

Municipal Brownfield Remediation Strategies

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2021 Annual Conference
League of Wisconsin Municipalities – October 21, 2021

Scope of Presentation



- ▶ Wisconsin Municipal Brownfield Remediation Toolbox
- ▶ A few words about PFAS
 - ▷ Special Considerations for Municipalities
- ▶ Best Practices

The LGU Brownfield Toolbox

- ▶ LGU = Local Government Unit
- ▶ Brownfield = idle, former industrial site, hindered by real or perceived contamination
- ▶ LGUs are catalysts for Wisconsin brownfield redevelopment



Wisconsin LGU Resources

- LGU liability exemption Wis. Stats. §292.11(9)(e):
 - tax delinquency
 - bankruptcy
 - condemnation
 - eminent domain
 - blight elimination
- LGU qualification for state/federal funding
- VPLE (Wis. Stats. §292.15)

LGU Cost Recovery Authorities

- ▶ Wis. Stats. §292.33 “Local Government Unit Cost Recovery Cause of Action”
 - ▷ LGU Eligible Property
 - ▷ Action against person from whom LGU acquired property who is a §292.11 “responsible person,” not otherwise exempt
 - ▷ Eligible costs include investigation, remediation, bringing action (no attys fees)

LGU Cost Recovery Authorities

- ▶ Wis. Stats. §292.35 “Local Government Unit Negotiation and Cost Recovery”
 - ▷ A “Site” or “Facility” owned by an LGU
 - ▷ Identify “Responsible Parties” (292.11 plus generators, transporters, owner/operators)
 - ▷ Secure WDNR approval for RAP
 - ▷ Public hearing, followed by “offer to settle” served on RPs for contribution of costs
 - ▷ WDNR proposes/appoints an “umpire”
 - ▷ After approval, umpire presides over expedited negotiation (60 days, with recommendation 20 days later)

Overview of “umpire” process

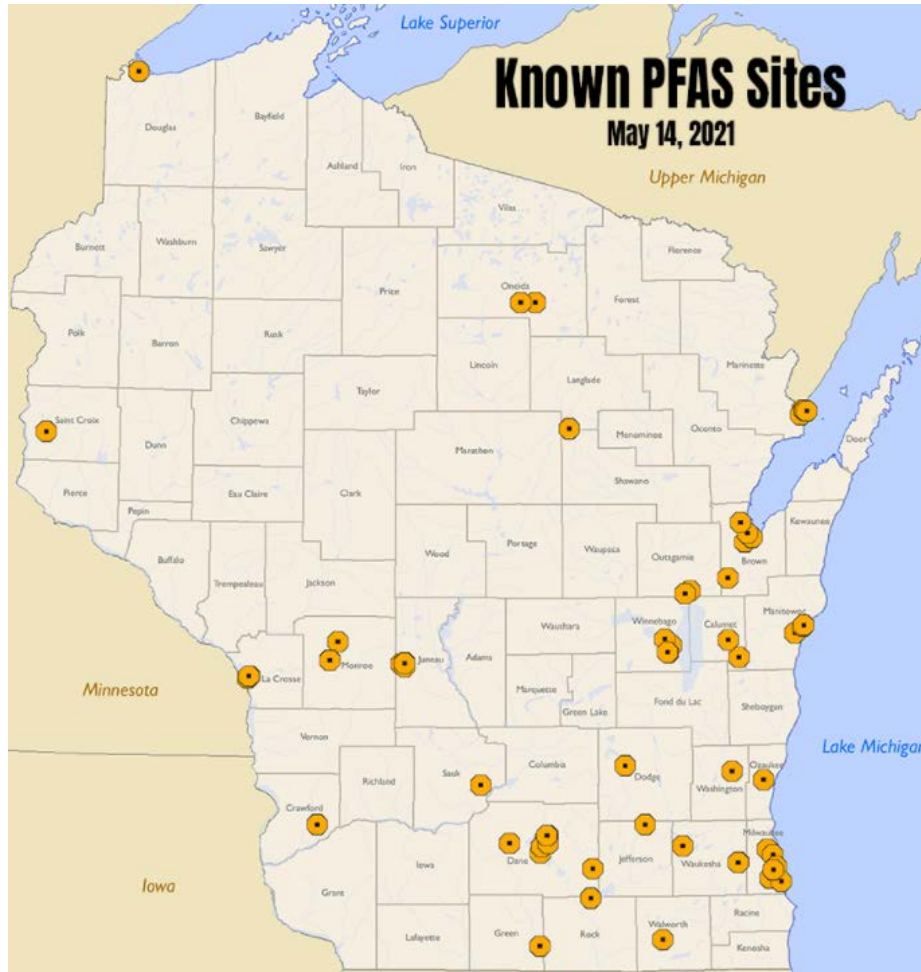
▶ Outcomes:

