Current Efforts

Wastewater Technical Advisory Group

Mike Shupryt
Wade Strickland
Meghan Williams

Current efforts to address PFAS in Wisconsin

- Standards Development
- 2019 Water Quality Monitoring & Research
- Examples from Other States

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Standards Development

- Team of toxicologists & epidemiologists
- Goal: identify critical studies to be used as basis for both groundwater and surface water standards

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Standards Development

<u>Reviewed basis for federal numbers</u>

- EPA 2016 health advisory levels
- ATSDR 2018 draft toxicological assessment
- Health Canada 2018 drinking water quality guidelines
- Goal: understand critical study selection, modeling approaches, uncertainty factors applied, etc.

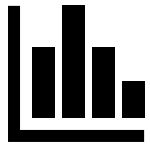
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

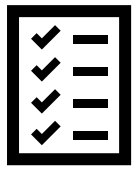
Health Canada | Santé Canada

Standards Development

Literature review

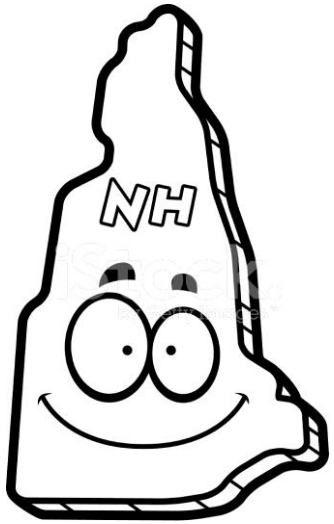


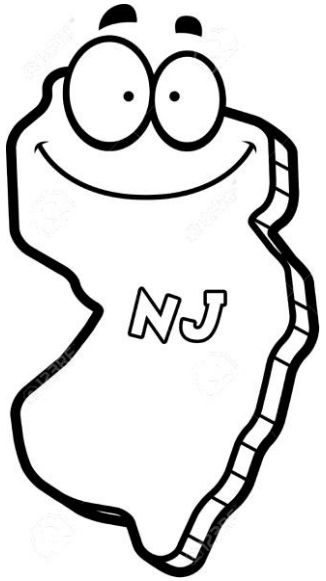
- Studies published since 2017



- Questions considered:
  1. Have there been more recent studies?
  2. Is there compelling evidence that a more recent study should be used as critical study?
  3. Do recent studies provide support that a particular health effect is most sensitive?

Standards Development





<u>Reviewed other states' approaches</u>

1. Which endpoint(s) were considered?
2. What were the critical studies?
3. What uncertainty factors were applied?

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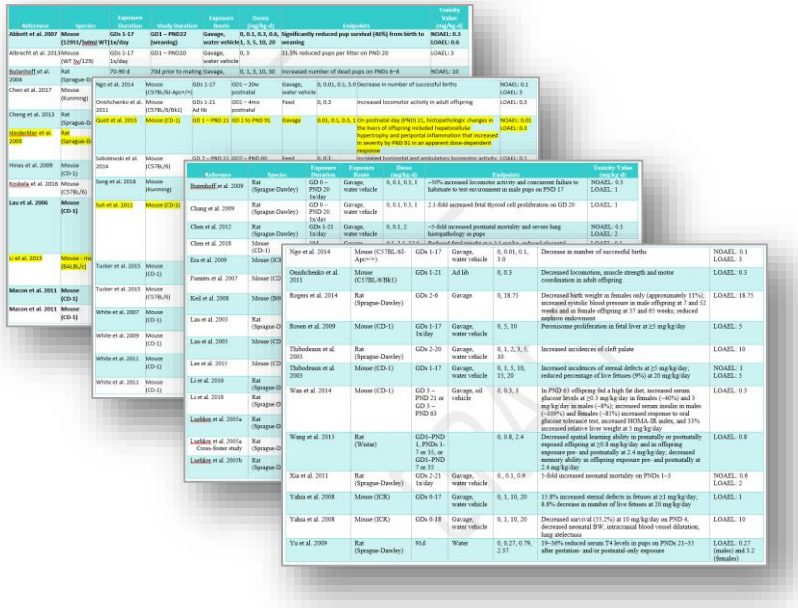
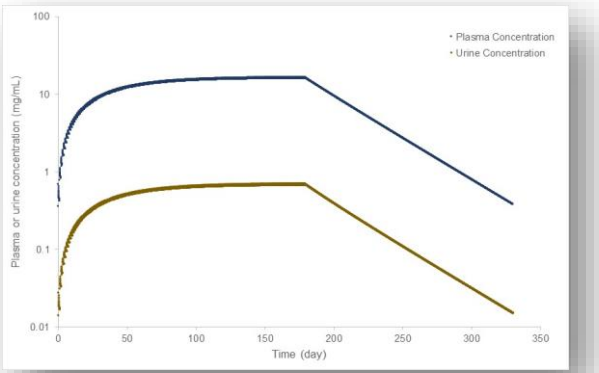
https://images.freeimages.com/images/premium/previews/5340/53409314-cartoon-new-hampshire.jpg

