

Speaker's Water Quality Task Force Briefing

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Marinette, WI
August 29, 2019

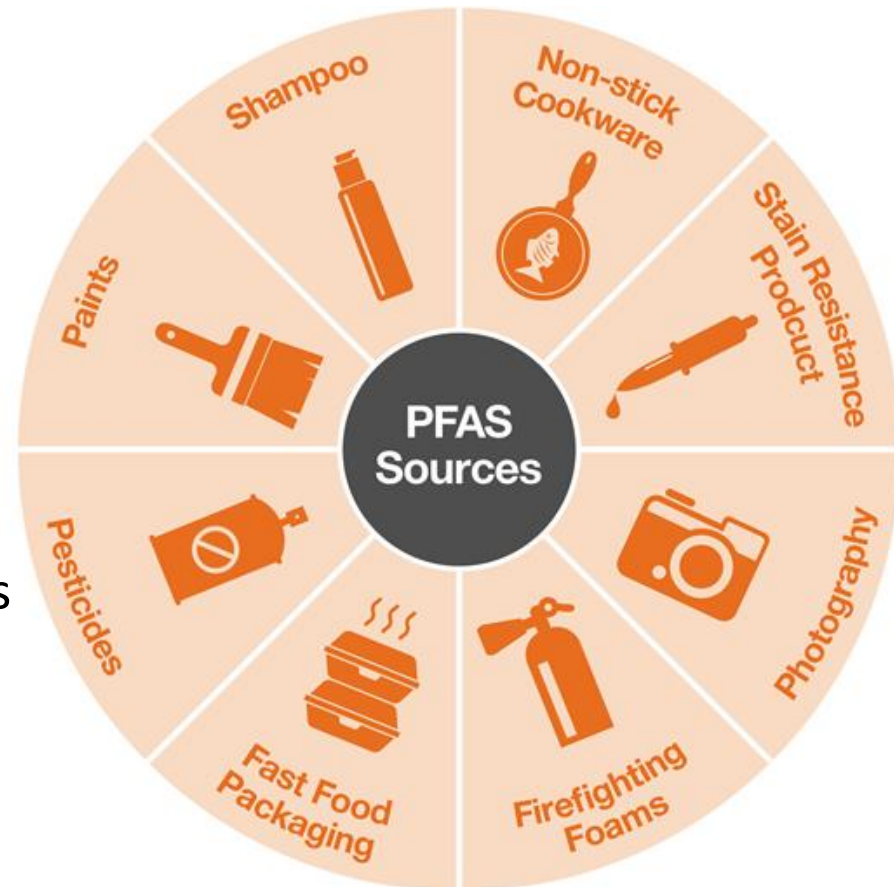


Today's Presentation Covers:

1. What are PFAS?
2. Where are PFAS found in Wisconsin?
3. What is DNR's role in addressing PFAS?
4. What is DHS' role in addressing Water Quality?
5. What are DHS/DNR recommendations for the Speaker's Water Quality Task Force?

What are PFAS?

- Per- and Polyfluoroalkyl Substances (PFAS)
 - Family of 3,000+ human-made chemicals
 - Commercial and Industrial applications since 1940s
 - PFOA, PFOS, PFNA, PFHxS, GenX
 - Less known about “short-chain” PFAS
- “Emerging Contaminant”
 - Not known to degrade in the environment
 - Threat to human health and the environment
- No Federally Enforceable Standards



What Products Contain PFAS?

- Manufactured for use in:
 - Non-stick coatings
 - Waterproof fabrics
 - Certain firefighting foams
 - Protective coatings
 - Stain/water resistant products
 - Chrome plating
 - Food packaging
 - Personal care products
 - Coated paper



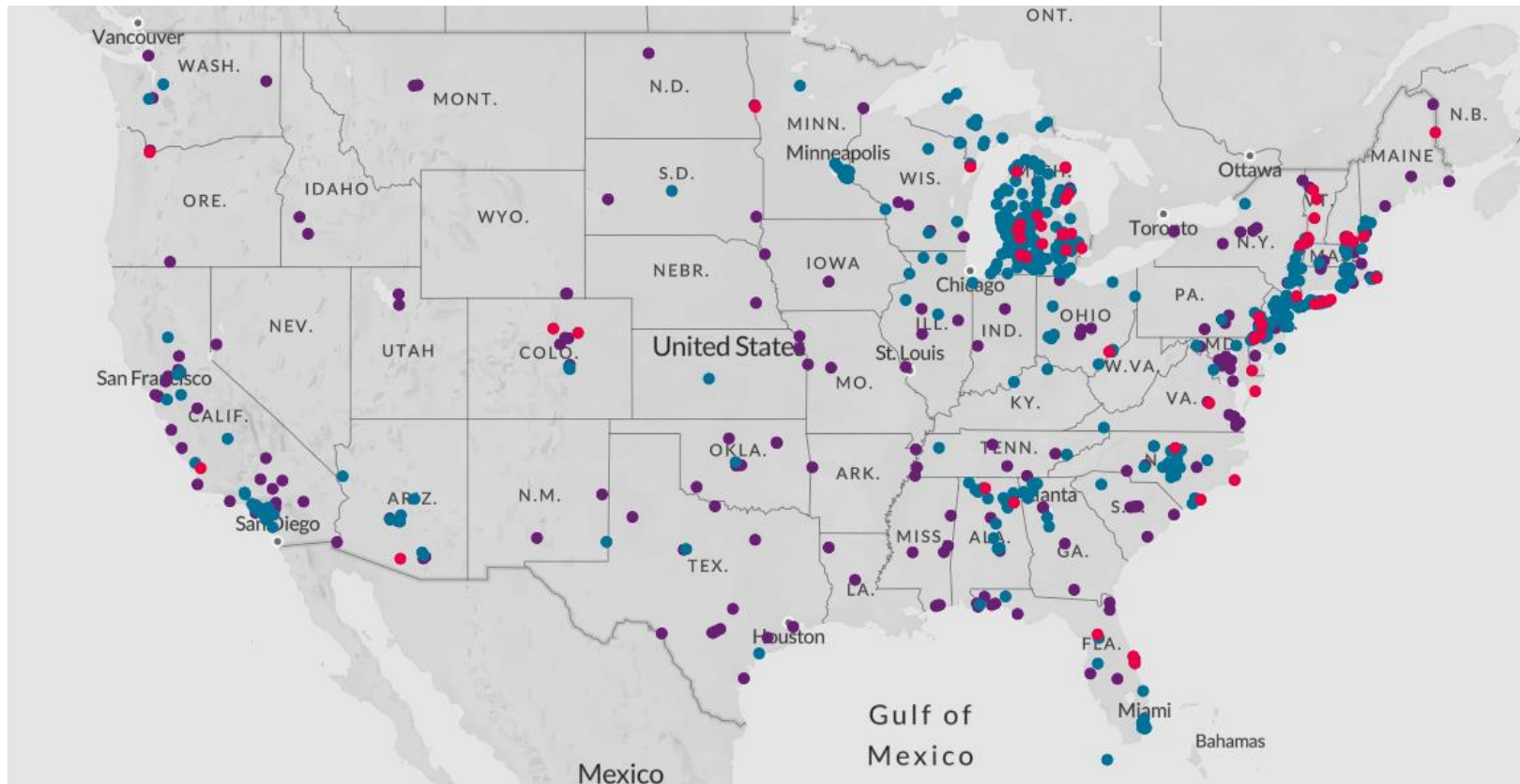
What are the health effects of PFAS?

- Studies in humans show PFAS may:
 - Decrease fertility in women
 - Increase the risk of high blood pressure and pre-eclampsia in pregnant women
 - Increase cholesterol levels
 - Decrease effectiveness of vaccines
 - Increase the risk of thyroid disease
 - Lower infant birth weights
- Studies in animals have shown:
 - Changes in liver, thyroid, and pancreatic function
 - Changes in hormone levels
 - Cancer

How are humans exposed?

