Michigan’s PFAS MCL Process with the MPART Science Advisory Workgroup

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Gov. Whitmer Directs MDEQ To File a Request for Rulemaking to Establish PFAS Drinking Water Standards

Date: March 26, 2019
Time: All Day Event
Add to Calendar: Calendar Google Yahoo MSN/Hotmail/Live

FOR IMMEDIATE RELEASE

March 26, 2019

LANSING, Mich. – Today Gov. Gretchen Whitmer released the following statement commenting on Michigan’s intent to establish PFAS drinking water standards to further protect Michiganders:

“All Michiganders deserve to know that we are prioritizing their health and are working every day to protect the water that is coming out of their taps.

“As a result, Michigan will begin the process to establish PFAS drinking water standards that protect public health and the environment. Michigan has long advocated that the federal government establish national standards to protect the nation’s water from PFAS contamination, but we can no longer wait for the Trump Administration to act.

“Today I’m directing the Michigan PFAS Action Response Team to form a science advisory workgroup to review both existing and proposed health-based drinking water standards from around the nation to inform the rulemaking process for appropriate Maximum Contaminant Levels (MCL) for Michigan by no later than July 1, 2019. Additionally, I’m directing the Department for Environmental Quality to immediately file a Request for Rulemaking to establish enforceable MCLs for PFAS in our drinking water supplies. The proposed regulations will be completed on an accelerated schedule with input from stakeholders by no later than October 1, 2019.

“These actions will move us a step closer towards finding real and permanent solutions to ensuring that all Michiganders know that they can trust their drinking water.”
Overview and Timeline of Michigan’s MCL Process

BEGIN

4/4 MPART

Apr 4, 2019

HBVs Developed (Health Based Values)

6/27 MPART

Jul 1, 2019

Draft Rules Developed

9/26 MPART

Oct 1, 2019

EGLE Develops Draft Rules with Stakeholder Input

ORR / ERRC

Dec 1, 2019

Final Rule Adopted

Apr 2020

SAWG Develops HBVs

MPART will continue to coordinate multi-agency efforts to investigate and reduce exposure to PFAS across the state
MPART Science Advisory Workgroup Charge

- Identify PFAS listed under USEPA method 537.1 with available risk assessment
- Identify key studies and points of departure from which to derive toxicity values
- Apply appropriate uncertainty factors, RSC, intake rates to derive health-based drinking water values
- Consider class-based approaches
Science Advisory Workgroup (SAWG)

- Epidemiologist
- Risk assessor
- Toxicologist

Dr. David Savitz
Dr. David Savitz, who chairs the advisory Workgroup, is a professor of epidemiology in the School of Public Health at Brown University. He also serves as associate dean for research, and holds joint appointments in obstetrics and gynecology, and pediatrics in the Alpert Medical School. His epidemiological research has addressed a wide range of public health issues including environmental hazards in the workplace and community, reproductive health outcomes, and environmental influences on cancer. He has done extensive work on health effects of ionizing radiation, pesticides, drinking water treatment by-products, and perfluorinated compounds. He is the author of nearly 350 papers in professional journals and editor or author of three books. He was president of the Society for Epidemiologic Research and the Society for Pediatric and Perinatal Epidemiologic Research, and North American regional councilor for the International Epidemiologic Association. Dr. Savitz is a member of the National Academy of Sciences Institute of Medicine. From 2013-2017 he served as vice president for research at Brown University. He was a member of the CS Science Panel that conducted some of the first epidemiologic research on PFAS in the mid-Ohio Valley and has published a number of reports related to potential health effects of PFAS. He recently shared the Science Panel to advise MPART on the current research related to toxicology, epidemiology, exposure pathways, and remediation of PFAS.

Mr. Kevin Cox
Kevin Cox is a Managing Toxicologist at NSF International. Prior to his current role, Mr. Cox was a Supervising Toxicologist supporting NSF’s drinking water additives and dietary supplement certification programs. As an expert in human health risk assessment, Mr. Cox has authored numerous chemical risk assessments evaluating exposure from unregulated drinking water contaminants, dietary supplement ingredients, toy product materials, and pool and spa treatment chemicals. Specific to PFAS, Mr. Cox has conducted a state-of-the-science analysis of published PFAS risk assessments in support of NSF International drinking water programs. This analysis was recently presented to Michigan water management professionals. Mr. Cox received his B.S. in biochemistry and history from the University of Michigan and his MPH in Environmental Health Sciences - Toxicology from the University of Michigan School of Public Health. He is currently an Associate Member of the Society of Toxicology. Mr. Cox also holds a J.D. from the University of Michigan Law School and is a member of the Michigan Bar Association.

