

AAAS EPI Center and the Great Lakes St
Lawrence Legislative Caucus PFAS and Drinking
Water Roundtable: Opportunities and
Challenges to Addressing PFAS in Drinking Water
December 9, 2020

Agenda

Welcome, Background, Goals, Agenda Review and Protocols

- Lisa Janairo, Program Director, Council of State Governments, Manager, Great Lakes-St. Lawrence Legislative Caucus
- Rebecca Aicher, Project Director, EPI Center
- Abby Dilley, Vice President and Senior Mediator, RESOLVE

Case Examples: How are Michigan and North Carolina responding to PFAS?

- Steve Sliver, Executive Director, Michigan PFAS Action Response Team (MPART) (pages 3 - 17)
- Chery A Murphy, Director, MSU Center for PFAS Research (pages 18 - 27)
- Jeff Warren, Executive Director, North Carolina Policy Collaboratory (pages 28 - 31)

Facilitated Interactive Panel Discussion

Additional Informational Needs and Potential for GLLC Legislative Action

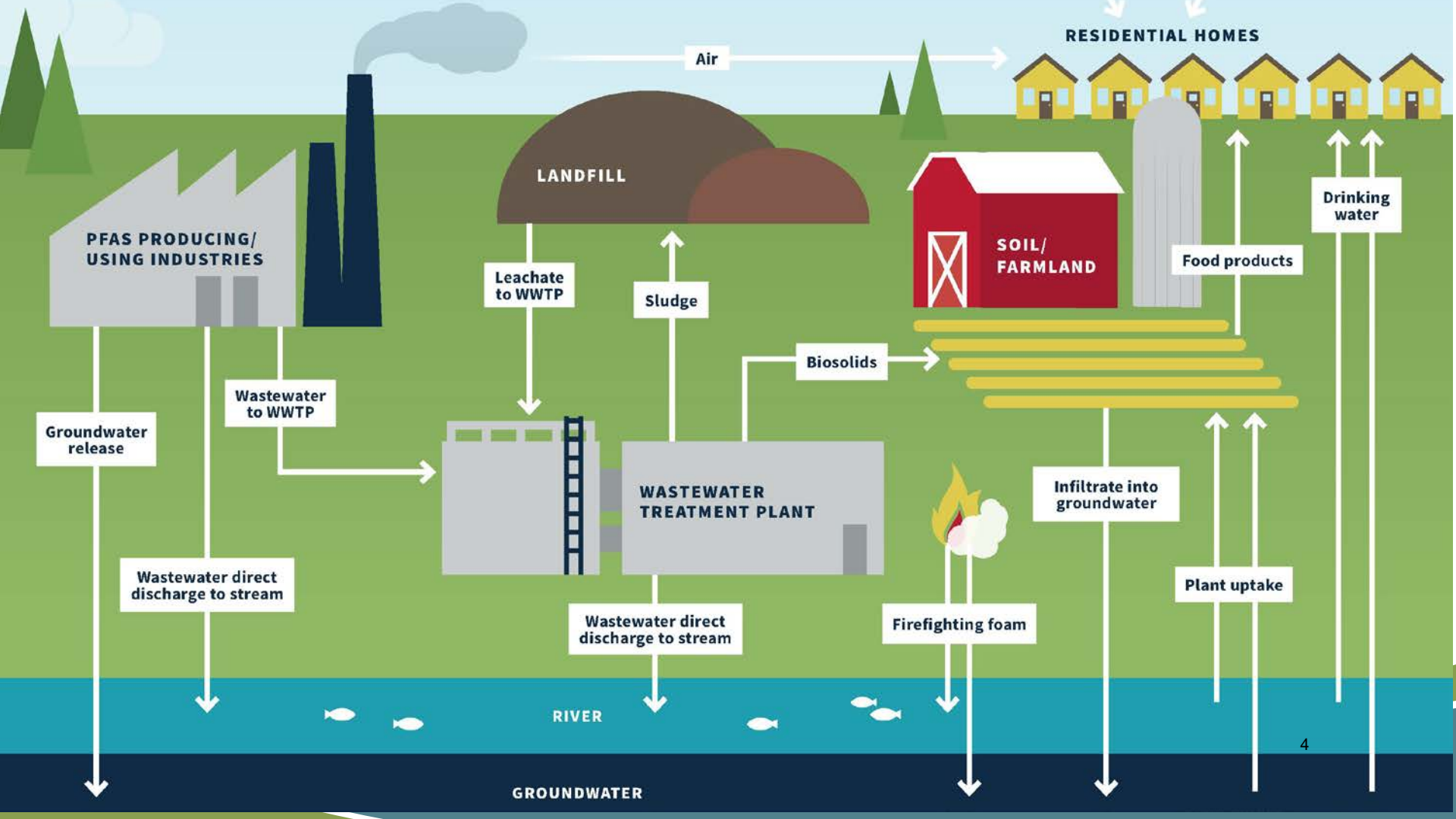
Wrap Up, Evaluation and Adjourn



Michigan's Response to PFAS

AAAS EPI Center and the Great Lakes St. Lawrence Legislative Caucus