- Main exposure from *Ingestion*
 - Drinking contaminated water
 - Eating food with PFAS-containing packaging
 - Eating fish caught from PFAS-contaminated water
 - Accidentally swallowing contaminated soil or dust.
- Exposure can also occur from PFAS-containing consumer products (i.e. non-stick cookware, stain resistant carpeting, and water repellant clothing)

Not just a Wisconsin Issue...



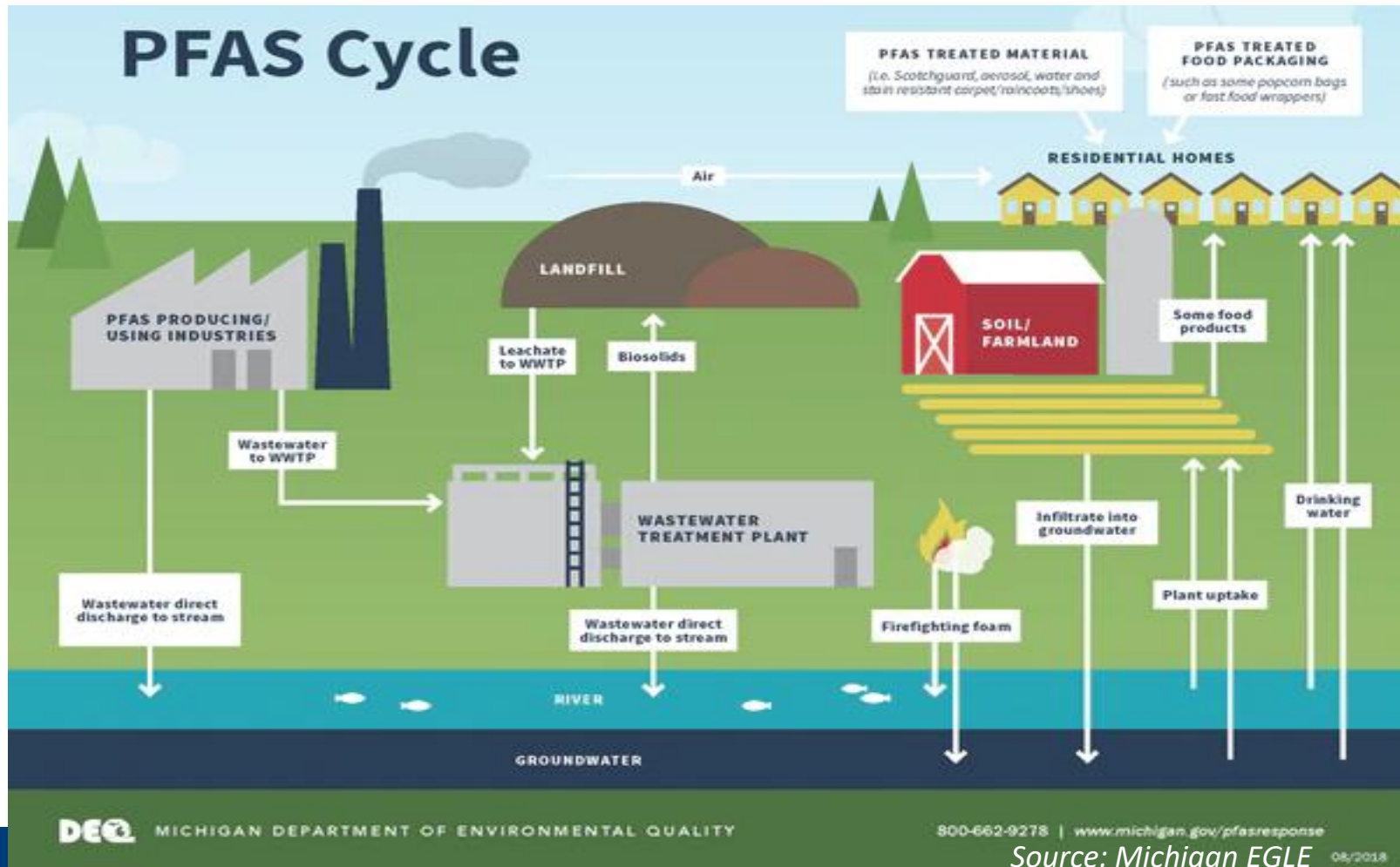
PFAS Contamination Sites In the U.S.

Source: EWG

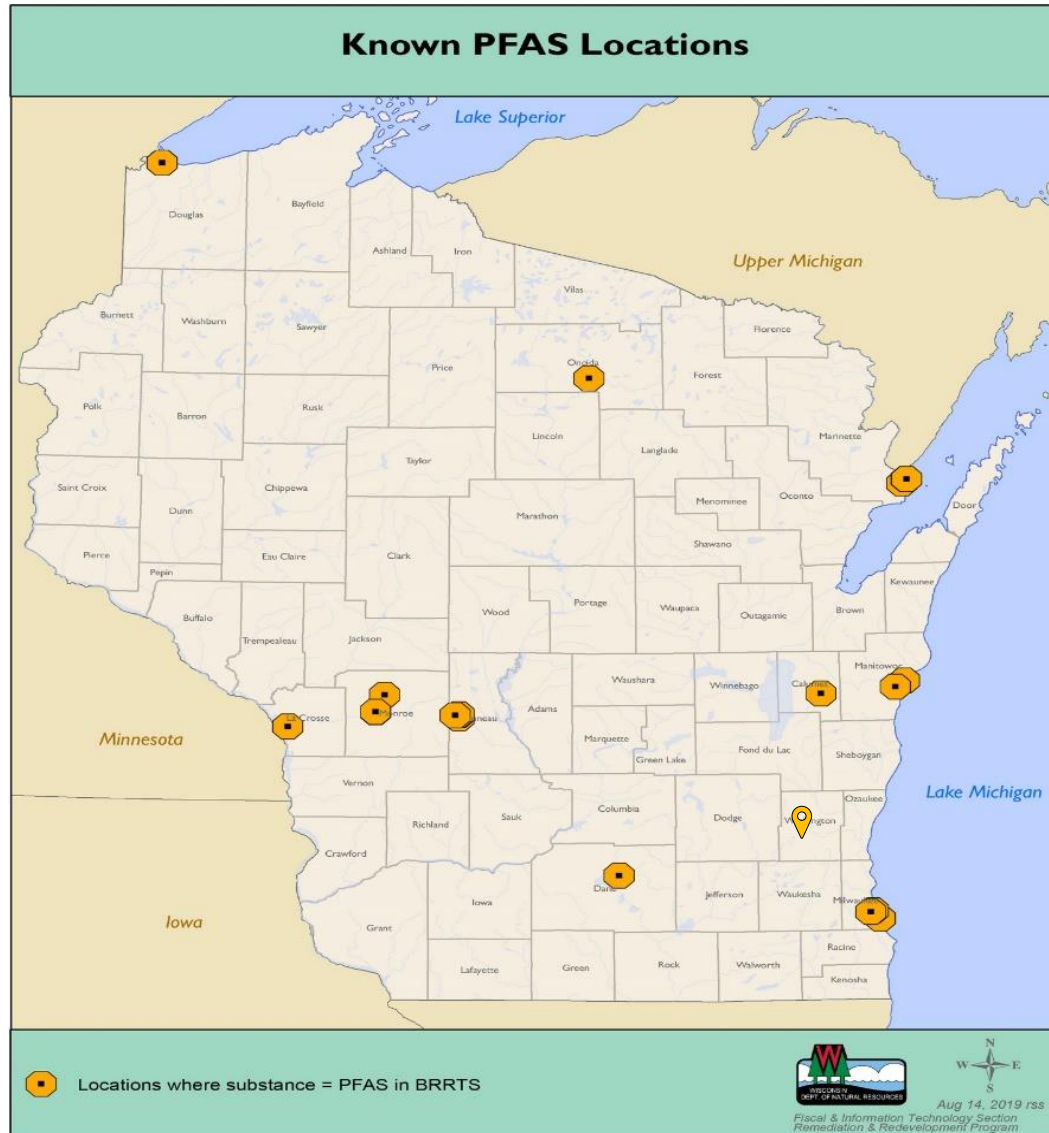
Where are PFAS found in Wisconsin?