- ▶ Agreement in negotiation (LGU plus one or more parties)
- ▶ Umpire recommended allocation (“design and implementation of the [RAP] and contribution of funds”), accepted/rejected w/in 60 days
 - ▶ Contribution protection (WDNR/USEPA MOU)
 - ▶ LGU may reject umpire recommendation as to any one RP
- ▶ Litigation

Case studies

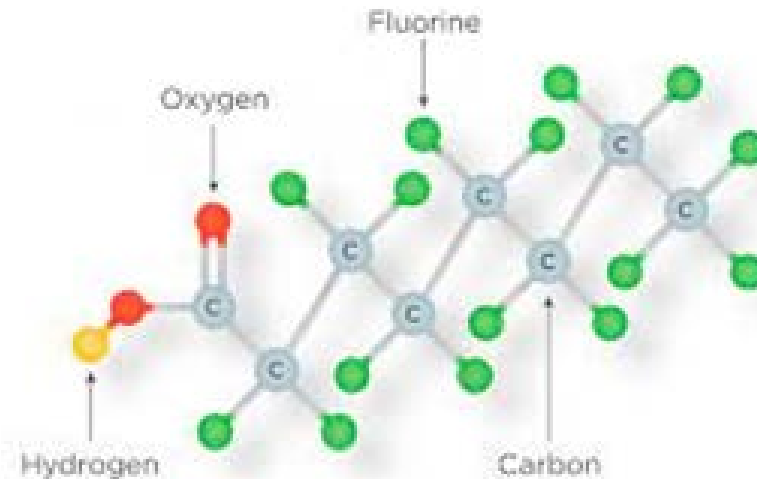
- ▶ Ashwaubenon High School/Klipstine Park
 - ▷ Ashwaubenon School District/Village of Ashwaubenon (LGU) recover ~\$1.9 million from RP
 - ▷ Two umpired negotiation sessions
 - ▷ settled via “agreement in negotiation” (early 2017)
- ▶ City of Manitowoc – Former Newton Gravel Pit
 - ▷ City of Manitowoc (LGU) plus ~4 RPs
 - ▷ Settled with 3 of 4 RPs
 - ▷ Recovery of >\$2.38 million
 - ▷ Recalcitrant party is responsible for PFAS

Known PFAS Sites in Wisconsin



Introduction to PFAS

- ▶ PFAS = Per- and Polyfluoroalkyl Substances
- ▶ Accidentally discovered by 3M chemist in 1938
- ▶ Carbon-fluorine bond
- ▶ Repels water, oil, fats
- ▶ Heat, fire resistant
- ▶ Friction resistant
- ▶ Durable – “Forever Chemical”
- ▶ Broad range of applications



PFAS All Around Us

- ▶ Scotch-Gard
- ▶ Stainmaster
- ▶ Gore-Tex
- ▶ Teflon
- ▶ Fertilizer - Milorganite
- ▶ Food Packaging
- ▶ Cosmetics/Pesticides
- ▶ Surfactants
- ▶ Aqueous Film Forming Foam (AFFF)
 - ▷ Airports
 - ▷ Class B Firefighting Systems