December 9, 2020

Steve Sliver, Executive Director
Michigan PFAS Action Response Team
(517) 290-2943
SliverS@Michigan.gov





Comprehensive Statewide Approach

- Michigan PFAS Action Response Team (MPART)
- Protect public health
- Standardize sampling and analytical
- Study occurrence
- Identify sources and source pathways
- Study environmental transport and fate
- Study ecological effects
- Seek input and educate
- Prevent future contamination
- Develop standards

MI PFAS Standards



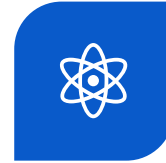
ENABLE
INVESTIGATIONS
AND RESPONSES



HEALTH-PROTECTIVE



DATA-DRIVEN



SCIENCE-BASED



STATE-LED



EVOLVING

Michigan's Drinking Water Standards

- August 3, 2020
- Maximum Contaminant Levels (MCLs)
- 2,700 water systems

Compound	MCL	EPA Recommendation
PFNA	6 ppt	NA
PFOA	8 ppt	70 ppt combined
PFOS	16 ppt	
PFHxS	51 ppt	NA
GenX (HFPO-DA)	370 ppt	NA
PFBS	420 ppt	NA
PFHxA	400,000 ppt	NA

Next Step in Standards

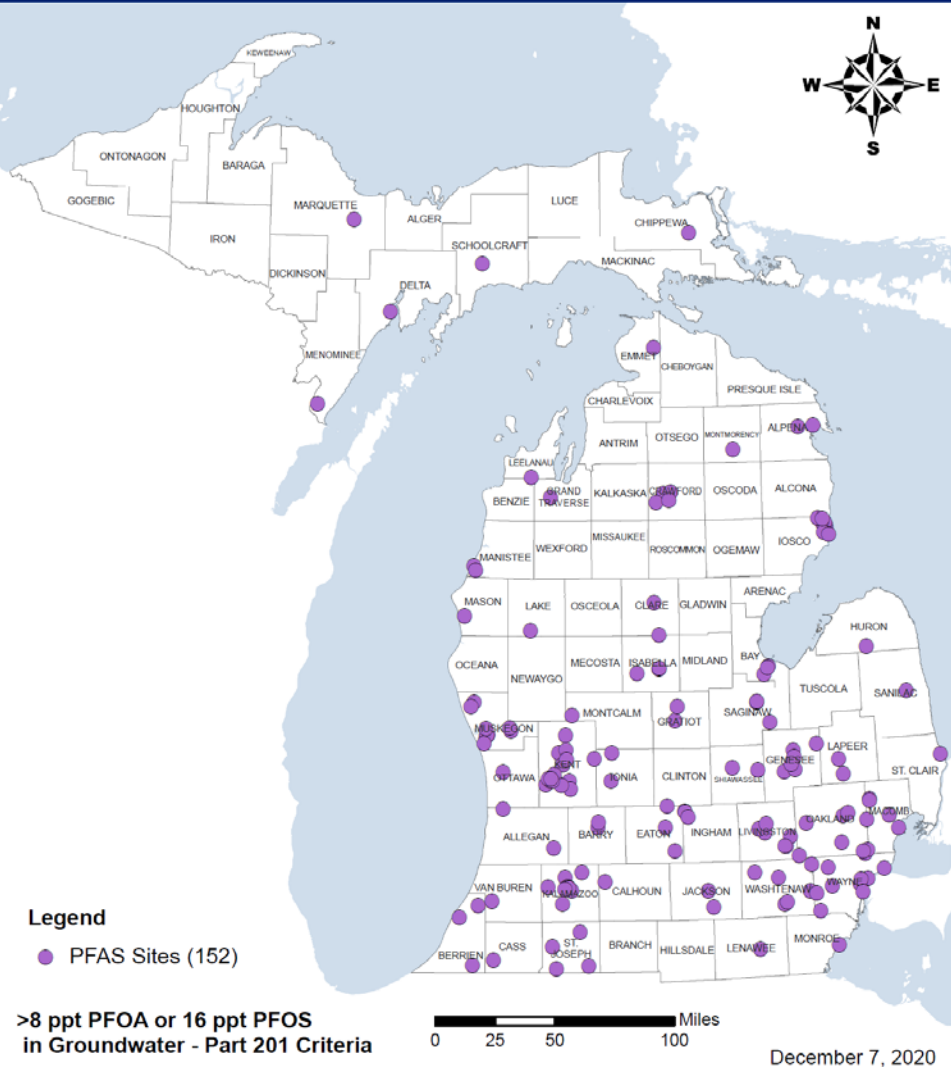
- Groundwater cleanup criteria already in rule

