Taking Action on PFAS

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
How We Got Here

- 2012 Wurtsmith “do not eat fish”
- 2013/2014 PFOS/PFOA recon sampling in surface waters
- 2017 connecting channels data
- Grayling – 2017 g.w. sample data from DMVA
- Wolverine – concerned citizens 1/24/2017
Current Magnitude

www.Michigan.gov/pfasresponse
PFAS Uses

Aerospace  Apparel  Building and Construction  Chemicals and Pharmaceuticals  Electronics

Oil & Gas  Energy  Healthcare and Hospitals  Aqueous Film Forming Foam  Semiconductors
Potential PFAS Sites - AFFF
Potential PFAS Sites - AFFF
Potential PFAS Sites - Waste
Potential PFAS Sites - Electroplaters
Potential PFAS Sites

Other Potential PFAS Sources:
- Footwear Manufacturers
- Furniture Manufacturers
- Carpet Manufacturers
- Car Washes
- Scrap Tire Fires
Michigan PFAS Action Response Team (MPART)

• Governor Snyder signed ED 2017-4 on November 13, 2017

• Design: ensure comprehensive, cohesive, timely response to continued mitigation PFAS substances (PFAS) across Michigan

• Goal: provide cooperation and coordination among all levels of government
MPART’s Approach

- Addressing known sites – focus on public health
- Proactive efforts - PWS sampling
- Investigating new potential sites
- Prevention
Regular Monitoring Plus

- Site-specific monitoring of known PFAS sites
- Monitoring of PFAS in rivers, lakes and streams, and fish
- Monitor point sources (Direct Discharges)
- Industrial Pretreatment Program Initiative (Indirect Discharges)
- Biosolids program
- Superfund program
- Coordinate with other Divisions (AQD, WMRPD and DHHS, others)
Example: Lapeer WWTP

- Elevated PFAS results in Flint River tracked to Lapeer WWTP
- DEQ found PFOS in discharge in June 2017
- Worked with City to find the source
- City working with source to eliminate PFOS
PFOS in Lapeer WWTP Biosolids

- 8/24/2017: PFOS = 2,100 µg/L (ppb)
- 9/29/2017: DEQ suspended Lapeer’s land application program.
- Biosolids now disposed at a landfill
- City of Lapeer issued order to plater requiring reduction/elimination of discharge to WWTP to 12 ppt PFOS
- Source reduction efforts appear to be successful in lowering levels in biosolids at WWTP
- Biosolids study
Sources of PFOS & PFOA for WWTPs

- Platers using fume suppressants/demisters/wetting agents
- Leather and fabric treaters, tanneries
- Paper and packaging manufacturers
- Manufacturers of parts w/PTFE coatings
- Landfills (leachate)
- Centralized Waste Treaters
- AFFF fire fighting foam
IPP PFAS Initiative Requirements

- Potential Source Screening
- Monitor Probable Sources
- If sources found:
  - Reduce/Eliminate PFOS & PFOA Sources
  - Monitor POTW effluent; report if exceeds standards
- Submit Interim Report – due 6/29
- Continue Source Reduction & Monitoring
- Submit Summary Report – due 10/26

Alternative Plan:
- More time
- Fewer samples
- For larger POTWs
70 active solid waste landfills
Draft sampling guidance
Trial run April 19, 2018
Statewide Fall 2018
Another Surface Water Investigation
Fish Collection and Analysis in partnership with DHHS

- 365 fish collected in 2017 are being analyzed
- 132 fish planned in 2018

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Location</th>
<th>Species</th>
<th># of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flint River watershed</td>
<td>Flint River @ Flint</td>
<td>Walleye, channel catfish</td>
<td>20</td>
</tr>
<tr>
<td>Mott/Holloway Reservoir</td>
<td>Bluegill</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Kearsley Reservoir</td>
<td>Bluegill, channel catfish</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Thread Lake</td>
<td>Bluegill, channel catfish</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Rogue River</td>
<td>u/s &amp; d/s of Rockford</td>
<td>Rockbass</td>
<td>20</td>
</tr>
<tr>
<td>Rockford area lakes</td>
<td>Panfish</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Caged fish</td>
<td>Au Sable/Grayling vicinity</td>
<td>4 sites</td>
<td>16</td>
</tr>
<tr>
<td>Rogue River</td>
<td>4 sites</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>132</strong></td>
</tr>
</tbody>
</table>
# Fish Consumption