Across DNR Programs and Environmental Media

- Drinking and Groundwater
- Surface Water
- Air
- Soil and Sediment
- Waste Management
- Wildlife and Fisheries



Where are PFAS Sites in Wisconsin?



Impacted Communities: Marinette and Peshtigo Area



The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not intended to be used for navigation, nor is this map an authoritative source of information about legal land ownership or public access. Users of this map should confirm the ownership of land through other means in order to avoid trespassing. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map.

Impacted Communities: Marinette and Peshtigo Area

Tyco Fire Products, Subsidiary of Johnson Controls International (JCI)

- Historic PFAS-containing firefighting foam production and testing
- Discharge impacting drinking water (potable wells), groundwater, surface water, soil and sediment
- Additional community concerns around foam on surface waters, impacts to wildlife, and contamination spreading from WWTP biosolids

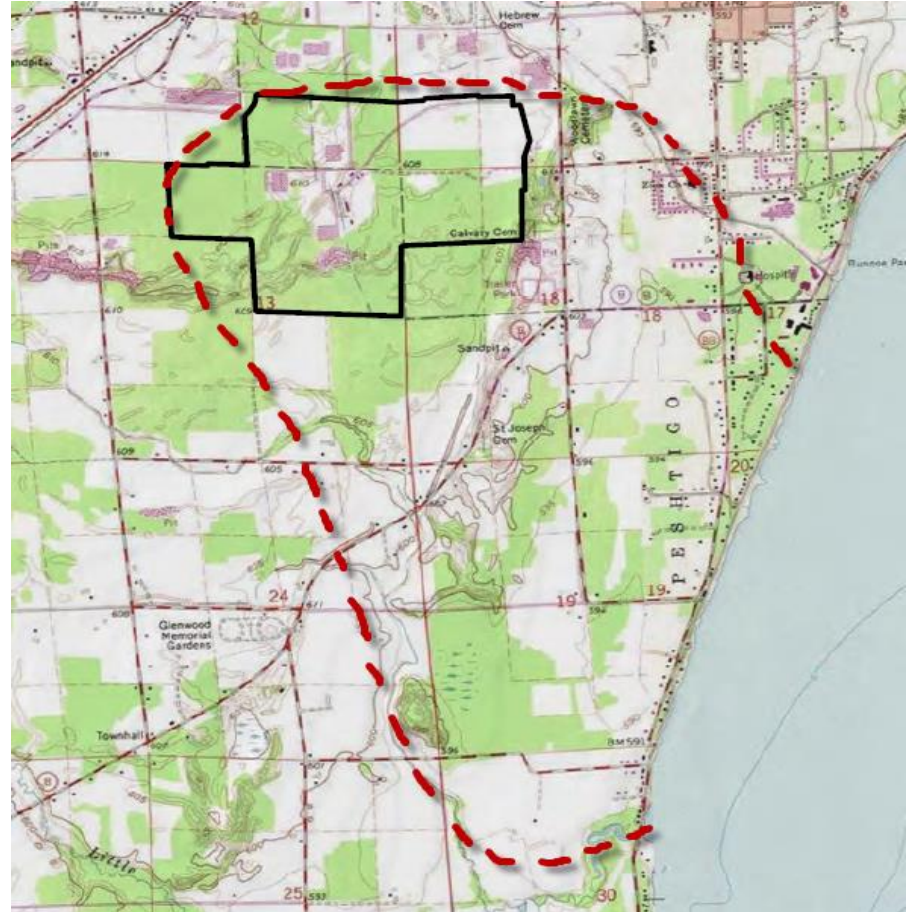


Source: <http://www.marinette.tycofpp.com/>

Site Investigation: JCI Fire Technology Center (FTC)

What's known?

- Estimated groundwater plume extends ~2 miles southeast FTC
- PFAS contamination has moved off-site into “ditches” and private ponds
- PFAS in cities of Marinette and Peshtigo wastewater treatment plant biosolids
- Soil contamination at FTC
- Concerns about PFAS foam in local rivers and Lake Michigan



Site Investigation: JCI Fire Technology Center (FTC)

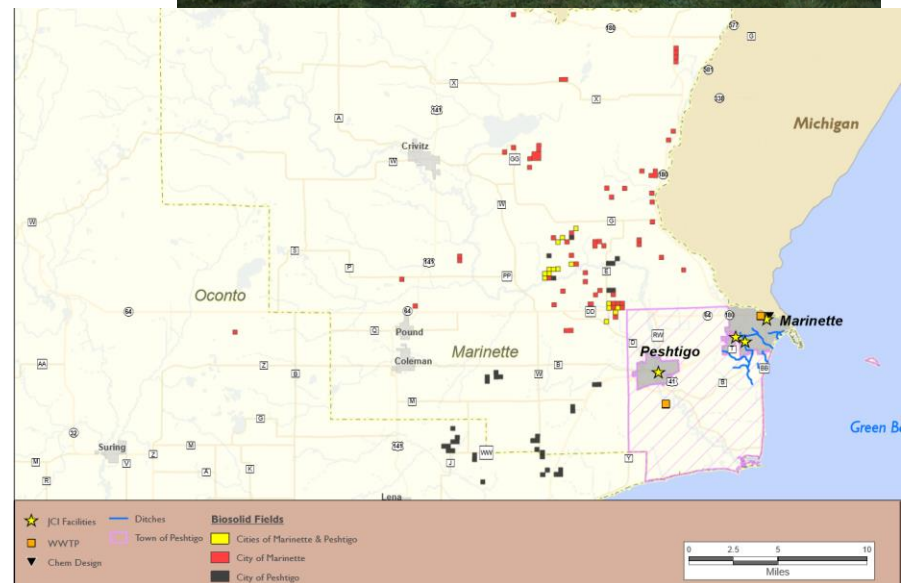
What's known?

- **168** private wells sampled in study area
- **58** private wells tested positive for PFAS
- **16** exceed EPA Lifetime Health Advisory level of 70 ppt
- **29** exceed the DHS recommended groundwater standard of 20 ppt
- **37** treatment systems installed
- Groundwater levels as high as 254,000 ppt PFOA and 64,000 ppt PFOS



JCI Site Investigation: Marinette and Peshtigo Wastewater Treatment

- City of Marinette biosolids:
 - 210,000 ppt PFOS
 - 10,000 ppt PFOA
- City of Peshtigo biosolids:
 - 26,000 ppt PFOS
 - 2,500 ppt PFOA



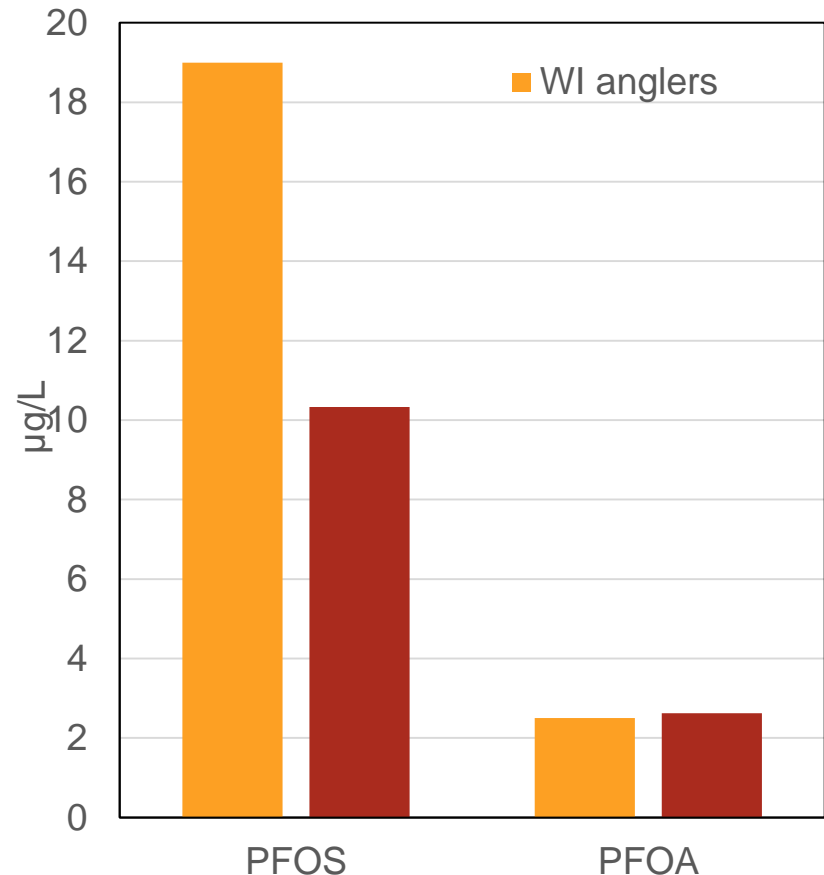
PFAS in Surface Water And Impacts to Humans, Waterfowl and Wildlife in Wisconsin

EPA, DNR AND DHS RESEARCH: 2006 TO 2017



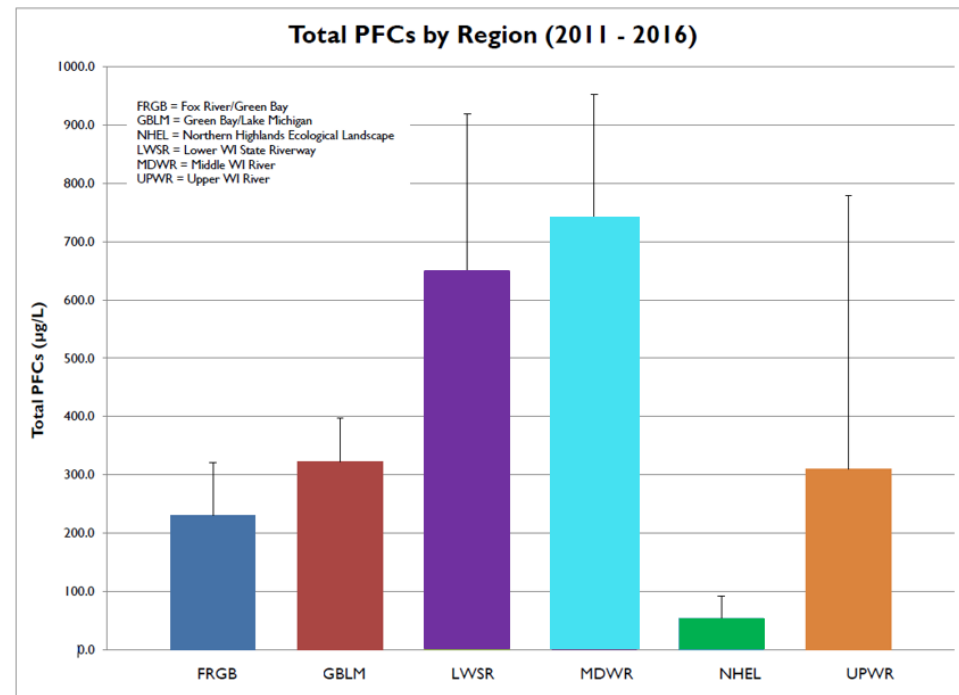
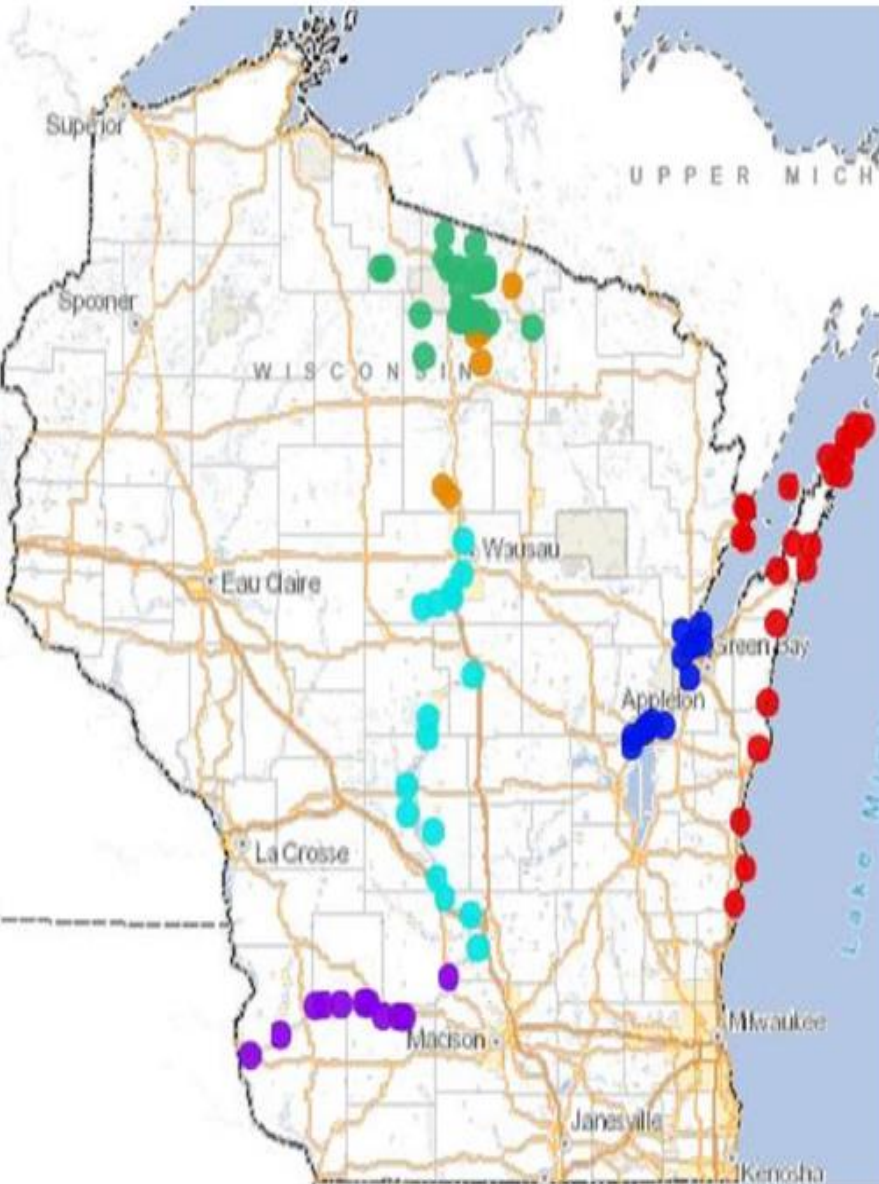
DHS Monitoring Efforts - Anglers

- DHS biomonitoring study of older male anglers
- PFOS present in all samples
- PFOA present in >97% of samples
- Wisconsin anglers in study had PFOS in blood > national average.