Compound	Prior to 8/3/20	After 8/3/20
PFOA	70 ppt combined	8 ppt
PFOS		16 ppt

- Rulemaking underway for other 5 PFAS to become groundwater cleanup criteria
 - November 2 and November 16 information sessions video recordings and slides are posted at www.michigan.gov/eglerrd, under “Announcements”

PFAS Sites

- Exceed groundwater cleanup criteria
- Prioritized investigations based on known or suspected sources, potential for exposure
- Protect drinking water pathway
- Pace of new discoveries likely to increase in 2021





Education and Outreach

- Proactive
- Robust
 - Local officials
 - Legislators
 - Town halls
 - Web site
- Inform general public
- Adapt

Adapting Outreach



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

REUNIÓN DE INFORMACIÓN PÚBLICA

Du-Wel Hartford, Municipio de Hartford, Condado de Van Buren, Michigan

21 de Agosto del 2019, 6 – 8 PM

Auditorio de la Escuela Secundaria de Hartford, 115 School Street, Hartford, Michigan

Las sustancias Per- y Polifluoroalquiladas (PFAS, por sus siglas en inglés) son una clase de químicos artificiales que han sido utilizadas en muchos productos de uso diario e industriales, tales como utensilios de cocina antiadherente, fábricas de tela impermeable, y espuma contra incendios. En mayo del 2019, los resultados de la recolección de muestras de agua del antiguo sitio de Du-Wel, ubicado en 520 Heywood Street, indicaron la presencia de PFAS en el agua subterránea cercana al sitio. Según esos resultados, el Departamento de Medioambiente, Grandes Lagos, y Energía (EGLE, por sus siglas en inglés), en colaboración con el Departamento de Salud y Servicios Humanos de Michigan (MDHHS, por sus siglas en inglés) y el Departamento de Salud del Distrito de Van Buren/Cass, comenzaron a recolectar muestras de agua de pozos residenciales cerca del sitio. Hasta la fecha, EGLE ha recolectado y recibido los resultados de 82 muestras de agua de pozos residenciales analizados por PFAS.

EGLE, en conjunto con MDHHS, el Departamento de Salud del Distrito de Van Buren/Cass, el Municipio de Hartford, y la Ciudad de Hartford, albergarán una reunión informativa acerca de la recolección de agua de pozos residenciales analizados por PFAS que se ha llevado a cabo, futuros planes de trabajo en el sitio, y un plan propuesto para proveer a los residentes afectados con una fuente de agua potable segura de largo plazo.