Dr. Jamie DeWitt
Dr. Jamie DeWitt is an associate professor in the Department of Pharmacology and Toxicology of the Brody School of Medicine at East Carolina University. Her laboratory’s research program explores relationships between biological organisms and their responses after exposure to environmental contaminants, with a specific focus on the immune system and its interactions with the nervous system during development and adulthood. The research program particularly focuses on emerging aquatic contaminants, especially PFAS. With respect to PFAS, DeWitt has published 13 primary research articles, six review articles, two book chapters, and edited a book on PFAS toxicity. She has served as an external reviewer for the United States Environmental Protection Agency (USEPA) health effects assessment of perfluoroctanoic acid (PFOS) and perfluorooctane sulfonate (PFOS), the United States National Toxicology Program’s immune effects assessment of PFOS and...
Timeline for the MPART SAWG
MPART Support and Resources to the SAWG

- MPART agencies provided administrative support, resources, and reached out to other agencies as needed

- Workgroup members provided additional resources

- Michigan-specific background information provided
Statewide Survey:

- **Type I Community Water Supplies**
  - Surface Water Systems
  - Groundwater Systems
  - Combination SW/GW Systems
- **Type II Non-transient Non-community Water Supplies**
  - Schools
  - Child Care Providers
  - MI Head Start Programs
- **Federally-recognized Tribal Water Supplies**
# Municipal Water System Testing

(as of 4/1/2019)

<table>
<thead>
<tr>
<th>Supply Type</th>
<th>Supplies Sampled</th>
<th>PFBS</th>
<th>PFHxA</th>
<th>PFHpA</th>
<th>PFHxS</th>
<th>PFOA</th>
<th>PFNA</th>
<th>PFOS</th>
<th>PFDA</th>
<th>MeFOSAA</th>
<th>EtFOSAA</th>
<th>PFUnA</th>
<th>PFDa</th>
<th>PFTrDA</th>
<th>PFTeDA</th>
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</thead>
<tbody>
<tr>
<td>Community Water Supplies</td>
<td>1,114</td>
<td>63</td>
<td>46</td>
<td>13</td>
<td>42</td>
<td>47</td>
<td>1</td>
<td>24</td>
<td>0</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Schools on Wells</td>
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<td>18</td>
<td>27</td>
<td>8</td>
<td>14</td>
<td>19</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tribes</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Child Care / MI Head Start</td>
<td>152</td>
<td>13</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,744</strong></td>
<td><strong>94</strong></td>
<td><strong>81</strong></td>
<td><strong>24</strong></td>
<td><strong>62</strong></td>
<td><strong>71</strong></td>
<td><strong>3</strong></td>
<td><strong>38</strong></td>
<td><strong>0</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>
Selected PFAS for Health-Based Values

- PFAS selected from USEPA Method 537.1 for development of individual Health-Based Values

<table>
<thead>
<tr>
<th>PFAS</th>
<th>Database Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFNA</td>
<td>Robust database</td>
</tr>
<tr>
<td>PFOA</td>
<td>Multiple agency values</td>
</tr>
<tr>
<td>PFOS</td>
<td></td>
</tr>
<tr>
<td>PFHxS</td>
<td></td>
</tr>
<tr>
<td>PFBS</td>
<td>Limited database</td>
</tr>
<tr>
<td>GenX</td>
<td>1 or more agency values</td>
</tr>
<tr>
<td>PFHxA</td>
<td>Much more limited database</td>
</tr>
<tr>
<td></td>
<td>2nd highest number of detections</td>
</tr>
</tbody>
</table>

**METHOD 537.1**

**DETERMINATION OF SELECTED PER- AND POLYFLUORINATED ALKYL SUBSTANCES IN DRINKING WATER BY SOLID PHASE EXTRACTION AND LIQUID CHROMATOGRAPHY/TANDEM MASS SPECTROMETRY (LC/MS/MS)**

1. **SCOPE AND APPLICATION**

   1.1. This is a solid phase extraction (SPE) liquid chromatography/tandem mass spectrometry (LC/MS/MS) method for the determination of selected per- and polyfluorinated alkyl substances (PFAS) in drinking water. Accuracy and precision data have been generated in reagent water and drinking water for the compounds listed in the table below.

