

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

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MPART

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:  iCalendar  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:

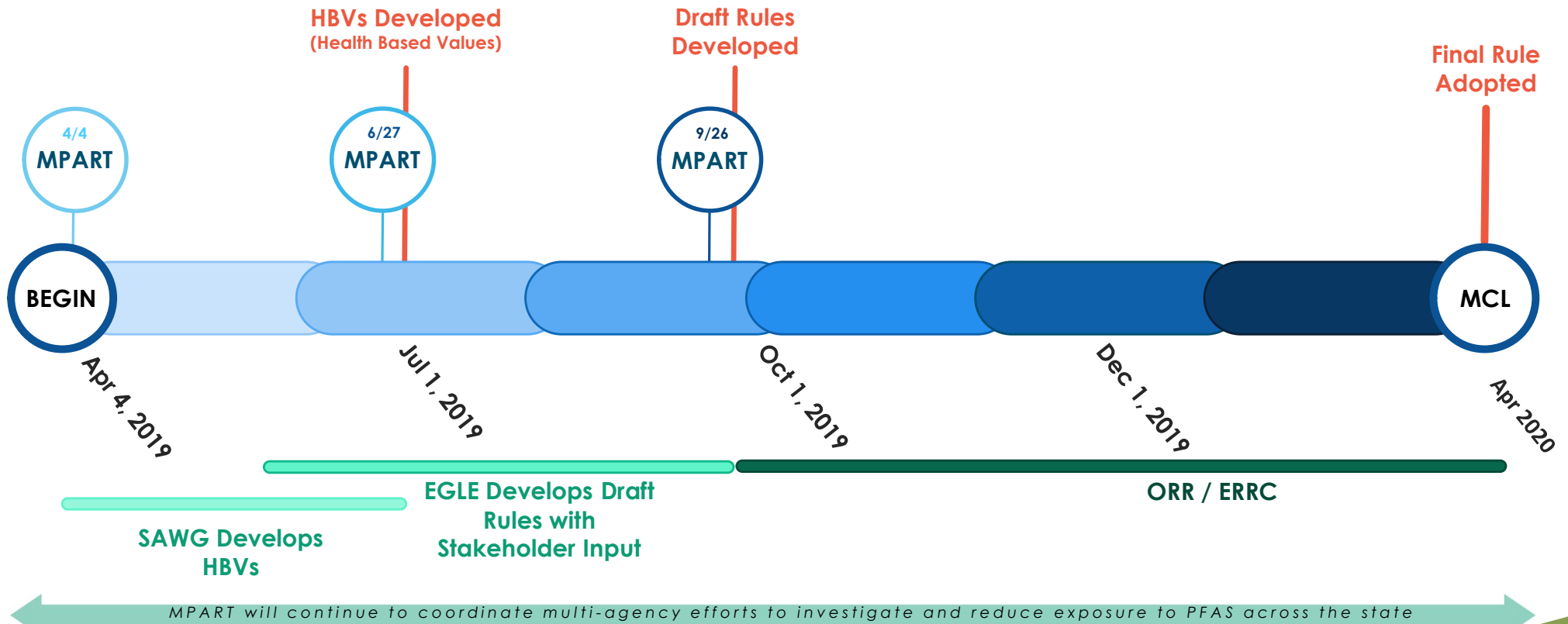
“All Michiganders deserve to know that we are prioritizing their health and are working every day to protect the water that is coming out of their taps.

“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



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

Preamble

On March 26, 2019, Governor Gretchen Whitmer directed the Michigan PFAS Action Response Team (MPART) to further protect public health and the environment, by forming a Science Advisory Workgroup to "review both existing and proposed health-based drinking water standards from around the nation to inform the rule making process for appropriate Maximum Contaminant Levels for Michigan..." Toward this objective, the Science Advisory Workgroup shall make numeric recommendation(s) to MPART for those per- and polyfluoroalkyls substances (PFAS) for which adequate information exists.

Charge

The Science Advisory Workgroup shall:

1. For the PFAS listed in USEPA Method 537.1, review all existing and proposed national- and state-derived PFAS drinking water standards and identify the most scientifically defensible non-cancer or cancer-based public health toxicity values available for each individual PFAS chemical family member, or combination thereof, for which the Science Advisory Workgroup determines that adequate information exists. Provide written justification that shall include, but not be limited to, the basis for the selection of the primary studies, critical effect identification, point of departure determination, evaluation of all uncertainty and/or modification factors applied, and the non-cancer or cancer-based toxicity value derivation. Consider the extent of corroborating evidence from other pertinent studies, including both toxicology and epidemiology.
2. Review all existing and proposed national- and state-derived PFAS drinking water standards and identify the most scientifically defensible exposure assessment and risk evaluation methodology for each individual PFAS chemical family member, or combination thereof, for which the Science Advisory Workgroup determines that adequate information exists. Provide written justification that shall include, but not be limited to, selection of the most appropriate receptor(s) and identification of all appropriate exposure assumptions for the receptor(s).
3. Identify the most appropriate and scientifically defensible combination of each specific PFAS toxicity value and exposure assessment and risk evaluation methodology, including consideration of relative source contribution, from which to derive a health-based drinking water value for each individual PFAS chemical family member, or combination thereof, for which the Science Advisory Workgroup determines that adequate information exists.
4. Provide to MPART no later than July 1, 2019, a report recommending scientifically-defensible numeric health-based values to inform the rulemaking process for Maximum Contaminant Levels for each individual PFAS chemical family member, or combination thereof, with written justification for the calculation.

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 nonionizing 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 Epidemiological 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 C8 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 chaired the Science Panel to advise MPART on the current research related to toxicology, epidemiology, exposure pathways, and remediation of PFAS.



Mr. Kevin Cox

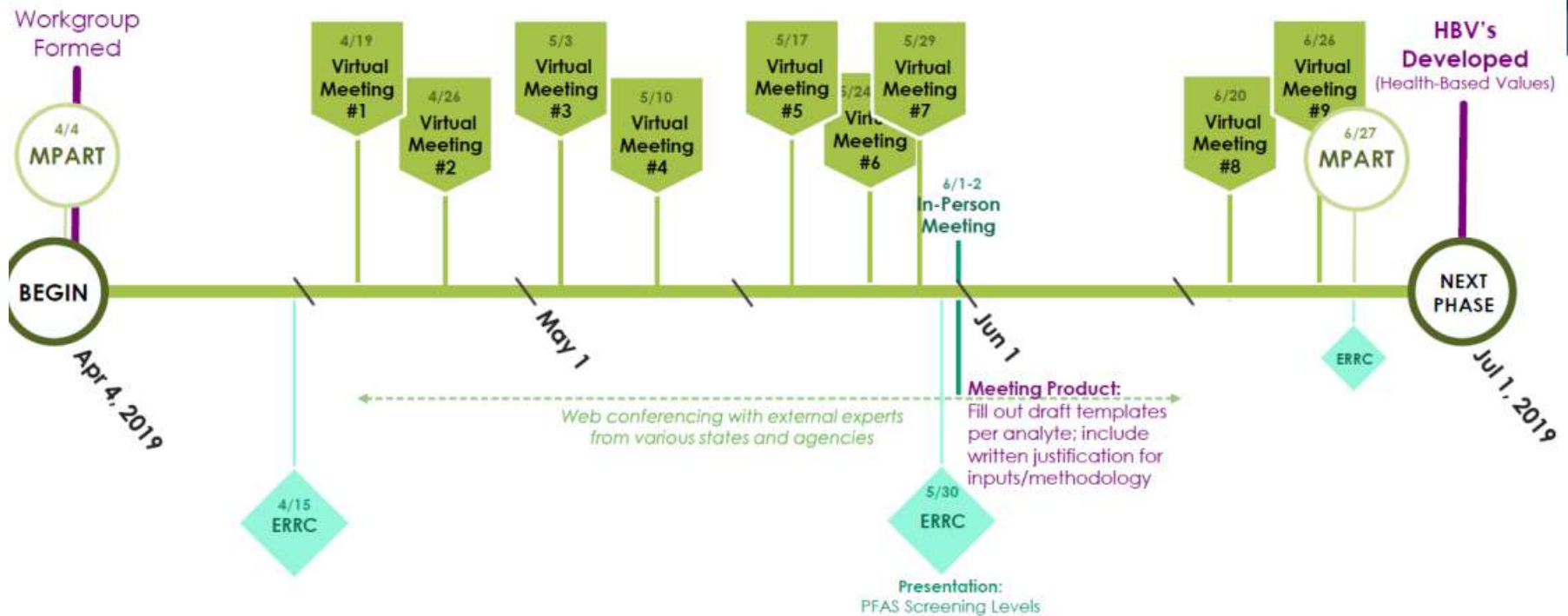
Kevin Cox is a Managing Toxicologist at NSF International. Prior to his current role, Mr. Cox was a Supervising Toxicologist supporting NSF's drinking water additives and dietary supplement certification programs. As an expert in human health risk assessment, Mr. Cox has authored numerous chemical risk 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 perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), the United States National Toxicology Program's immune effects assessment of PFOA and ...