Residentes viviendo cerca del antiguo sitio de la planta de Du-Wel, y otros miembros de la comunidad que estén interesados, son animados a atender.



Legislative Support

- Appropriations
- Legislation
- Community outreach

Funding

- \$70 million since 2017
 - Environmental investigations
 - Laboratory equipment
 - Drinking water infrastructure
 - Mapping
 - Environmental health
 - Local public health support
- \$4 million in grants to municipal airports
- \$25 million in grants to municipal water systems



Aqueous Film Forming Foam (AFFF)

- Class B AFFF for hydrocarbon fires
- Major source of PFAS contamination
 - Military sites
 - Airports
 - Refineries
 - Fire Departments
- State Fire Marshal
 - Surveyed fire departments
 - Developed best practices



Prevention

- State AFFF collection and disposal
 - \$1.4 million
 - 52,000 gallons
- Legislation regulating AFFF
 - Prohibits use in training
 - Requires reporting of use
 - Requires firefighter education
 - AFFF collection and disposal
- Market-driven limitations in other products
 - National policy needed

Takeaways



Coordinated and
comprehensive
response



Evidence-based
policy-making



Transparency



Funding

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' is green, and the 'G', 'L', and 'E' are blue.

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY



MSU Center for PFAS Research

Cheryl A Murphy (and several others)

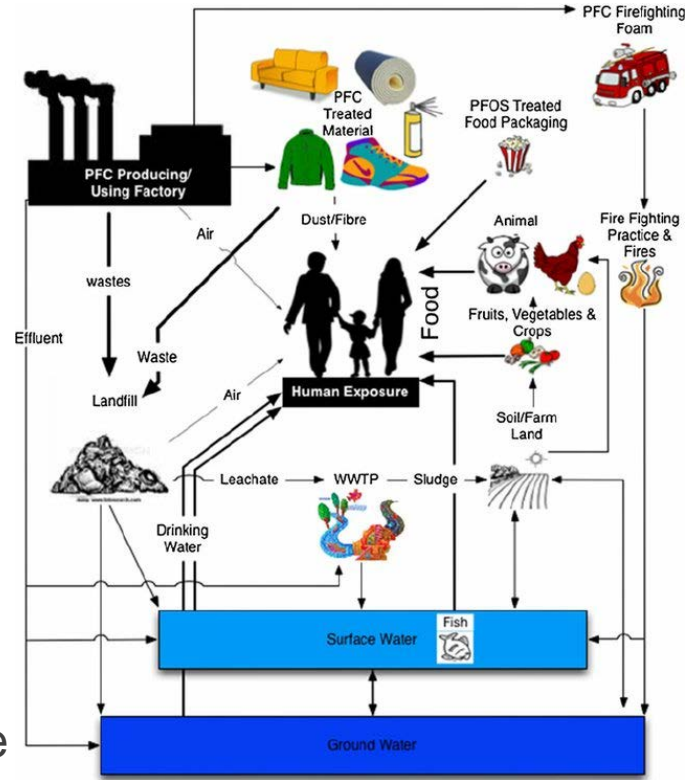
<https://www.canr.msu.edu/pfas-research/>

Fisheries and Wildlife, Biochemistry and Molecular Biology, Plant, Soil and Microbial Science, Biosystems and Agricultural Engineering, Food Science and Human Nutrition, James Madison College, Entomology, Civil and Environmental Engineering, Chemistry, Electrical Engineering, Philosophy, Lyman Briggs College, Biomedical Engineering, Packaging, Extension