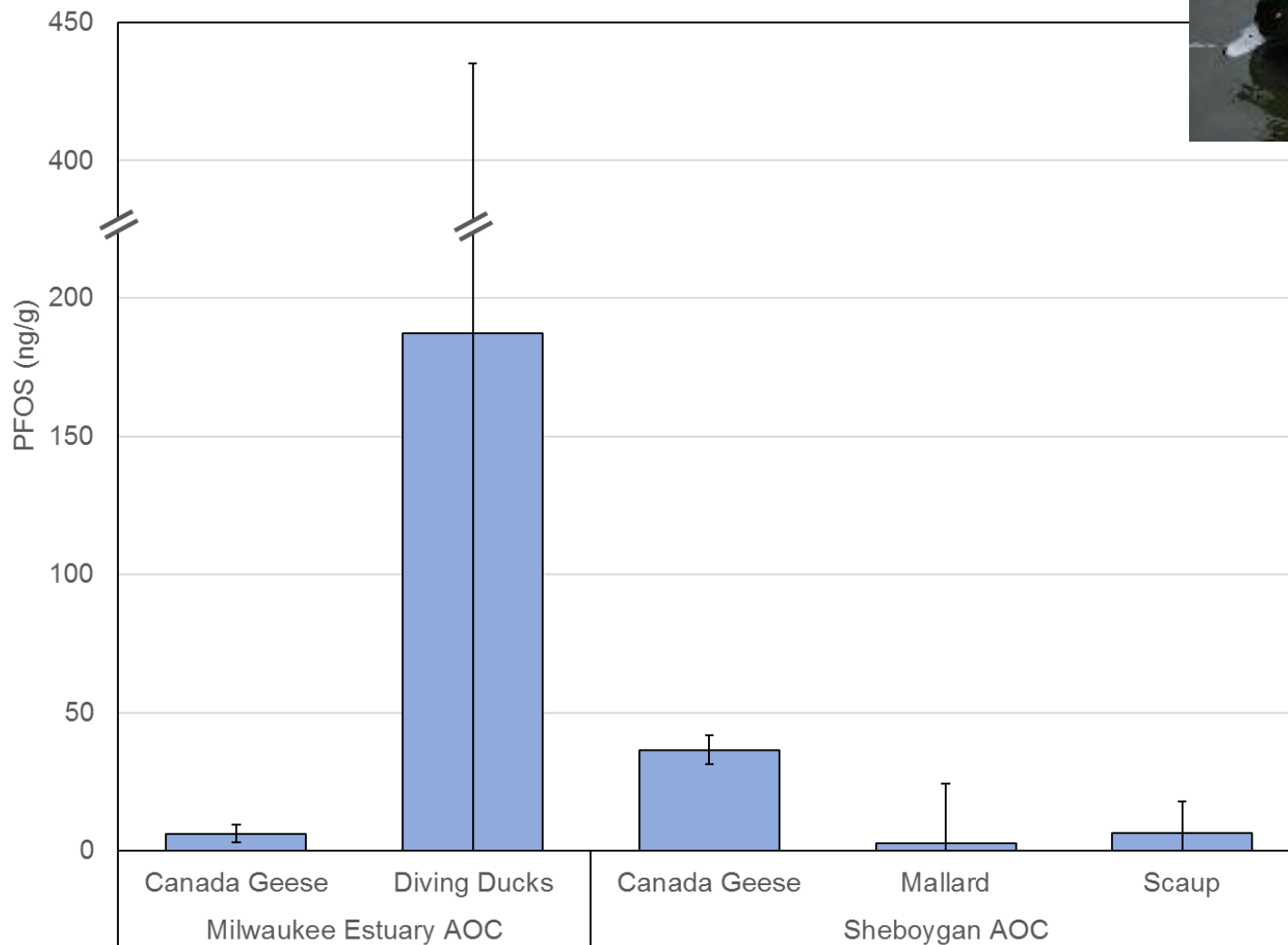


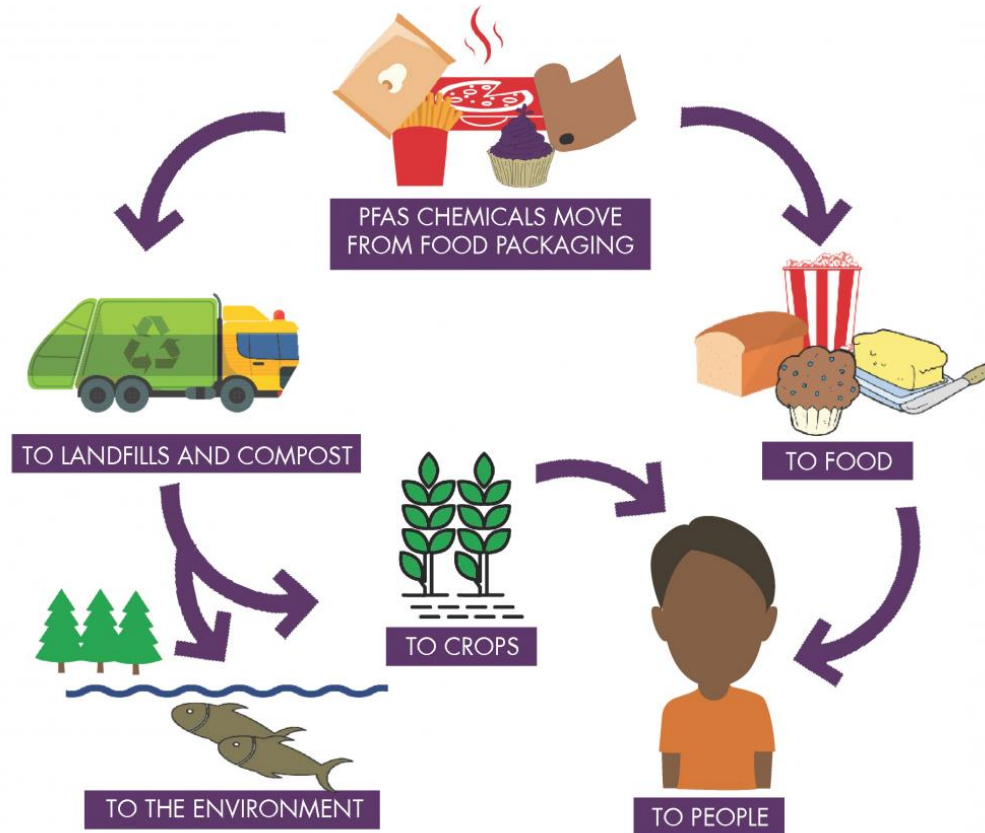
DNR Monitoring Efforts - Eagles

Bald Eagle Populations Sampled 2011 – 2017



DNR Monitoring efforts: waterfowl





Graphic credit: City of Exeter NH

DNR's Role in Addressing PFAS



DNR's Role in Addressing PFAS

1. Respond to PFAS contamination.
2. Prevent discharges of PFAS that pose human health and environmental threats.
3. Engage with and assist communities and businesses in minimizing discharges & limiting future liability.
4. Develop environmental standards and identify best available technology.

Governor Evers' E.O. 40: PFAS

1. Creation of a coordinating council by DNR, DHS and DATCP, including other state agencies.
2. Develop a public information website for PFAS.
3. Expand monitoring of fish and wildlife.
4. Develop regulatory standards.
5. Modify the Voluntary Party Liability Exemption to protect state tax payers.
6. Assess opportunities for using natural resources damage claims for PFAS.

DNR PFAS Researchers & Needs

1. Laboratory methods for analyzing PFAS in groundwater, surface water and solids
2. Modeling exposure pathways
3. Characterization of probable PFAS sources
4. PFAS toxicity and environmental exposure
5. Soil, air and water treatment technologies
6. Characterization and safe management of PFAS-containing materials
7. PFAS discharges and movement through soil, air and water

Developing Standards: 2006 Rulemaking Process

DNR PERMANENT ADMINISTRATIVE RULE PROMULGATION PROCEDURE (2006)

1. Scope Statement (pink sheet) prepared and approved Secretary's signature November 10, published December 10

2. Yellow sheet deadline
December 27

3. Green Sheet deadline
January 23

4. Board authorization for hearing
February 25

5. Hearing notice deadline
March 10

6. Public hearing held
April 15

7. Yellow sheet deadline
April 25

8. Green sheet deadline
May 25

9. Board approval of rules
June 25

10. Submit to Legislature for Review – To Chief Clerks/To Presiding Officers (7 working days)/ to Standing Committees (30-60 days+) – July 10

11. Review period ends
Secretary's signature filed with Revisor
September 10

12. Rule becomes effective
November 1

Developing Standards: Rulemaking Today

DNR PERMANENT ADMINISTRATIVE RULE PROMULGATION PROCEDURE

[When Governor approval of scope received after April 2013] Rev. 7/10/18

PHASE I – Scope Statement

1. Scope statement completed and approved by the Secretary.

2. Scope statement submitted to DOA for review of explicit authority.

3. DOA submits the scope statement to the Governor who may approve or reject the scope statement.

4. Governor issues written notice of approval via email to the Department rule officer.

5. Scope statement is submitted to Legislative Reference (LRB) for publication in the Administrative Register. The LRB will note the expiration date of the scope statement in the Register. 2017 WI ACT 39.

6. Scope statement is also submitted to chief clerks of the legislature for distribution to JCRAR, who may request a public hearing on the scope statement. 2017 WI ACT 57.

7. Yellow sheet is prepared to reserve time on NRB agenda for scope approval and conditional approval of the Notice of Public Hearing and Notice of Submittal to Legislative Council.