Timeline for the MPART SAWG



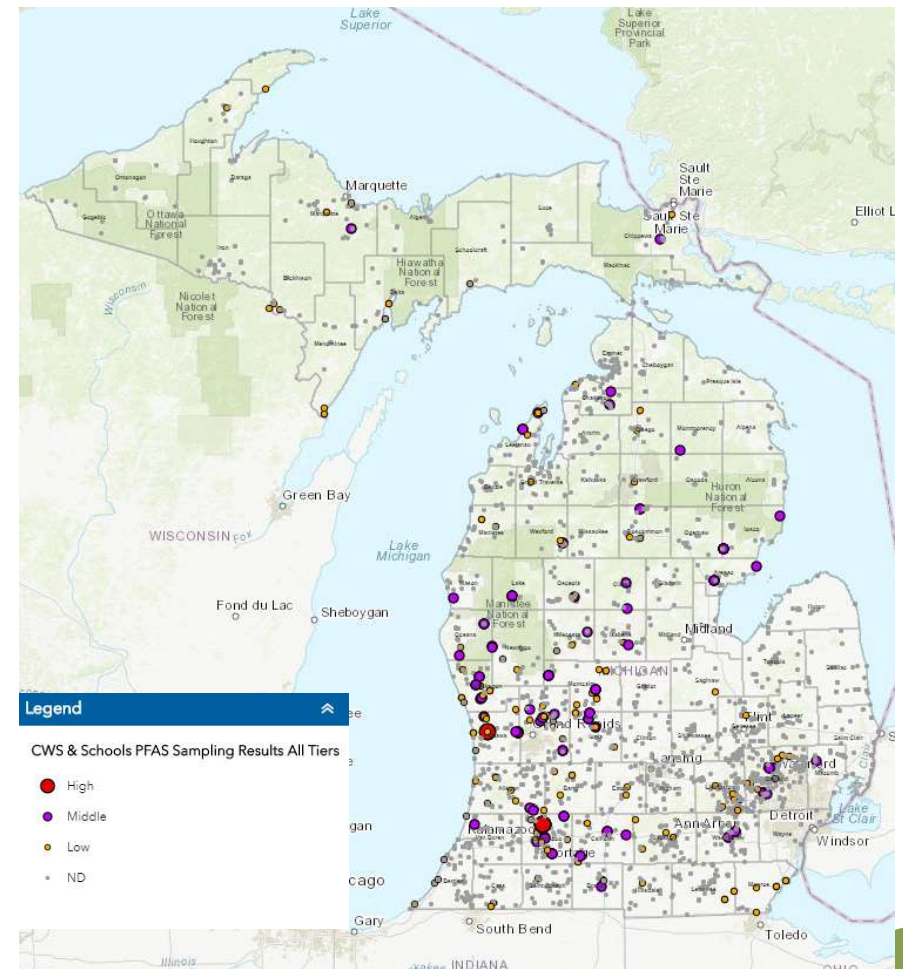
MPART Support and Resources to the SAWG

- 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)