PFAS 101 – Historical Production

Table 2-1. Discovery and manufacturing history of select PFAS

PFAS ¹	Development Time Period							
	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
PTFE	Invented	Non-Stick Coatings			Waterproof Fabrics			
PFOS		Initial Production	Stain & Water Resistant Products	Firefighting foam				U.S. Reduction of PFOS, PFOA, PFNA (and other select PFAS ²)
PFOA		Initial Production	Protective Coatings					
PFNA					Initial Production	Architectural Resins		
Fluoro-telomers					Initial Production	Firefighting Foams	Predominant form of firefighting foam	
Dominant Process ³		Electrochemical Fluorination (ECF)						Fluoro-telomerization (shorter chain ECF)
Pre-Invention of Chemistry /			Initial Chemical Synthesis / Production			Commercial Products Introduced and Used		

Notes:

1. This table includes fluoropolymers, PFAAs, and fluorotelomers. PTFE (polytetrafluoroethylene) is a fluoropolymer. PFOS, PFOA, and PFNA (perfluorononanoic acid) are PFAAs.
2. Refer to Section 3.4.
3. The dominant manufacturing process is shown in the table; note, however, that ECF and fluorotelomerization have both been, and continue to be, used for the production of select PFAS.

Sources: Prevedouros et al. 2006; Concawe 2016; Chemours 2017; Gore-Tex 2017; US Naval Research Academy 2017



PFAS Environmental and Human Exposure

- ▶ PFAS manufacturing
- ▶ Downstream manufacturers, for example:
 - ▷ Teflon application – Mirro
 - ▷ Leather treatment – Wolverine
 - ▷ AFFF manufacture – JCI/Tyco
- ▶ Landfills > POTWs > Landfills/Biosolids
- ▶ AFFF Airports/Military/Class B Firefighting

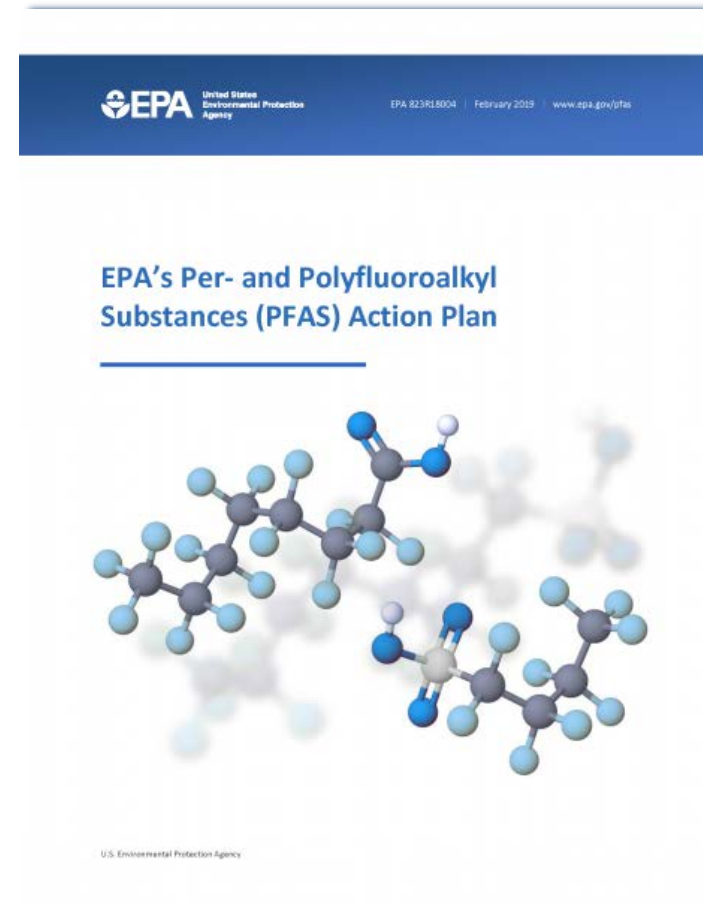
PFAS Environmental and Human Exposure

- ▶ Toxicology still evolving
- ▶ PFAS can cause developmental effects to fetuses and infants, cancer impacts to liver, thyroid, immune system and high cholesterol
- ▶ Detectable concentrations have been confirmed by CDC in the blood of ~95% of persons tested (2011-2012)



Federal Regulation of PFAS

- ▶ 2019 PFAS Action Plan
 - ▷ MCL
 - ▷ CERCLA Hazardous Substance
- ▶ Only current federal level is a “Health Advisory Level” of 70 Nanograms/Liter, or 70 parts per trillion (ppt)*
 - *70 ppt = waiting 32,000 years for 60 seconds
- ▶ “EPA Council on PFAS” established by Administrator Michael Regan (April 2021)



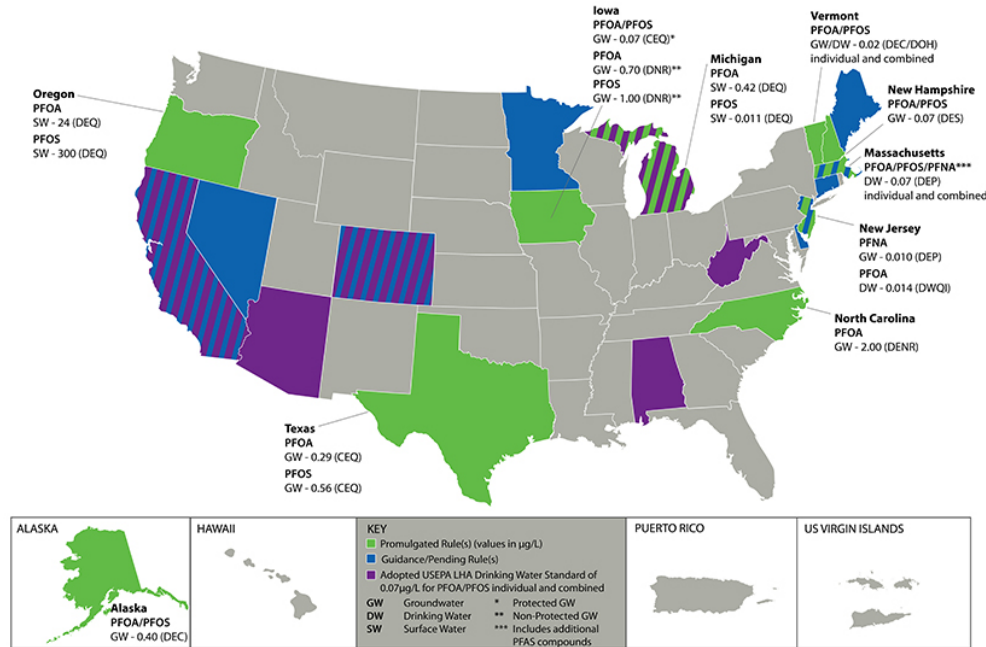
Federal Regulation of PFAS

- ▶ US Infrastructure Bill - Senate
 - ▷ \$10 billion for PFAS response
- ▶ Comprehensive PFAS Action Act - House
 - ▷ CERCLA Hazardous Substance Designation
 - ▷ SDWA, CWA, CAA and TSCA
- ▶ Federal Defense Authorization
- ▶ U.S. EPA Fifth Contaminant Candidate List:
“class based” approach for ~4,000 PFAS
compounds

Regulation of PFAS by States

Some states adopted 70 ppt EPA HAL as their standard

- Colorado
- Connecticut
- Maine (biosolid limits)
- Massachusetts (plus 20ppt gw/dw)
- Michigan
- Rhode Island



Other states lower standards

- California – 14 ppt PFOA, 13 ppt PFOS
- Minnesota – approved MCLs: 47 ppt PFHxS, 15 ppt PFOS
- New Hampshire – 12 ppt PFOA, 15 ppt PFOS (first proposed MCLs in nation)
- New Jersey – PFOA 14 ppt MCL, PFOS = 13 ppt proposed MCL
- New York – 10 ppt
- Vermont – 20 ppt PFOA

Class B AFFF Regulation

ALLOWED:

- **PFAS-containing foams CAN BE USED for EMERGENCY firefighting & fire prevention operations.**
 - » Take measures to prevent discharge into lakes, streams, rivers & sewers, per NR 708.
 - » Safety Data Sheets from the foam manufacturer must be acquired, retained & available.
- **PFAS-containing foams CAN BE USED for TESTING purposes.**
 - » Testing facilities must contain, store, treat & dispose of foam appropriately.
 - » **Flushing or draining foam into storm or sanitary sewers is PROHIBITED.**


When PFAS foam is discharged to the environment, immediately call* the **24-hour Emergency Hotline: 1-800-943-0003**

*Without hindering firefighting or fire prevention operations.

WHEN PFAS-CONTAINING FOAM IS USED FOR EMERGENCIES OR TESTING


Storage

Use secondary containment when storing foam. Even small leaks can cause environmental impacts.




Emergencies

Work with the DNR and responsible parties to **contain** deployed foam, **limit** environmental impacts to the extent practicable, and **immediately report** the discharge.



Disposal

Develop a disposal plan for foam containers and recovered foam solutions with **environmental and hazardous waste disposal contractors.**



PFAS Remediation Technologies

- ▶ Granular Activated Carbon
 - ▷ Effective, but just a medium transfer
- ▶ POTW dilemma
 - ▷ Cost benefit for treatment
 - ▷ Biosolid management
- ▶ Permanent remediation/destruction
 - ▷ Incineration – turnkey services/indemnity
 - ▷ On site/in situ – smoldering/stabilization

Evolution of PFAS Litigation

- ▶ First Phase: initial claims by individuals and classes of individuals impacted by PFAS
- ▶ Second Phase: “parens patriae” claims by states against PFAS manufacturers
- ▶ Third Phase: Multi-District Litigation (MDL) against PFAS-containing AFFF (aqueous film forming foam) manufacturers and producers
- ▶ Current State: individual/class/municipal actions

What are the Concerns for Wisconsin Municipalities?

- ▶ Potential impact on human health and concerns regarding drinking water supply and groundwater
- ▶ Potential liability for municipalities
 - ▷ Landfills
 - ▷ POTW effluent, sludge/biosolid application
 - ▷ Acquisition of blighted, abandoned, tax delinquent properties
- ▶ Industry/use specific impacts (e.g., military, airport, waterproofing, Teflon/nonstick coating)
- ▶ Impact on Brownfield redevelopment, including VPLE
- ▶ WDNR “Local Government Unit” (LGU) exemption

What can a municipality do?

“Enhanced Best Practices”

- Utilize 292.33/292.35 LGU cost recovery for owned contaminated property/landfills
- Scrupulously investigate property environmental conditions before acquiring with LGU exemption (blighted property, tax delinquent, condemnation)
- Tailor development agreements to new VPLE
- Communicate early and often with WDNR
- Seek funding, but USEPA grants unavailable for PFAS
- Be alert/sensitive to specific industries/uses and POTW and sludge management practices
- Secure experienced technical/legal services

Additional PFAS Resources

- ▶ U.S.EPA PFAS Website: <https://www.epa.gov/pfas>
- ▶ WDNR PFAS Website: www.wdnr.wisconsin.gov/topic/PFAS
- ▶ Godfrey & Kahn PFAS Resources: www.gklaw.com/PFAS
- ▶ [Interstate Technology and Regulatory Council \(ITRC\) PFAS Website](#)
- ▶ [Geosyntec PFAS Technical On-Demand Webinars](#)