8. Green Sheet package is prepared to request NRB approval of scope statement and conditional approval of the Notices.

9. NRB meeting is held for approval of the scope statement and conditional approval of the notices.

PHASE II – Rule Development

10. Proposed rule language is prepared in Board Order format.

11. Complete the analysis section of the board order.

12. Does the rule require incorporation by reference? If yes, be sure to update analysis. See step 23.

PHASE III – Soliciting Comments on Economic Impact

13. Solicitation Notice is prepared for seeking comments on economic impacts of the proposed rule.

14. Drafting bureau meets with the Department Economist to determine Economic Impact level.

15. Fiscal estimate and Economic Impact Analysis (FE/EIA) prepared using Fiscal Estimate form DOA-249.

16. Solicitation Memo to NRB is prepared informing the Board of the department's intent to seek comments on economic impact.

17. Solicitation Memo and other documents are routed, then approved by the Secretary's office and submitted to NRB.

18. Solicitation Notice and other documents are sent by the drafting bureau to affected businesses, interested parties; rules officer posts on the DNR website.

PHASE IV – Public Hearings

19. Public hearing documents are prepared for 15-day passive review by the NRB.

20. Rule documents sent to the Legislative Council for their 20-working day review; docs also sent to DOA and Chief Clerks for referral to JCRAR, 2017 WI Act 57

21. The public hearing notice is published in the Administrative Register.

22. Public hearing is held and public comment period closes.

PHASE V – Final Rule Adopted by NRB and Governor

23. Board order for proposed rule may be modified as necessary based on public comments received and Incorporation by Reference if needed.

24. Yellow Sheet is prepared to hold a place on NRB agenda for adoption of proposed rule.

25. Green Sheet package is prepared and approved by the Secretary to request NRB adoption of the proposed rule.

26. NRB meeting is held requesting adoption of final rule.

27. Final rule and rule checklist is submitted by the rule officer requesting Governor approval.

28. The rule officer notifies JCRAR that the Department has submitted a rule to the Governor for approval.

PHASE VI – Legislative Review This is the 30 month deadline. The end result is that rulemaking must go from scope statement publication to legislative review within 30 months. 2017 WI ACT 57.

29. Report to Legislature and Notices prepared and submitted to Assembly and Senate Chief Clerks.

30. Standing Committee's review completed. (30 days; an additional 30 days can be requested by the committees).

31. JCRAR Reviews the rule and can object to the rule in whole or in part, or just review. Usually a 30 day review. Rule officer notes the final date of the review time period.

32. The Department rule officer prints the rule and it is signed by the Secretary; the rule officer files with LRB.

33. Rule proof received from LRB, the program reviews the proof copy and it's returned to the LRB by rule officer.

34. Final Rule is published in the end of month Administrative Register.

35. Rule becomes effective the first day of the month following publication in the Administrative Register.

Currently here →

Rulemaking: Public Input & Transparency

- Each rule will have formal public input points.
- DNR will host advisory meetings with stakeholders.

Upcoming meetings

Meeting date & time	Location	Resources
September 5, 2019	Madison State Natural Resources Building (GEF2) Room G27A 101 S Webster St	<p>If you plan to attend the meeting, please RSVP to Molly Schmidt and state whether you will attend in person. In-person attendees must RSVP to ensure building access on the meeting date. A call-in number will be available on the meeting agenda for those attending remotely.</p> <p>Meeting and background material</p> <ul style="list-style-type: none">• A first draft of proposed rule revisions relating to changes made by 2015 Wis. Act 204 to the definition of "agency with administrative authority" at Wis. Stat. s. 292.12• A first draft of miscellaneous proposed rule revisions including updates to terminology, submittal format requirements, and other changes.• A white paper regarding proposed rule revisions regarding remedial action confirmation samples• A first draft of proposed rule revisions relating to contaminated sediments• A second draft of proposed rule revisions relating to changes made by 2017 Wis. Act 70, regarding the definition of "property" and property boundary changes in the Voluntary Party Liability Exemption (VPLE) program <p>Note: for those attending in person, either a laptop that can connect to wireless internet or printed versions of the relevant statutes and administrative code may be useful for participating in discussions regarding statutory language and proposed rule changes (ch. 292, Wis. Stats, and chs. NR 700-754, Wis. Adm. Code).</p>



NR 809: Public Drinking Water Standards

- Directed by Governor to develop drinking water standards for PFOA and PFOS.
- Plan to submit request to Natural Resources Board in October.
- Like MI, NJ, NH and VT, plan to establish protective standards for public water.
- EPA will announce at end of year if they plan to start 5-7 year process to develop federal MCL.



NR 105: Surface Water Quality Standards

- Directed by Governor to develop surface water standards for PFOA and PFOS.
- Plan to submit request to Natural Resources Board in October.
- Like MI, plan to establish protective standards for discharging PFOA and PFOS to surface waters.
- In 2021, EPA will determine if data is available to support standard development in future.



NR 140: Groundwater Quality Standards

- Directed by Governor to develop groundwater quality standards for PFOA and PFOS.
- Plan to submit request to Natural Resources Board in October.
- DNR groundwater standards are used by state and US EPA at environmental cleanups.
- EPA does not develop groundwater standards.



NR 140 Groundwater PALs & ESs

Preventive Action Limit (PAL)

- Early warning trigger at sites.
- Facility must notify DNR.
- May result in no action, investigation or revised practices.
- DNR has discretion.

Enforcement Standard (ES)

- Requires action of facility or site.
- Allows DNR to grant regulatory closure even if contamination > ES when natural attenuation proven.
- DNR has discretion.



DHS's role in recommending state groundwater standards

Wisconsin's Groundwater Standards Setting Process

- Described in Ch. 160, Wis. Stats.
- Draws upon the expertise of multiple state agencies to develop proposed rules
- Two kinds of numbers – Enforcement Standards (ESs) and Preventive Action Limits (PALs)

Agencies identify substances found in, or possibly found in groundwater.

DNR sends list of substances of public health concern to DHS.

DHS reviews scientific information on each substance and recommends ESs.

DNR uses DHS recommendations to propose rules establishing standards.

DHS reviews scientific information on every substance.

- Federal numbers
 - USEPA drinking water standard (Maximum Contaminant Level)
 - Suggested no-adverse-response level from EPA
 - Water concentration based on cancer risk
- Federal and state reviews or guidance
- Peer-reviewed published studies
- Studies from industry

We follow statute to select ES recommendations.

Standards Based Upon:

1. Most recent federal number
2. State drinking water standard
3. DHS-calculated recommendation based on:
 - a. Acceptable daily intake from EPA
 - b. Cancer-causing potential
 - c. Information from scientific studies

We also provide PAL recommendations.

- PALs are set at 10% of the ES if the substance is shown to have any of the following effects:
 - Carcinogenic (Cancer-causing)
 - Mutagenic (DNA-damaging)
 - Teratogenic (Developmental)
 - Interactive
- Otherwise, PAL recommendation for substances of public health is 20% of the ES.

Even if there is a federal number or acceptable daily intake, DHS may recommend a different ES.

- If there is significant technical information that:
 - Is scientifically valid
 - Was not considered by federal government when the federal number was set

-AND-

- With reasonable scientific certainty, DHS determines that a different ES is justified.

Credible scientific evidence may justify a different ES recommendation.

Required

- Resulted from scientifically valid analytical protocols

Considered

- Peer-reviewed
- Resulted from more than one study
- Consistent with credible medical and toxicological evidence

Ch. 160 outlines the calculations DHS must use for ES recommendations.