Standards Development

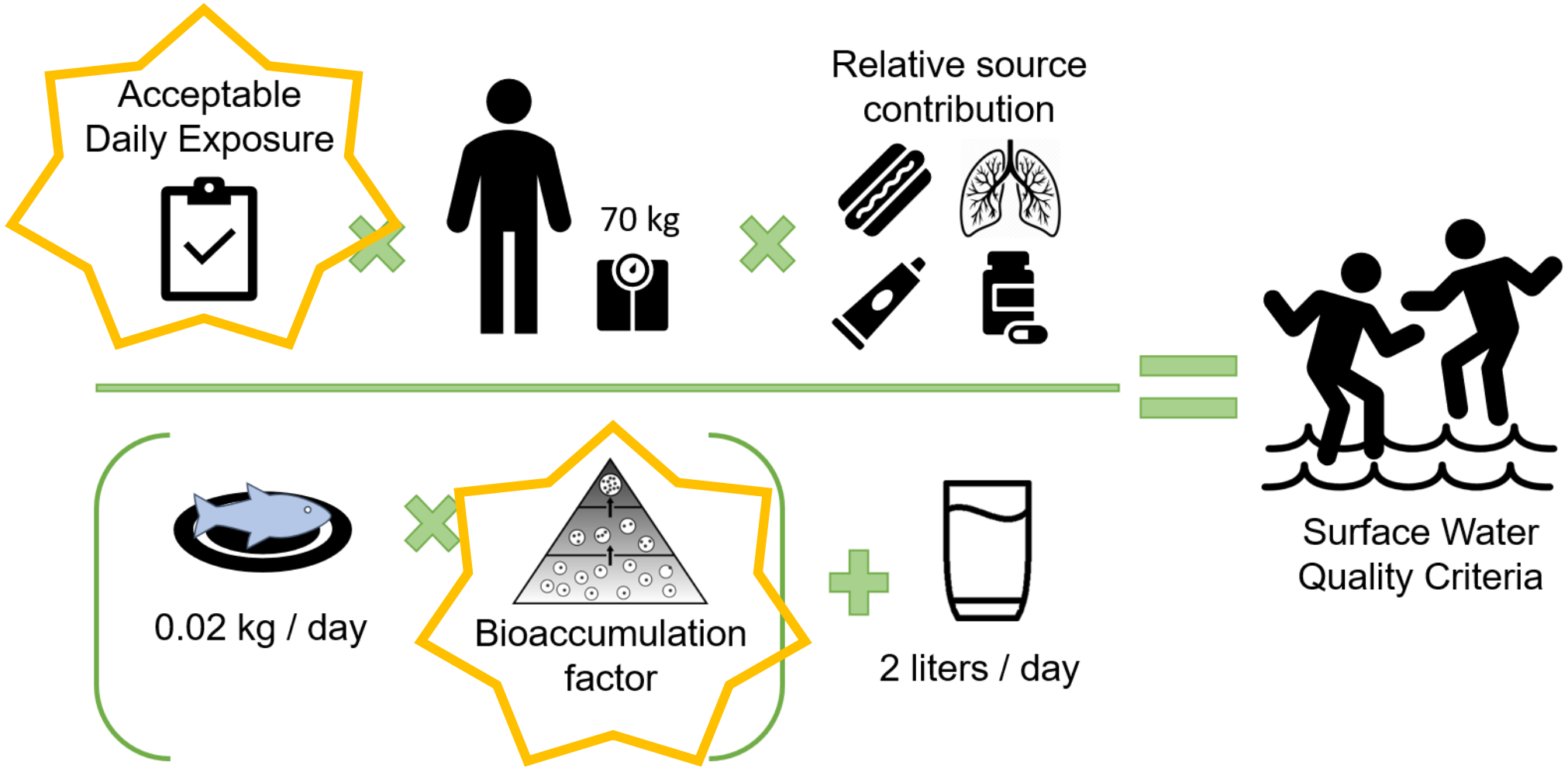
Data synthesis

- Aggregated data from federal numbers, recent literature, and other states' approaches
- Applied modeling used by EPA and ATSDR to new studies
- Determined whether to use existing toxicity number or derive new number
  - Reference dose (RfD)





Standards Development



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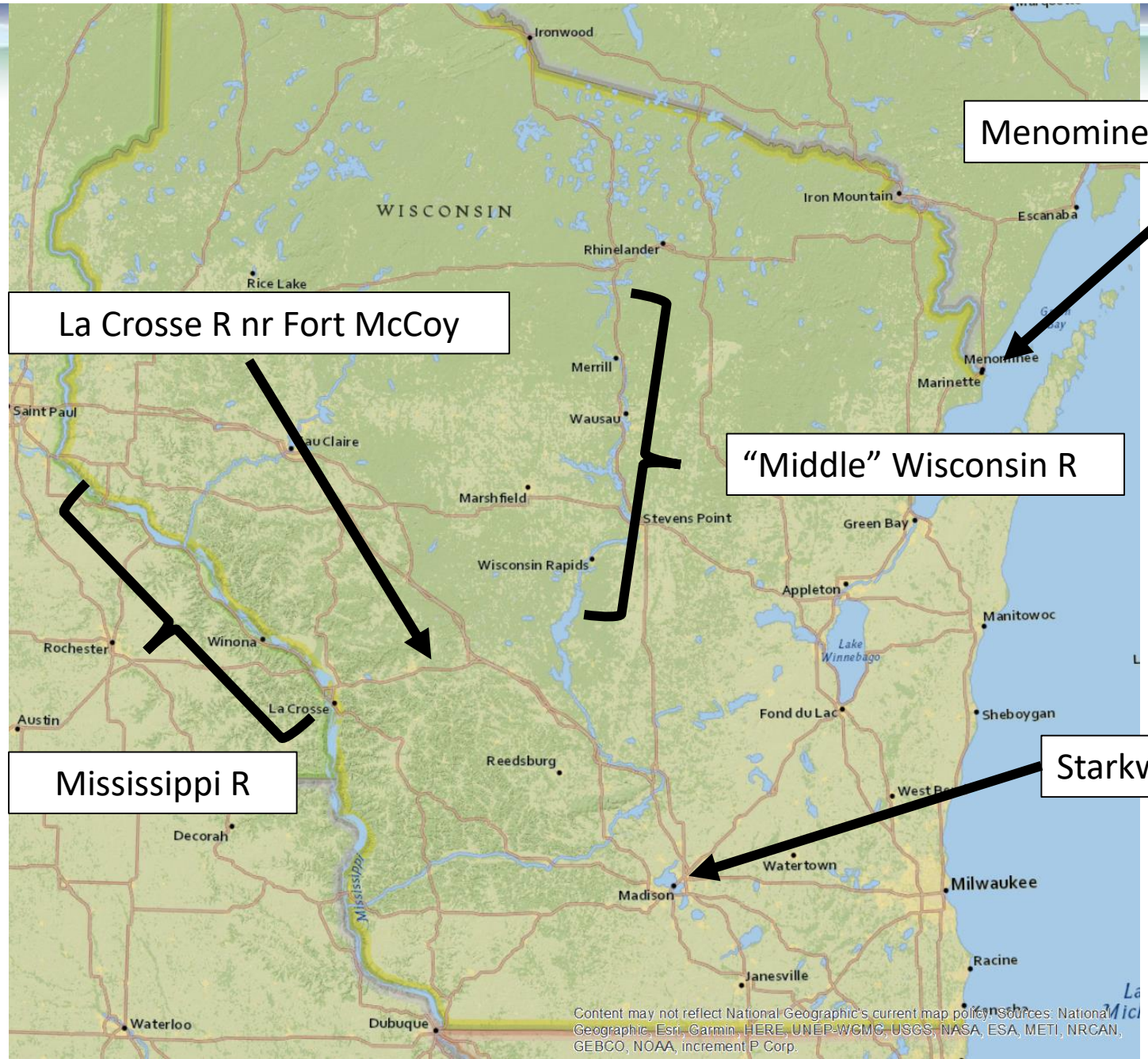
Monitoring efforts: 2019 water quality

- Surface water & fish tissue monitoring
  - Project Objective 1: Describe PFAS concentrations at sites with known or suspected contamination
  - Project Objective 2: Collect paired fish tissue and surface water chemistry to aid development of a water quality standard
  - Timeframe: mid- to late summer (characterize local conditions)
- Develop monitoring procedures for PFAS
  - Adapting Michigan DEQ protocols
  - Approved materials & SOP

Monitoring efforts: 2019 water quality

Waterbody	Source known?	Known contamination	Number of sample sites	Sample types
Menominee River from Scott Flowage to mouth	Y	Groundwater wells, surface water	3-5	Fish & water
Starkweather Creek from headwaters to Lake Monona	Y	Groundwater wells	4	Fish & water
La Crosse River and Silver Creek	Y	Groundwater wells	4	Water
Wisconsin River, middle reach	N	Groundwater wells, bald eagle plasma	3	Fish & water
Mississippi River Pools 3, 4, 6, & 8	Y	Surface water, fish tissue	4	Fish & water

2019 WR Surface Water and Fish Tissue Monitoring Plans



Menominee R @ Marinette

La Crosse R nr Fort McCoy

"Middle" Wisconsin R

Mississippi R

Starkweather Creek

PFAS in Municipal Wastewater Study Proposal

- Project A
  - Quantify PFAS in **influent** and fractions in **effluent** and **sludge/biosolids** (mass balance)
  - ~12 POTWs, mix of suspected high-low upstream PFAS sources
- Project B
  - Impact of biosolids on agricultural fields and shallow groundwater
  - Estimate loading and compare PFAS concentrations

Principal Investigator – Martin Shafer, PhD

UW-Madison - Wisconsin State Lab of Hygiene

Wisconsin State Laboratory of Hygiene
UNIVERSITY OF WISCONSIN-MADISON

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- Overview of Michigan’s Wastewater Related PFAS Efforts

Michigan's PFAS Program History

- Michigan's PFAS Action Response Team (MPART) formed in 2017
- MPART was more permanently established via Executive Order in February 2019
  - Inter-agency coordination required
- https://www.michigan.gov/pfasresponse

Michigan Standards

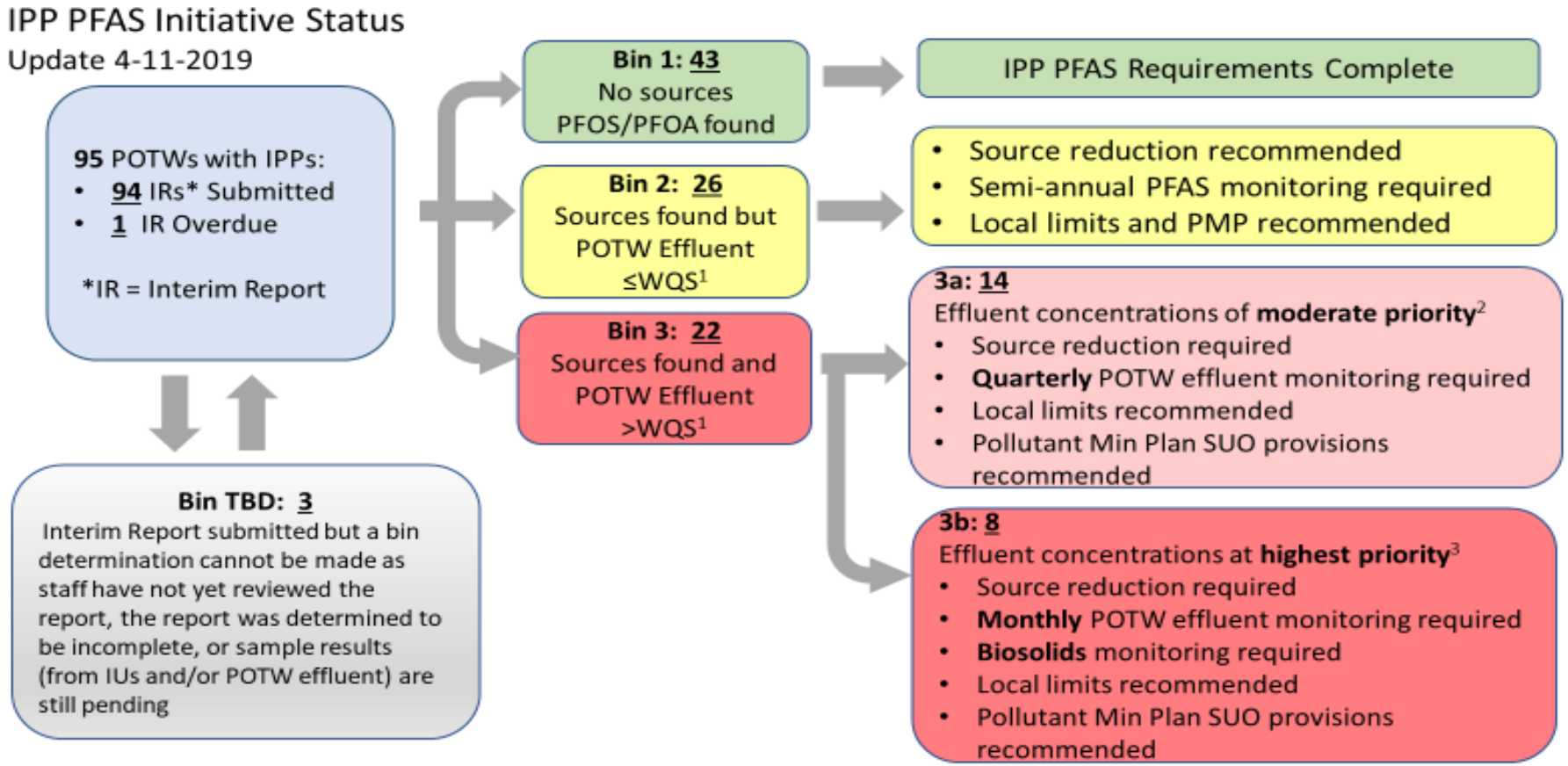
Criteria	PFOS	PFOA	PFOS/PFOA
Drinking Water Health Advisory Level	70 parts per trillion (ppt)	70 ppt	70 ppt
Groundwater (used as a drinking water source)	70 ppt	70 ppt	70 ppt
Soil protective of groundwater (for GSI pathway)	0.24 parts per billion (ppb)	10,000 ppb	n/a
Surface water (drinking water source)	11 ppt	420 ppt	n/a
Surface water (non-drinking water source)	12 ppt	12,000 ppt	n/a