Needs and Opportunities

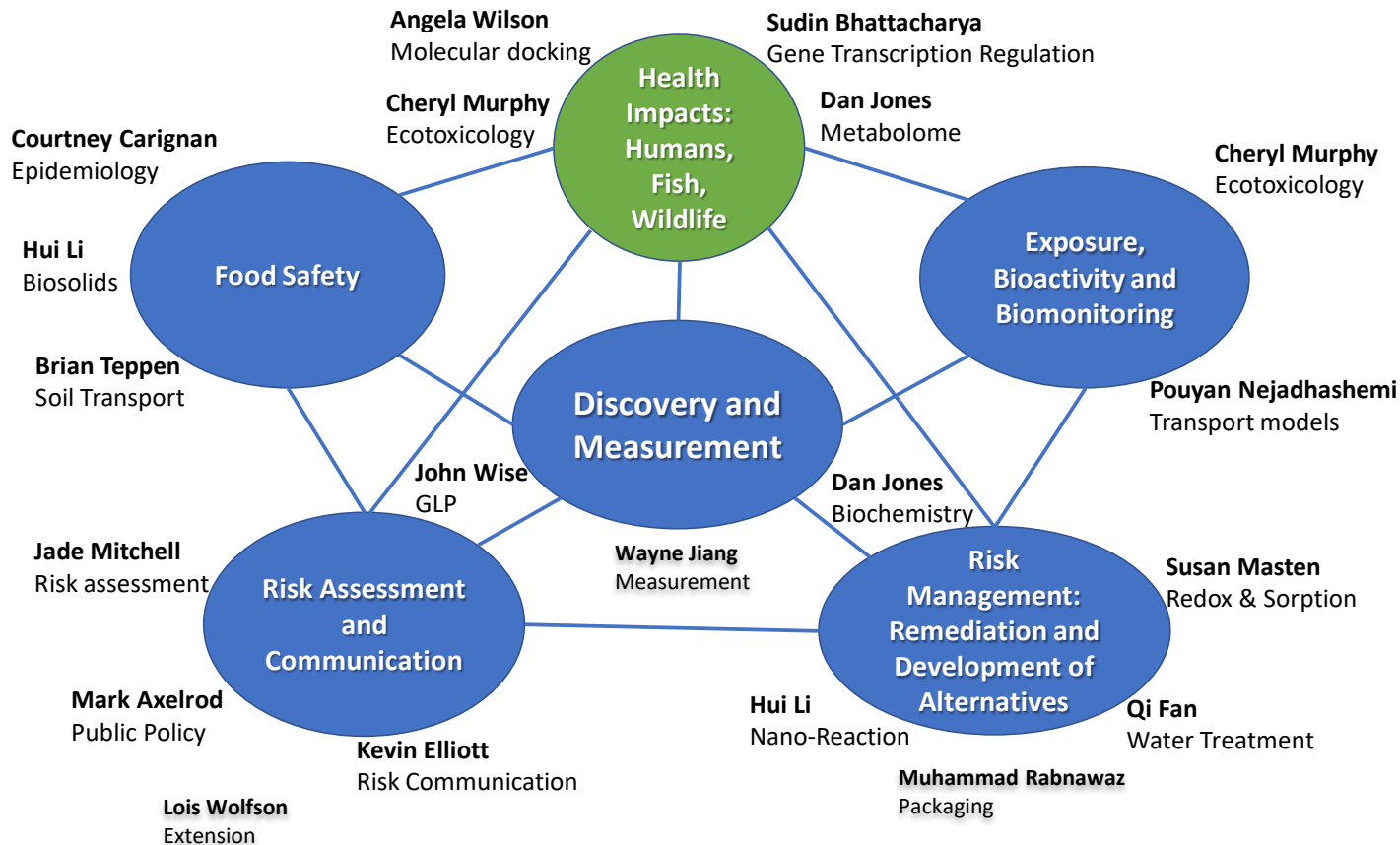
Big Unknowns and Needs:

- PFAS in the environment: which chemicals and how much?
- PFAS contributions to health effects in context of multiple stressors
- PFAS transport and bioaccumulation through water, environment, and food
- Safe and effective removal and replacement
- Communicate risk and formulate policy with uncertainty



