



PFAS and POTWs

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PFAS

- What they are
- Why they are important
- What DEQ WRD will require of POTW_s

Lapeer POTW



- Discovered PFOS in discharge in June 2017
- Worked with City to find the source
- City working with source to eliminate PFOS

What's in a Name?

- **PFAS** – Per and Polyfluoroalkyl Substances
- Also called **PFCs** for Perfluorinated Compounds
- But **PFCs** can also mean **Perfluorocarbons** associated with greenhouse gases--confusing
- **PFAS** and **PFOS** sound similar: also confusing
- Discussion on [epa.gov](https://www.epa.gov/pfas/basic-information-about-and-polyfluoroalkyl-substances-pfas#use)

<https://www.epa.gov/pfas/basic-information-about-and-polyfluoroalkyl-substances-pfas#use>⁴

PFAS—

• **Class of Manufactured Chemicals**

- **PFAS** – Per and Polyfluoroalkyl Substances
- Synthetic, used extensively for 70 years
- Useful properties: oil- and water-resistance
- **Emerging** pollutants: science about the chemicals and impacts is being developed

Environmental and Health Concerns



- Widespread wildlife and human exposure
- Human Health concerns
- Most studied chemicals are PFOS and PFOA

PFAS and Consumer Products



Stain and water-repellants for fabrics, leather, and carpets

PFAS and Consumer Products



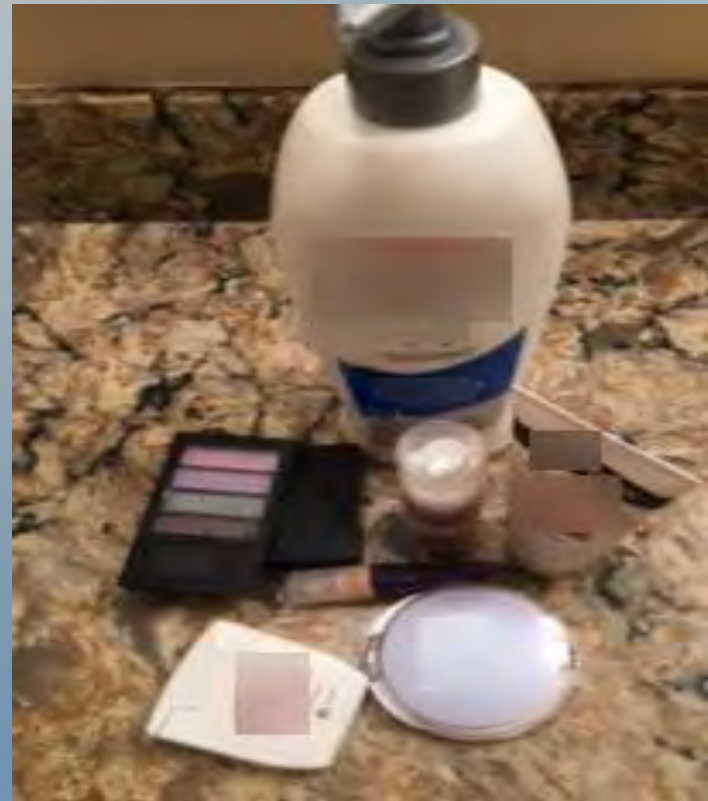
Used in Non-stick coatings:

- cooking pans
- auto polishes and waxes
- food wrappers and cartons



PFAS and Consumer Products

- Personal care items
 - Cosmetics
 - dental floss
 - lotions
 - sunscreen
 - cosmetics

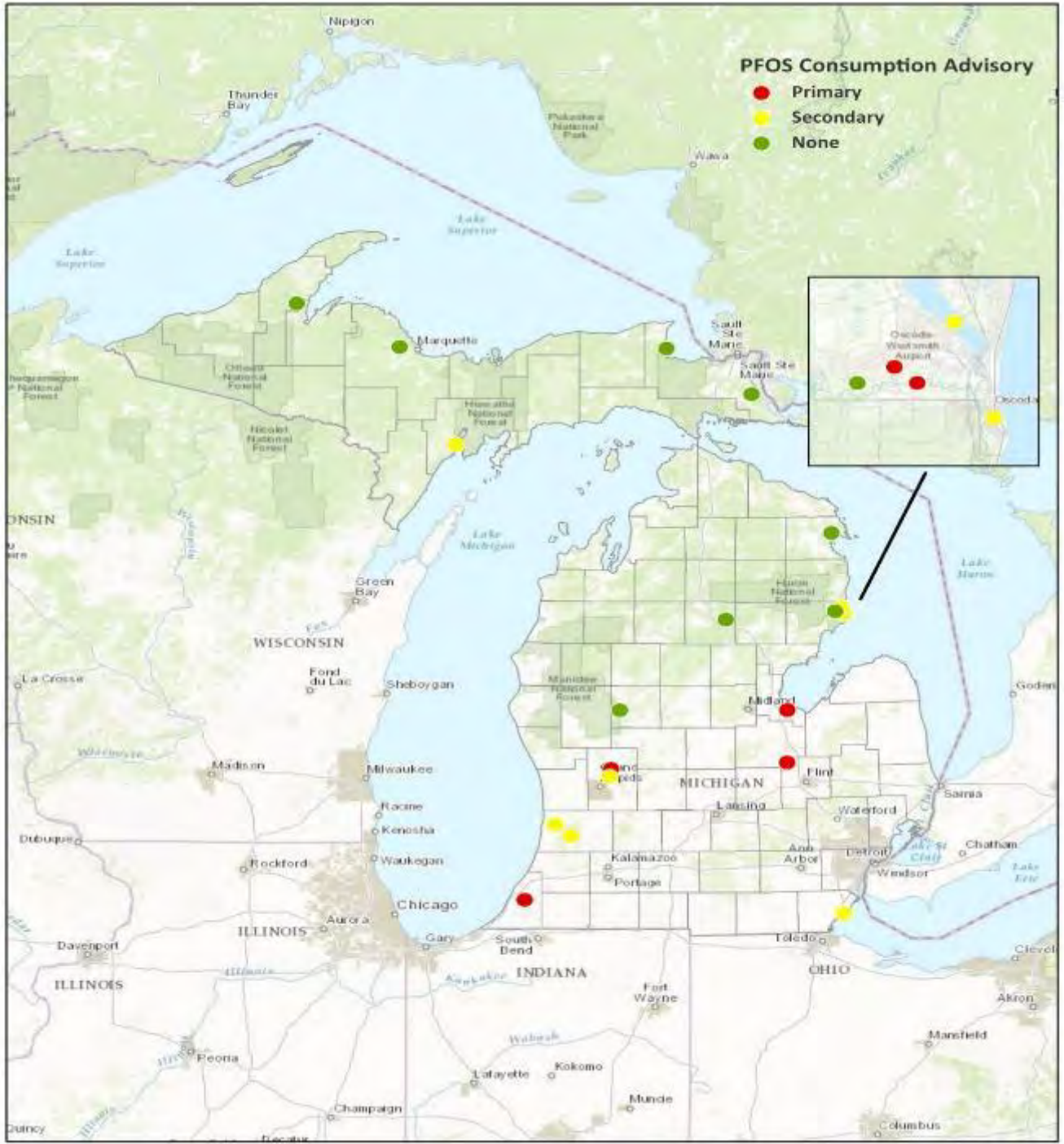


PFAS of Concern: PFOA

- **PFOA:** perfluorooctanoic acid
 - Non-stick coatings
 - Stain- and water-repellant treatment
- Human health exposure: food and drinking water, occupational exposure
- National voluntary phase out, but may still be found

PFAS of Concern: PFOS

- PFOS = Perfluorooctane Sulfonate
 - Persistent and Bioaccumulative
 - Human health concerns
 - Associated Fish Consumption Advisories
 - Banned from some uses
 - Manufacture in US stopped voluntarily



PFOS and Fish Consumption Advisories

Flint River

(downstream of Mott Dam)

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Limited [▲]
Largemouth Bass	PFOS	Any	6 Per Year
Smallmouth Bass	PFOS	Any	6 Per Year

PFOS can't be reduced by trimming and cooking. Do not double MI Servings.

Sources of PFOS

- Fume suppressant for some plating tanks
- Landfills (leachate)
- Centralized Waste Treaters
- Leather and fabric treaters
- Tanneries
- AFFF fire fighting foam
- POTWs accepting wastewater from above sources

PFOS and Platers



- Used by electroplaters as a demister/defoamer (air pollution control) since mid-1990s
- Banned for some uses since September 2015
- Manufacture largely phased out in US
- Potential source of PFOS to POTWs, surface waters

Other Sources of PFOS

- Landfill leachate (esp. from industrial wastes)
- Tanneries and Fabric Treaters
- Centralized Waste Treaters accepting above wastes
- Historical dumping of industrial wastes w/PFOS
- AFFF (aqueous film-forming foam for fire suppression)
- ??



PFOS and POTWS



- Very soluble, heavy
- Passes through conventional POTW processes
- Accumulates in biosolids: water portion (biosolids mostly water) and/or solids?
- Still learning about what happens to PFAS in various environments

Questions about PFAS

- Can replacement chemicals (often PFAS) break down and/or become PFOS or PFOA?
- Are replacement chemicals safe?
- What concentrations of PFAS are safe?
- Where should we expect to find PFOS?

DEQ is working with EPA and industry on the answers to these questions

Statewide, Multi-media Action



BUSINESS EDUCATION HEALTH GOVERNMENT SAFETY

SOM / ENVIRONMENTAL HEALTH

Taking Action, Protecting Michigan

Governor's Directive Creates The PFAS Action Response Team

What You Need to Know About PFAS Contamination

Perfluoroalkyl and polyfluoroalkyl substances (PFAS), also known as PFCs, have been classified by the US Environmental Protection Agency as an emerging contaminant on the national level. PFAS are a suite of chemicals historically used in thousands of applications throughout the industrial, food, and textile industries. They are incredibly stable, breaking down very slowly in the environment, and are highly soluble, easily transferring through soil to groundwater. PFAS contamination has been identified in several locations across the state of Michigan as a result of use in multiple industries across the State. PFAS is used in firefighting foams, food packaging, cleaning products, and various other products. It is also used by many industries such as plating, tanneries, or clothing manufacturers, where waterproofing may be required or a protective film is needed in a manufacturing process.

Governor Snyder and the State of Michigan are taking action to address this issue in a proactive and innovative way. Ten state departments, in coordination with local and federal



Water Resources Division (WRD) Strategy

- Monitor PFAS in surface waters, fish
- Coordinate with other divisions
- Identify potential sources from info
- Eliminate or minimize sources

WRD Strategy

- Identify/control sources through **existing regulatory programs**, including NPDES permits
- Sample PFAS at **select WWTPs** with routine monitoring
- Sample **direct dischargers** with potential for PFAS

NPDES Requirement: Industrial Pretreatment Program (IPP)

- Some POTW NPDES permits require an IPP to regulate industrial wastewater accepted
- **For POTWs w/IPPs: require source evaluation and follow up**
- To ensure are not passing through PFOS or PFOA greater than water quality standards
- Current permit requirement, new pollutants

IPP Strategy

- **Screen Potential Sources:** desk evaluation
- Develop **Monitoring Plan** (get approval for alternate) to monitor probable sources
- **Sample** probable sources
- **Reduce/eliminate** if sources found
- DEQ will provide **technical assistance**

IPP Strategy

- **Evaluate** if potential impact to POTW
- **Interim Report** to DEQ WRD
- **Effluent monitoring** if required by DEQ
- If sources found, ongoing **reduction** efforts
- **Summary Report** to DEQ WRD



Questions?