criteria
  - Expanded from 99 to 138 sites on August 3, 2020
- Prioritized investigations based on known or suspected sources, potential for exposure
- Protect drinking water pathway

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Surface Water Investigations

- Survey of surface water and fish
- Foam
- Wastewater

Industrial Pretreatment Program PFAS Initiative

- EGLE, WWTPs, users working together
- 2 reports in June 2020
  - Fume suppressant study
  - PFAS in municipal WWTPs
- Surface water criteria
  - 12 ppt PFOS (11 ppt DW source)
  - 12,000 ppt PFOA (420 ppt DW source)

Waste Disposal Issues

- MPART facilitating coordination among landfills and wastewater treatment plants
- Leachate is impacted*
  - 16 to 3,200 ppt PFOA
  - 9 to 960 ppt PFOS
- Options for managing impacted leachate
  - Onsite (recirculate, deep well injection)
  - Pretreatment (GAC, RO)
  - Schedule loads to WWTP or CWT
  - Local limits

*MWRA Statewide Study, March 2019

Waste Disposal Issues

- Waste stabilization studies
  - Can leachability of PFAS effectively be reduced?
- Analytical methods
  - Only nationally-validated methods are for drinking water
  - Appropriate leach test method?
- No solid waste or hazardous waste standards
  - Concern over what future regulations may require

PFAS Challenges in Composting

- PFAS in food packaging
  - No PFOA or PFOS
- Industrial impacted biosolids
- PFAS in industrial by-products (e.g., paper mill sludges)
- Impacted plant material
  - PFAS in irrigation water
  - PFAS in material land applied
- Wastewater and stormwater runoff
- No standard for finished compost

Treatment Technology Roundtable

- Network
  - Industry
  - Academia
  - Utilities
  - Regulators
  - Consultants
- Appropriate application of available technology
- Identify research gaps

Preliminary agenda now available for the Great Lakes Virtual PFAS Summit, taking place October 26-30!

Register today!

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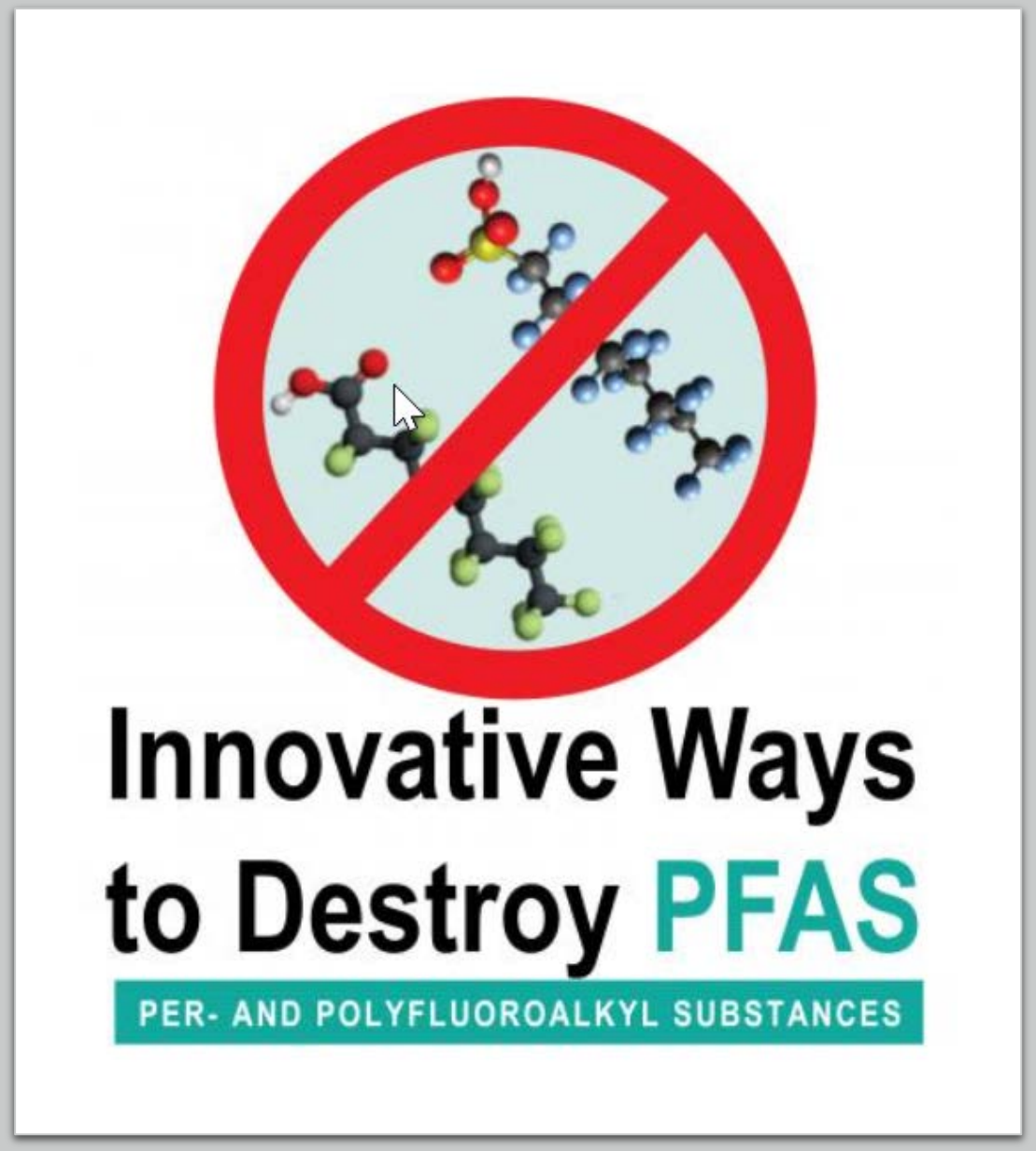
EPA Challenge

- Non-thermal technologies for AFFF
- Partners
  - DOD
  - ECOS
  - Michigan EGLE
  - Colorado DPHE
- November 23, 2020 deadline
- https://www.epa.gov/innovation/innovative-ways-destroy-pfas-challenge



Studies and Research

- Biosolids
  - Report on initial screening value for industrial impacted
  - Expanded monitoring
- Statewide soil survey
- Plant uptake
  - Home gardening project
  - Crops
- Point of use filter performance

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Ecological Studies

- PFAS bioaccumulation risk for fish and wildlife
  - Clarks Marsh
- Movement and environmental risk of contamination for aquatic organisms
  - Huron River

Great Lakes PFAS Task Force

- June 2019 Resolution
- Share information and coordinate
- 3 workgroups
  - Air Quality
  - Land Application
  - Fish and Wildlife

GREAT LAKES
ST. LAWRENCE
GOVERNORS
& PREMIERS

Public Health Studies

- Exposure assessments
  - Kent County
- Health studies
  - Kent County
  - Parchment
- Biomonitoring
  - Statewide
  - Firefighters
- Investigations
  - Oscoda

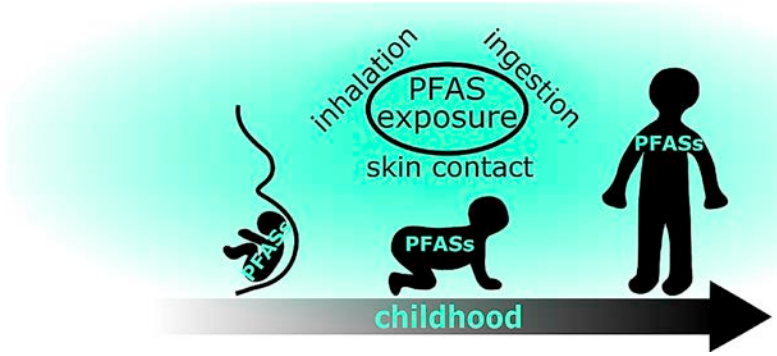

Image from Winkens et al. Emerging Contaminants 2017

Prevention

- AFFF collection and disposal
  - 52,000 gallons
- Legislation regulating AFFF
- Market-driven limitations

Michigan's Response to PFAS Continues

- Multi-agency coordination
- Data-driven and science-based
- Cooperative and collaborative approach
- Let's work together on solutions managing materials contaminated with PFAS

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
Michigan Department of Transportation

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

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LICENSING AND REGULATORY AFFAIRS
CUSTOMER DRIVEN. BUSINESS MINDED.

DEPARTMENT OF MILITARY AND VETERANS AFFAIRS MICHIGAN