<table>
<thead>
<tr>
<th>Type of Fish</th>
<th>Chemical Causing MI Serving Guideline</th>
<th>Size of Fish (length in inches)</th>
<th>MI Servings per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluegill</td>
<td>PFOS</td>
<td>Any</td>
<td>4</td>
</tr>
<tr>
<td>Carp</td>
<td>PCBs</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>Catfish</td>
<td>Dioxins</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>Black Crapple</td>
<td>Mercury</td>
<td>Under 9&quot;</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 9&quot;</td>
<td>4</td>
</tr>
<tr>
<td>Freshwater Drum</td>
<td>PCBs and Mercury</td>
<td>Any</td>
<td>2</td>
</tr>
<tr>
<td>Largemouth and Smallmouth bass</td>
<td>PCBs and Mercury</td>
<td>Under 20&quot;</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 20&quot;</td>
<td>1</td>
</tr>
<tr>
<td>Muskie</td>
<td>Mercury</td>
<td>Any</td>
<td>Do Not Eat</td>
</tr>
<tr>
<td>Northern Pike</td>
<td>Mercury</td>
<td>Any</td>
<td>2</td>
</tr>
<tr>
<td>Rock Bass</td>
<td>PCBs</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>Sturgeon</td>
<td>PCBs</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>Sunfish</td>
<td>PFOS</td>
<td>Any</td>
<td>4</td>
</tr>
<tr>
<td>Walleye</td>
<td>PCBs and Dioxins</td>
<td>Any</td>
<td>6 per Year(^2)</td>
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<tr>
<td>White (Silver) Bass</td>
<td>PCBs</td>
<td>Any</td>
<td>Limited</td>
</tr>
<tr>
<td>White Crapple</td>
<td>Mercury</td>
<td>Under 9&quot;</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 9&quot;</td>
<td>4</td>
</tr>
<tr>
<td>Yellow Perch</td>
<td>Mercury</td>
<td>Any</td>
<td>4</td>
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</table>
Deer Collections - MDNR

- 20 deer from 4 PFAS contaminated surface water locations
  - Oscoda
  - Alpena
  - Grayling
  - Kent County
- 48 deer head muscle samples
- 39 counties in Michigan
1,380 community water supplies

461 schools

Represents 75% of MI residents

Sampling began as a pilot in April, paused and launched in full on May 18

Involves 1-3 teams

To be completed December
Legend
NTNCWS (Schools)
Population
- 25 - 500
- 501 - 750
- 751 - 1000
- 1001 - 1500
- 1501 - 2000

Source: Drinking Water & Municipal Assistance
PFAS Environmental Testing Factoids

As of the end of May 2018:

~ 4,700 samples taken by MDEQ for PFAS throughout all 31 sites, for drinking water, groundwater, and surface water

- 2,755 drinking water samples taken, including public water supplies and residential wells
  - Out of 2674 results back,
    - 1688 ND (63%)
    - 863 between ND – 70ppt (32%)
    - 22 over 70 ppt (5%)
- 1,681 groundwater samples taken
  - Out of 1651 results back,
    - 340 ND (21%)
    - 833 between ND and 70 ppt (50%)
    - 478 over 70 ppt (29%)
Challenges:

- Media Transfer
- Disposal
- Landfill/Leachate
Challenges:  
Criteria

- Lack of federal standards
  - Primary drinking water criteria, hazardous constituents, biosolids,…
  - EPA Lifetime Health Advisory Level of 70 ppt PFOA and PFOS combined or individually not enforceable

- Michigan standards
  - Groundwater for drinking water clean-up standard (January 10, 2018)
    - 70 ppt PFOA and PFOS combined or individually

- Surface Water - Rule 57 Water Quality Standards
  - PFOS:
    - 11ppt (drinking water source)
    - 12 ppt (non-drinking water source)
  - PFOA:
    - 420 ppt (drinking water source)
    - 12,000 ppt (non-drinking water source)
Challenges:
Prioritizing Sites

- Identify
- Investigate
- Remediate
Challenges:
Sampling Strategy

- Where to sample
- When to sample
- What to sample
- What do we know about
  - Source(s)
  - Geology
  - Groundwater flow direction
Challenges: Analysis

- Laboratory Analytical Methods
- 14 or 24 analytes depending on method and media
- Over 3,000 PFAS chemicals
Challenges:
Reporting Results

- Significant digits: 12.345 or 12
- J flags or ND
- ND below RL
- Total PFAS ≠ Sum of estimates
Challenges:
Response to results

- Comparison to lifetime health advisory level
- How long is result valid?
- PFAS source investigation v. survey
- Presumptive mitigation needed?
Challenges:
Airports/Fire Departments

- Potential contamination from use of AFFF
- Current inventory of AFFF
- Best practices for training and use
Challenges:
Surface Water Foam
Challenge: Resources

Funding

Agency capacity
Challenges: Communication

- Risk
  - Need consistent message
- Coordination among agencies
- Community engagement
Parts per trillion

1 ppt = 1 drop (0.05mL) in 20 Olympic Swimming Pools

Note: 1 Olympic Pool = 660,000 gallons
www.michigan.gov/pfasresponse

PFAS RESPONSE
TAKING ACTION, PROTECTING MICHIGAN

TAKING ACTION TO PROTECT THE PUBLIC'S WATER

Perfluoroalkyl and polyfluoroalkyl substances (PFAS), such as perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), are part of a group of chemicals used globally during the past century in manufacturing, firefighting and thousands of common household and other consumer products.

In recent years, experts have become increasingly concerned by the potential effects of high concentrations of PFAS on human health.

Although there is more to learn about PFAS and human health, the State of Michigan takes this issue seriously and is one of the first states in the nation to establish a clean-up standard for PFAS in groundwater used for drinking water.

Launched in 2017, the Michigan PFAS Action Response Team (MPART) is the first multi-agency action team of its kind in the nation. Agencies representing health, environment and other branches of state government have joined together to investigate sources and locations of PFAS contamination in the state, take action to protect people's drinking water, and keep the public informed we learn more about this nationally emerging contaminant.
Contact Information & Questions

• Environmental Assistance Center: 800-662-9278

• Twitter@MichiganDEQ

• www.Michigan.gov/pfasresponse

• Steve Sliver, slivers@Michigan.gov