Oliaei et al, 2012

The PFAS Center Team of Expertise



Vision

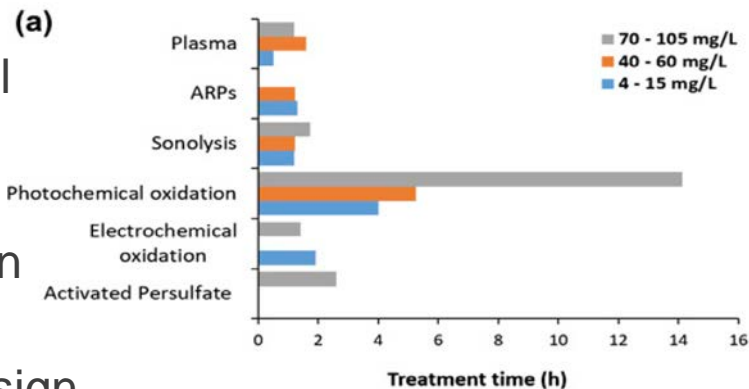
- Multidisciplinary team to take on complex interdisciplinary problem
- Comprehensive outlook and solutions-based
- Cohesive unit to interact with state and federal partners
- Consistent with MSU's Land Grant mission
- Embed with well-developed outreach programs



Solutions Approach

- Lead development of PFAS measurement standards in food, water, and biota
- Mitigate PFAS in agricultural and natural products
- Develop green chemistry-guided alternatives based on systems biology
- Advance state-of-the-art design of rapid, safe, and effective remediation technologies
- Communicate Risk
- Collaboration hub

Remediation Technologies:



“...there is need for performing the research necessary to scale these processes for field implementation to determine if they will be cost-effective and technically feasible....”

Why MSU?

- Unique strengths in Agriculture, Natural Resources, Human Health, Systems Biology, Packaging and Engineering
- Interdisciplinary team building expertise
- A competitive and solutions-based center that complements other efforts
- Establish regional partnerships (Purdue, Grand Valley State, University Research Corridor, Great Lakes Network)
- Collaborate with State, Community and Industry partners

Other US PFAS centers

The logo for STEER (Sources, Transport, Exposure & Effects of PFASs) features the word "STEER" in a bold, blue, sans-serif font. The letters are filled with a white, cracked-glass or mosaic-like pattern.

Sources, Transport, Exposure & Effects of PFASs
UNIVERSITY OF RHODE ISLAND SUPERFUND RESEARCH PROGRAM

Focused on water and
exposure to children

The logo for NC State University consists of a red square with the words "NC STATE UNIVERSITY" in white, bold, sans-serif capital letters.

Center for Environmental and
Human Health
Effects of Per- and Polyfluoroalkyl
Substances
~ 7.4 million \$ grant

Focused on toxicity

Funded Projects

Fate, transport and bioaccumulation of PFASs in the Huron River Watershed - **Cheryl Murphy, Dan Jones, Pouyan Nejadhashemi, Hui Li, John Newsted, Lori Ivan**. Funded by MDNR and EGLE

Predicting health hazards to Great Lakes fish from PFAS contamination. **Cheryl Murphy, Angela Wilson**, Tom Loch, Funded by Great Lakes Fishery Trust

PFAS immunotoxicity among children exposed to drinking water that contained elevated concentrations of PFAS from historic use of firefighting foam (AFFF). This collaboration also developed The [PFAS Exchange](#) as an innovative online resource for people in impacted communities, their governments, and medical providers **Courtney Carignan**, funded by NIEHS

Quantify exposure to legacy and overlooked PFAS among communities impacted by PFAS drinking water contamination to inform future interventions and remediation. **Courtney Carignan**, funded by EPA



Development of Innovative Nano-Reactor Technology for Rapid and Complete Defluorination of PFAS **Hui Li**, Michigan Translational Research and Commercialization (MTRAC) Phase 1,



Plant Uptake of PFAS from Soils Amended with Biosolid - **Hui Li**, MSU GREEN Project

Photodegradation of PFAS, **Hui Li**, funded by MTRAC (pilot project)

Expectations for the next year

- Seed Project Development
- Establishment of accredited PFAS analytical lab
- Collaborative proposals submitted for Center funding
- Initiate Systems Biology Framework
- Develop standards for PFAS measurement in various matrices

MSU PFAS Research Upcoming Events

- **My AOP** – Short course for Adverse Outcome Pathway Development for PhD students and professionals with collaboration with NTNU. Dec 7-11 (currently limited to 30 students, but if successful will open up more offerings)
- **MSU PFAS Research Showcase** – online event during the afternoon of January 15, 2021, Interactive Forum
- MSU PFAS Center Remediation Technology brownbag seminar series (lunchtime series, multiple dates)

Questions

Contact Cheryl Murphy (camurphy@msu.edu)

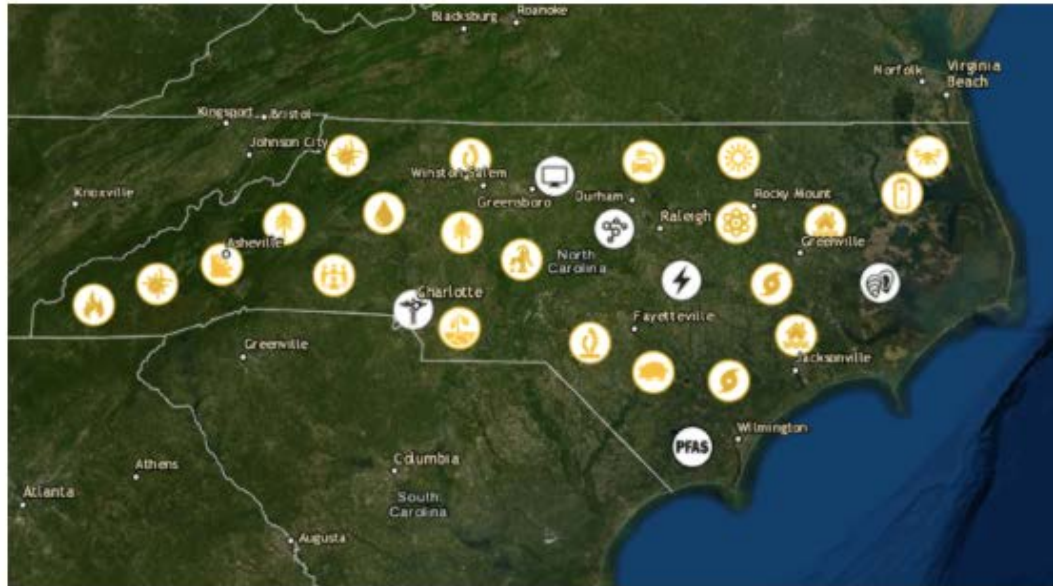


Jeff Warren, Executive Director,
North Carolina Policy Collaboratory

The Policy Collaboratory was established by the North Carolina General Assembly in 2016 to utilize and disseminate the research expertise across the University of North Carolina System for practical use by state and local government.

 COVID-19 Research Projects

Current Projects



About the Collaboratory

A collaboratory is a center without walls in which researchers can perform their research without regard to





PHOTOS: DeBruhl's of Wilmington



What they're saying: Ashley grad Alex Highsmith makes NFL debut



HEALTH BRIEFS: New doctor joins NHRMC Physician Group



SUPPORT GROUPS: Al-Anon and Alateen meets virtually

Protection, politics driving the Wilmington area to gun ranges



PHOTO: But Wilmi

WHITE PAPER
SEPARATING FACT FROM FICTION IN SEAWATER DESALINATION
 Desalitech
[LEARN MORE](#)

Toxin taints CFPUA drinking water



MOST POPULAR

- 1 Ask Pastor Adrienne column: Jesus never sinned so he can't know how I feel?
Nov 5 at 2:01 AM
- 2 Tinsley column: Dogs to the rescue
Nov 4 at 10:01 AM



The beauty of North Carolina's lakes and rivers is being threatened by a group of human-made chemicals, known as PFAS, including GenX.

[What are PFAS?](#)



To understand the extent of PFAS contamination across the state, the North Carolina General Assembly funded a statewide research study.

[Learn about the study](#)



This study is a collaboration among universities to document the presence of PFAS and understand its impacts on the environment and our health.

[Meet the research team](#)