2018 Industrial Pretreatment Program PFAS Initiative

<u>95 Wastewater Treatment Plants with Industrial Pret. Programs</u>

1) Screen industrial users for PFAS
2) Sample users and effluent for PFAS
3) Control/reduce discharges to treatment plant
4) Ongoing performance monitoring

Michigan PFAS IPP Findings



National Pollutant Discharge Elimination System (NPDES) Permits & PFAS

For IPP WWTPs:

- PFOS/PFOA monitoring
  - Bin 1: 4x/5 yrs (w/additional monitoring requirements)
  - Bin 2: 2x/yr
  - Bin 3a: 4x/yr
  - Bin 3b: 12x/yr
- Pollutant Minimization Plans for PFOS/PFOA
  - Bin 3: All
  - Bin 2: Upon Trigger
  - Reporting may overlap w/IPP requirements

Direct NPDES Dischargers & PFAS

- EGLE Monitoring of Probable PFOS Sources
- Some Sources Found
- Consent Order Process (Interim Step)
- Next, NPDES Permit Requirements (e.g., monitoring, PMP)
- Treatment Already Installed at Several Facilities

Michigan Statewide Biosolids Study

- Sample Effluent, Influent, & Biosolids from 41 Wastewater Treatment Plants (WWTP)
  - Oct – Nov 2018
    - 3.0 – 9.0 MGD (8 WWTPs)
    - 0.5 – 3.0 MGD (8 WWTPs)
    - 0.2 – 0.4 MGD (5 WWTPs)
  - Various treatment processes evaluated
  - Some with no industrial users
- Screen select fields from WWTPs with high concentrations of PFOS in biosolids
  - Spring 2019
  - Follow-up based on results
- Sample fields from WWTPs with “typical/low” PFOS concentrations in biosolids
- Identify data gaps

Land Application Site Screening

Field selection procedure to prioritize fields for screening

April 2019 – Field Screening

- Land App sites used by WWTPs with high PFOS concentrations
- Land app sites used by WWTPs with low/typical PFOS concentrations ranges
- Soils, drain tiles, swales, surface waters
- Follow-up if necessary

Questions?

Mike Shupryt
Michael.Shupryt@wisconsin.gov
608-261-6404

Wade Strickland
Wade.Strickland@wisconsin.gov
608-266-7420

Meghan Williams
MeghanC3.Williams@wisconsin.gov
608-267-7654

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