Supply Type	Supplies Sampled	PFBS	PFHxA	PFHpA	PFHxS	PFOA	PFNA	PFOS	PFDA	MeFOSAA	EtFOSAA	PFUnA	PFDoA	PFTTrDA	PFTeDA
Community Water Supplies	1,114	63	46	13	42	47	1	24	0	0	1	0	0	0	0
Schools on Wells	461	18	27	8	14	19	2	9	0	3	1	0	0	0	0
Tribes	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Child Care /MI Head Start	152	13	8	3	6	5	0	5	0	0	1	0	0	0	0
Total	1,744	94	81	24	62	71	3	38	0	3	3	0	0	0	0

Statewide Drinking Water Testing Initiative Results
Individual PFAS Analytes from EPA Method 537 v. 1.1

Selected PFAS for Health-Based Values

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

PFNA PFOA PFOS PFHxS	Robust database Multiple agency values
PFBS GenX	Limited database 1 or more agency values
PFHxA	Much more limited database 2 nd highest number of detections

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.

<u>Analyte^a</u>	<u>Acronym</u>	<u>Chemical Abstract Services Registry Number (CASRN)</u>
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6 ^b
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorodecanoic acid	PFDA	335-76-2
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluorononanoic acid	PFNA	375-95-1
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorotetradecanoic acid	PFTA	376-06-7
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluoroundecanoic acid	PFUnA	2058-94-8
11-chloroicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9 ^c
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1 ^d
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4 ^e

^a Some PFAS are commercially available as ammonium, sodium and potassium salts. This method measures all forms of the analytes as anions while the counterion is inconsequential. Analytes may be purchased as acids or as any of the corresponding salts (see Section 7.2.3 regarding correcting the analyte concentration for the salt content).

^b HFPO-DA is one component of the GenX processing aid technology.

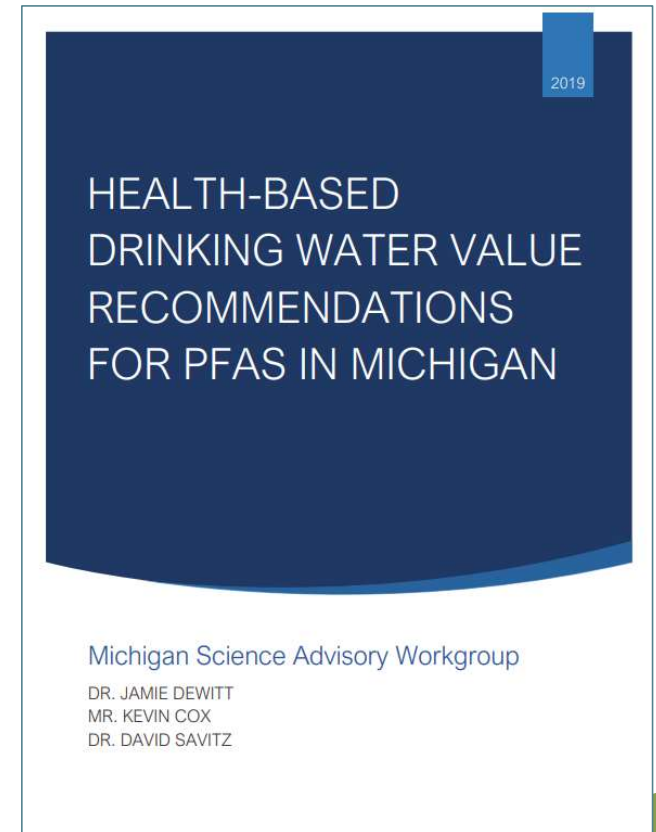
^c 11Cl-PF3OUdS is available in salt form (e.g. CASRN of potassium salt is 83329-89-9).

^d 9Cl-PF3ONS analyte is available in salt form (e.g. CASRN of potassium salt is 73606-19-6)

^e ADONA is available as the sodium salt (no CASRN) and the ammonium salt (CASRN is 958445-448).

