PFAS

• What they are
• Why they are important
• What DEQ WRD will require of POTWs
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-pfass#use)
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

<table>
<thead>
<tr>
<th>Type of Fish</th>
<th>Chemicals of Concern</th>
<th>Size of Fish (length in inches)</th>
<th>MI Servings per Month*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carp</td>
<td>PCBs</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>Largemouth Bass</td>
<td>PFOS</td>
<td>Any</td>
<td>6 Per Year</td>
</tr>
<tr>
<td>Smallmouth Bass</td>
<td>PFOS</td>
<td>Any</td>
<td>6 Per Year</td>
</tr>
</tbody>
</table>

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.
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?