- Equations used are specified in Ch. 160, Wis. Stats.
- Non-cancer effects – based on drinking water exposures in infants
- Cancer effects – based on one-in-a-million lifetime excess cancer risk from daily exposure over a lifetime

Examples of DHS Recommendations from the 10th Cycle of the Process

Example 1: Tetrachloroethylene (PCE)

- Current ES: 5 micrograms per liter ($\mu\text{g/L}$)
- ES recommendation: 20 $\mu\text{g/L}$
- PAL recommendation: 2 $\mu\text{g/L}$ (10% of ES)
- Basis of recommendation: Most recent federal number

Example 2: PFOA

- No current ES
- ES recommendation: 20 nanograms per liter (ng/L)
 - Combined with PFOS because they cause similar effects
- PAL recommendation: 2 ng/L
- Basis of recommendation: Significant technical information not considered by federal government when the federal number was set

Example 3: PFOS

- No current ES
- ES recommendation: 20 ng/L
- PAL recommendation: 2 ng/L
- Basis of recommendation: Significant technical information not considered by federal government when the federal number was set

How we compare to other States?

		Groundwater (all values in ppt)				
		PFOA	PFOS	PFHxS	PFNA	<i>Groundwater Standard/Guideline Policy Type</i>
Colorado	<i>Singular or combined</i>	70	70			<i>Site-specific Groundwater Quality Standard (proposed)</i>
Delaware	<i>Singular or combined</i>	70	70			<i>Reporting Level (not promulgated)</i>
Massachusetts		20	20	20	20	<i>Groundwater Standard (proposed)</i>
Michigan	<i>Singular or combined</i>	8	16			<i>Clean-up Standard (proposed)</i>
Minnesota		35	15	47		<i>Guidance Level</i>
New Hampshire		12	15	18	11	<i>Ambient Groundwater Quality Standard (proposed)</i>
New Jersey		10	10		10	<i>Groundwater Quality Standard</i>
Vermont	<i>Singular or combined</i>	20	20	20	20	<i>Cleanup Level (enforceable)</i>
Wisconsin	<i>Singular or combined</i>	20	20			<i>Groundwater Standard (proposed)</i>

In summary...

- By design, the groundwater standards process enables us to protect public health and welfare.
- ES recommendations are based on federal or state guidelines, or credible current scientific information.
- Detailed documentation on our recommendations is available on our website.
- DHS's involvement in Cycle 10 continues as rulemaking proceeds at DNR.



Public Health Risk Assessment in Communities

What we do

- Conduct risk assessments
- Address community health concerns
- Recommend actions to stop or reduce unhealthy exposures at ongoing chemical contamination sites
- Support EPA, DNR, local health departments, and communities on various chemical contamination sites across the state

What does a health risk assessment mean?

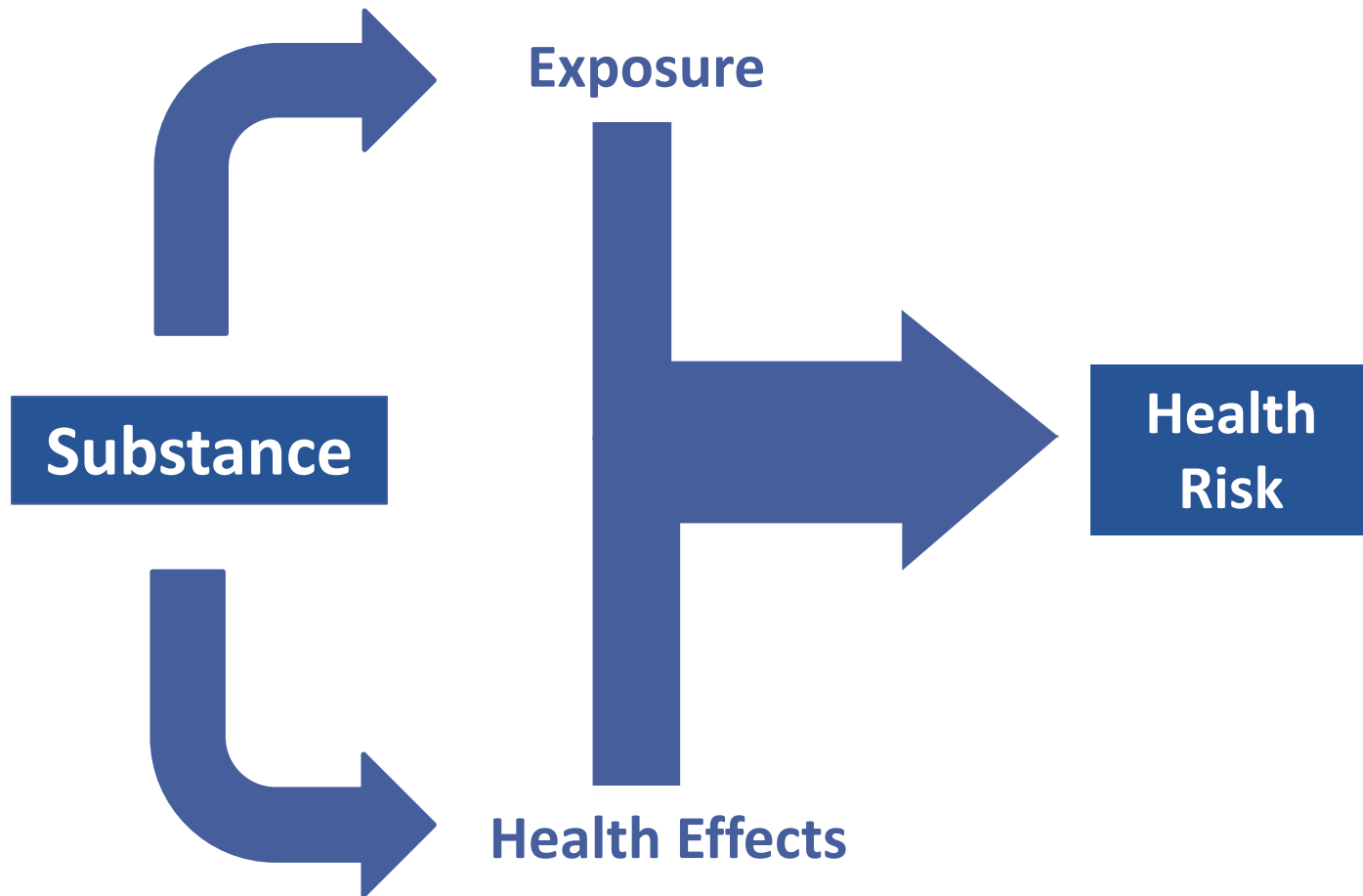
Determination of the relationship between the magnitude of exposure to environmental hazards and the probability of occurrence of adverse health effects.

-Wis. Stat. 254.02 (1) (b)

Assess the chance of experiencing health effects by coming in contact with hazardous substances present in the environment.

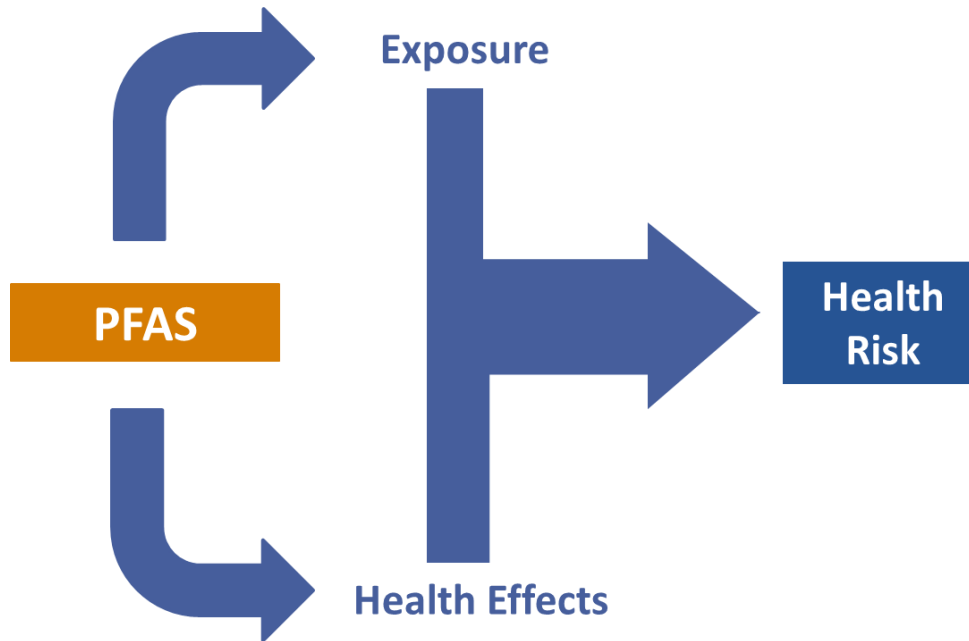
*Depends on many factors.

How do we conduct a health risk assessment?



An Example

PFAS Contamination in the Peshtigo and Marinette area

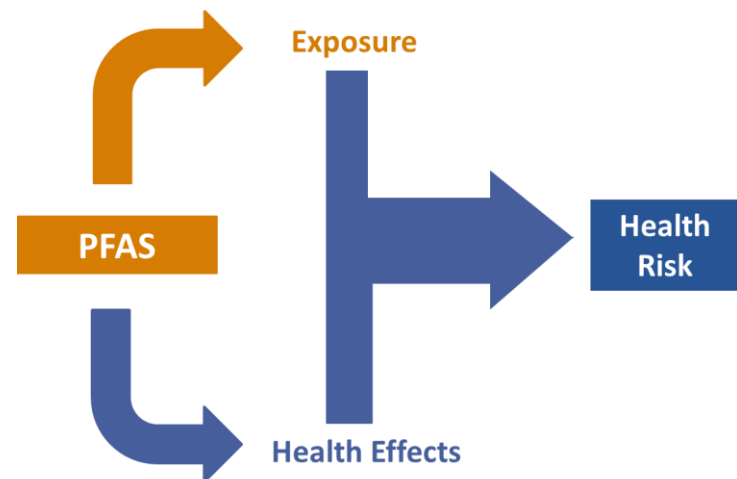


An Example

PFAS contamination in the Peshtigo and Marinette area

1. **Exposure**
2. **Health Effects**
3. **What it means**
4. **Recommendations**

- PFAS found in groundwater, private wells, surface water, soil, sediment, and biosolids.
- Drinking contaminated water is the main exposure pathway.

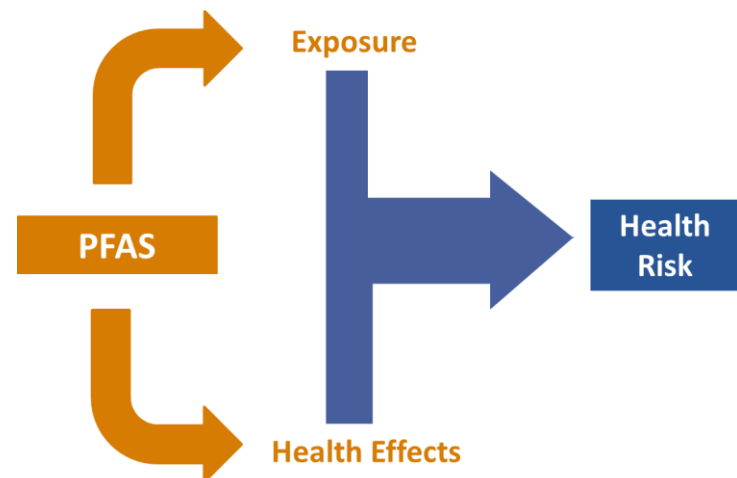


An Example

PFAS contamination in the Peshtigo and Marinette area

1. Exposure
2. Health Effects
3. What it means
4. Recommendations

- What are the health effects?





Numerous research studies are being conducted to better understand the health effects of PFAS.





High PFAS levels in blood are associated with:

- Decreased response to vaccines.
- Increased cholesterol levels.
- Increased risk of thyroid disease.
- Increased risk of high blood pressure in pregnant women.
- Decreased fertility in women.

Pregnant women, fetuses, and infants are most susceptible to adverse health effects of PFAS exposure.



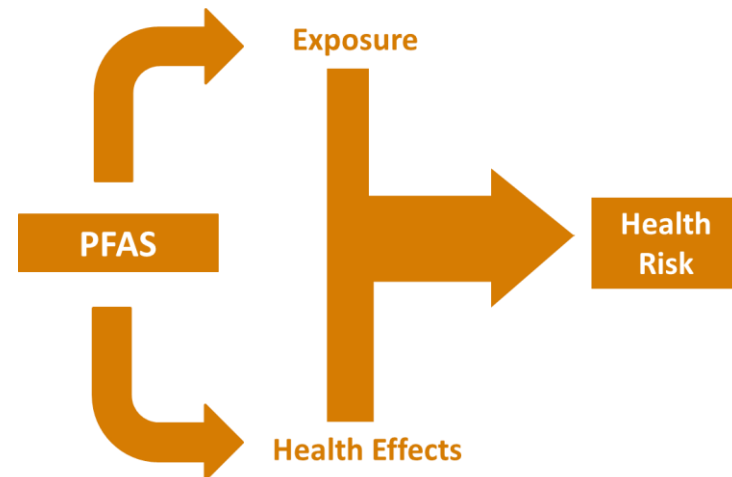
DHS recommends a combined enforcement standard of 20 ppt for PFOA and PFOS.

An Example

PFAS contamination in the Peshtigo and Marinette area

1. Exposure
2. Health Effects
3. What it means
4. Recommendations

- 29 private wells out of 168 wells exceeded DHS's recommendation of 20 ppt.



An Example

PFAS contamination in the Peshtigo and Marinette area

1. Exposure
2. Health Effects
3. What it means
4. **Recommendations**

- Use alternative water source and implement treatment system.

Summary

- DHS conducts site-specific health risk assessments and provides recommendations to protect the public's health.
- High levels of PFAS can pose health risks, especially to pregnant women, developing fetus, and infants.
- DHS has begun conducting a comprehensive public health assessment through working with partner agencies and communities.

Conclusions

- DHS collaboratively works with state and local agencies to address both legacy and emerging water quality issues.
- DHS is committed to applying the best scientific evidence to inform actions that are protective of health.

Demystifying PFAS in Wisconsin

Demystifying PFAS

1. DNR cannot amend a DHS-recommended groundwater standard.
2. The public had no opportunity to comment on final NR 140 standards.
3. DNR can require regulated entity to take *any action* if PAL attained or exceeded.
4. DNR will require everyone to meet the PAL, or they will not receive regulatory approval.
5. DHS's recommendation is most stringent in the world.

How we compare to other States?

		Groundwater (all values in ppt)				<i>Groundwater Standard/Guideline Policy Type</i>
		PFOA	PFOS	PFHxS	PFNA	
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Demystifying PFAS

6. EPA will establish all regulatory standards in the near future – Wisconsin should wait for the federal government.
7. There may be minimum health benefits – if any at all – from DNR's proposed regulations.
8. These compounds are no longer produced in the US.
9. The levels of PFAS in humans has been dropping significantly over the last decade.

Recommendations to Speaker's Water Quality Task Force



DHS and DNR

DNR & DHS Recommendations

1. Authority to establish regulatory standards for safe levels of PFAS allowed in the air, land and waters of the state.
2. Authority to establish regulatory standards for the safe management of materials (e.g., contaminated soil or biosolids).
3. Prohibition and regulation of training & testing with PFAS-containing firefighting foam.
4. Require labeling of products containing PFAS, with types of PFAS and amounts.

DNR & DHS Recommendations

5. Provide funding for the following:

- Sampling of all public water supplies.
- Conducting a clean-sweep program to collect PFAS-containing firefighting foam from local fire departments.
- DNR staff to assist municipalities and industry to identify sources of PFAS and work on best practices to reduce its use and discharge.
- Field work and other research to create means to detect and eliminate PFAS from the environment and receptors.

DHS & DNR Recommendations

- Support rapid testing capacity to respond to urgent public health concerns involving environmental contamination by emerging contaminants including PFAS.
- Support for the development of new analytical methods for emerging contaminants and rapid testing capacity at the Wisconsin State Laboratory of Hygiene to respond to urgent public health concerns.
- Additional funding for research through the joint solicitation from the Wisconsin Groundwater Coordinating Council.

DHS & DNR Recommendations

- Provide funding for additional DHS capacity to:
 - Provide technical support and carry out community engagement on water quality issues.
 - Develop timely recommendations for groundwater enforcement standards for emerging contaminants.

Questions