Development of Health-Based Values

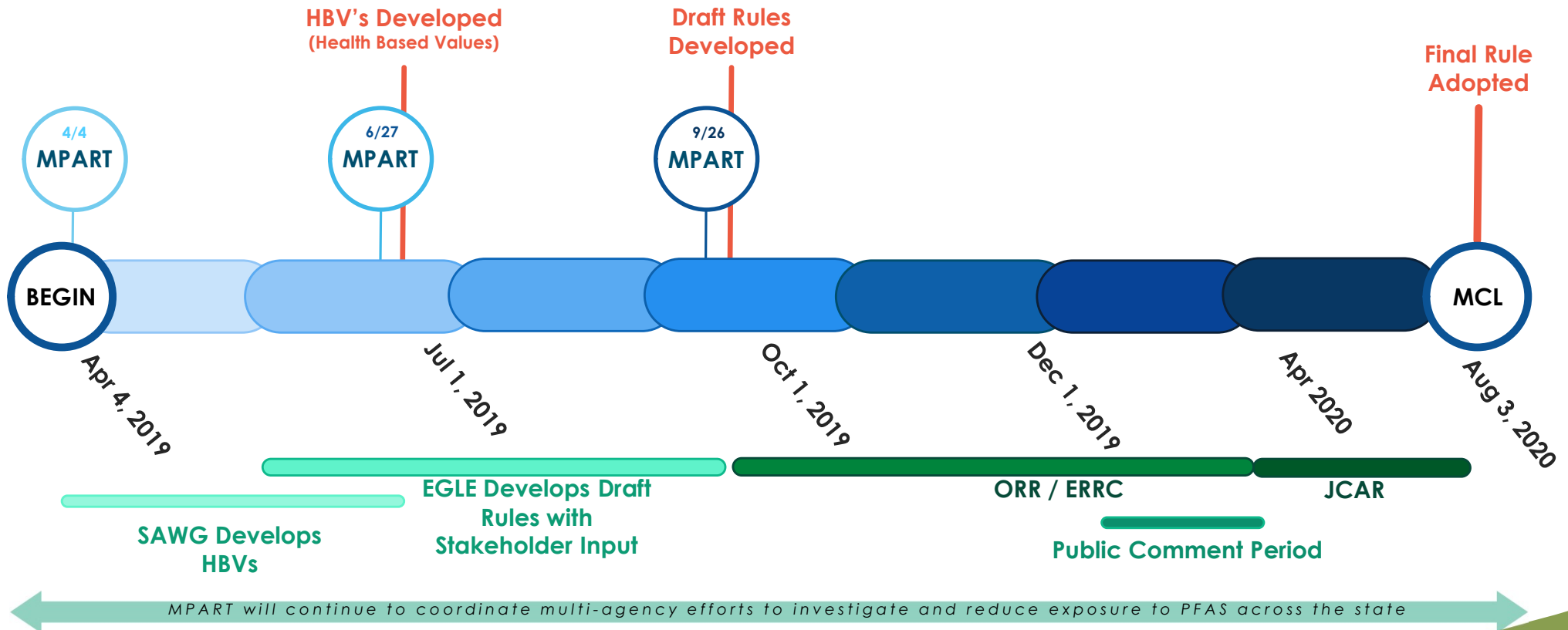
- Toxicity Values
 - Identification of Key Study, Critical Effect(s), Point of Departure
 - Toxicokinetic adjustment to Human Equivalent Dose
 - Uncertainty Factors
- Relative Source Contribution
- Exposure Parameters & Considerations
 - Identification of sensitive population
 - Goeden et al. 2019 Toxicokinetic 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 $\geq C6$ for sulfonates and $\geq C8$ 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



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://www.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
- MPART Tools and Reports
 - Michigan Science Advisory Workgroup Health-Based Drinking Water Values for PFAS in Michigan Report - https://www.michigan.gov/documents/pfasresponse/Health-Based_Drinking_Water_Value_Recommendations_for_PFAS_in_Michigan_Report_659258_7.pdf
- MPART Meetings (ERRC meeting re: PFAS and MPART meetings)
 - https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_92294---,00.html

MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse

The logo for the Michigan Department of Environment, Great Lakes, and Energy (EGLE). The letters 'EGLE' are rendered in a bold, sans-serif font. The 'E' and 'L' are green, while the 'G' and 'E' are blue.

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