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Acronym</th>
<th>CASRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexafluoropropylene oxide dimer acid</td>
<td>HFPO-DA</td>
<td>33252-43-4</td>
</tr>
<tr>
<td>N-ethyl perfluorooctanesulfonamide acid</td>
<td>NEOSAA</td>
<td>2991-50-6</td>
</tr>
<tr>
<td>N-methyl perfluorooctanesulfonamide acid</td>
<td>NMFOSAA</td>
<td>2355-31-9</td>
</tr>
<tr>
<td>Perfluorobutanesulfonic acid</td>
<td>PFBS</td>
<td>375-73-5</td>
</tr>
<tr>
<td>Perfluorodecanoic acid</td>
<td>PFDA</td>
<td>335-76-2</td>
</tr>
<tr>
<td>Perfluorododecanoic acid</td>
<td>PFDA</td>
<td>307-55-1</td>
</tr>
<tr>
<td>Perfluorohexanoic acid</td>
<td>PFHA</td>
<td>375-85-9</td>
</tr>
<tr>
<td>Perfluorohexanesulfonic acid</td>
<td>PFHAs</td>
<td>355-46-4</td>
</tr>
<tr>
<td>Perfluorohexanoic acid</td>
<td>PFHAs</td>
<td>307-24-4</td>
</tr>
<tr>
<td>Perfluorononanoic acid</td>
<td>PFNA</td>
<td>375-95-1</td>
</tr>
<tr>
<td>Perfluorovinyl sulfonic acid</td>
<td>PFOS</td>
<td>1763-21-3</td>
</tr>
<tr>
<td>Perfluorooctanoic acid</td>
<td>PFOA</td>
<td>335-67-1</td>
</tr>
<tr>
<td>Perfluorotridecanoic acid</td>
<td>PFToDA</td>
<td>376-66-7</td>
</tr>
<tr>
<td>Perfluorodecanoic acid</td>
<td>PFToDA</td>
<td>72629-94-8</td>
</tr>
<tr>
<td>Perfluorobutenyl sulfonic acid</td>
<td>PFUnA</td>
<td>2083-98-4</td>
</tr>
<tr>
<td>11-Chloro-1-dodecyl-3-fluoroundec-1-sulfonic acid</td>
<td>11Cl-PFDOUS</td>
<td>763051-02-9</td>
</tr>
<tr>
<td>4-Chlorohexadecyl-3-fluoroundec-1-sulfonic acid</td>
<td>4Cl-PFDOUS</td>
<td>786425-56-1</td>
</tr>
<tr>
<td>4,6-Divinyl-3H-perfluororesin acid</td>
<td>ADONA</td>
<td>99305-14-4</td>
</tr>
</tbody>
</table>

- Some PFAS are commercially available as ammonium, sodium and potassium salts. This method measures all forms of the analyte as anions while the counterion is inconsequential. Analytes may be purchased as acids or as any of the corresponding salts (see Section 7.2 regarding correct the analyte concentration for the salt content).
- HFPO-DA is one component of the GenX processing aid technology.
- **1Cl-PFDOUS** is available as salt form (e.g. CASRN of potassium salt is 83329-69-9).
- **4Cl-PFDOUS** available as salt form (e.g. CASRN of potassium salt is 73466-19-4).
- **ADONA** is available as the sodium salt (see CASRN) and the ammonium salt (CASRN is 934425-448).
Development of Health-Based Values

- **Toxicity Values**
  - Identification of Key Study, Critical Effect(s), Point of Departure
  - Toxicokinetic adjustment to Human Equivalent Dose
  - Uncertainty Factors
- **Relative Source Contribution**
- **Exposure Parameters & Considerations**
  - Identification of sensitive population
  - Goeden et al. 2019 Toxicokinetic Model
Screening Level for Long-Chain PFAS

- No scientific consensus on which PFAS should be grouped or the basis of such grouping
  - Proposed Health-Based Drinking Water Values are to be applied individually to the specific PFAS
- Scientific agreement for similar toxicity of long-chain PFAS
  - Long-chain defined as ≥C6 for sulfonates and ≥C8 for carboxylates
- Recommending the use of the HBV for PFNA (6 ppt) as screening level for all other long-chain PFAS listed in USEPA Method 537.1 for which an individual HBV was not derived
  - The screening level should not be used to evaluate risk but as a tool for EGLE/public water supplies to use for decision making
Overview and Timeline of Michigan’s MCL Process

- **HBV’s Developed (Health Based Values)**: 4/4 MPART
- **Draft Rules Developed**: 6/27 MPART
- **Final Rule Adopted**: 9/26 MPART

**Timeline**:
- **BEGIN**: Apr 4, 2019
- **EGLE Develops Draft Rules with Stakeholder Input**: Jul 1, 2019
- **Public Comment Period**: Oct 1, 2019
- **ORR / ERRC**: Dec 1, 2019
- **MPART will continue to coordinate multi-agency efforts to investigate and reduce exposure to PFAS across the state**: Apr 2020
- **MCL**: Aug 3, 2020
SAWG Input on Public Comments

• MPART Human Health Workgroup reviewed those specific comments calling into question the Health Based Values (HBVs)
• MPART then reconvened the SAWG to discuss and deliberate on these points raised during public comment
• SAWG documented its work reviewing these comments, and provided conclusions to the MPART Human Health Workgroup
• MPART Human Health Workgroup issued a statement to MPART leadership concluding that the comments submitted did not alter the conclusions of the SAWG re: HBVs
Resources

- MPART Website
  - [Michigan.gov/pfasresponse/](https://Michigan.gov/pfasresponse/)
- Drinking water – Public Drinking Water – Statewide Testing Initiative
  - [https://www.michigan.gov/pfasresponse/0,9038,7-365-95571_95577_95587---,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-95571_95577_95587---,00.html)
- MPART Tools and Reports
- MPART Meetings (ERRC meeting re: PFAS and MPART meetings)
  - [https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_92294---,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_92294---,00.html)
MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse