



DEPARTMENT  
OF HEALTH

# Perfluorochemicals (PFCs) and Health-Based Values Oakdale

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July 31, 2018

# Agenda

- What are PFCs (also known as PFAS)?
  - Where do they come from?
  - Why are they important?
- What are MDH's Health-Based Values?
- What about PFCs in Minnesota?
- What have other communities done?

# PFCs (also known as PFAS)

- Human-made chemicals found in everyday items
- Used since 1940s to make products that resist heat, stains, water, oil and grease; production increased rapidly in 1970s
- Many other specialized industrial and commercial uses (operative word: non-stick)



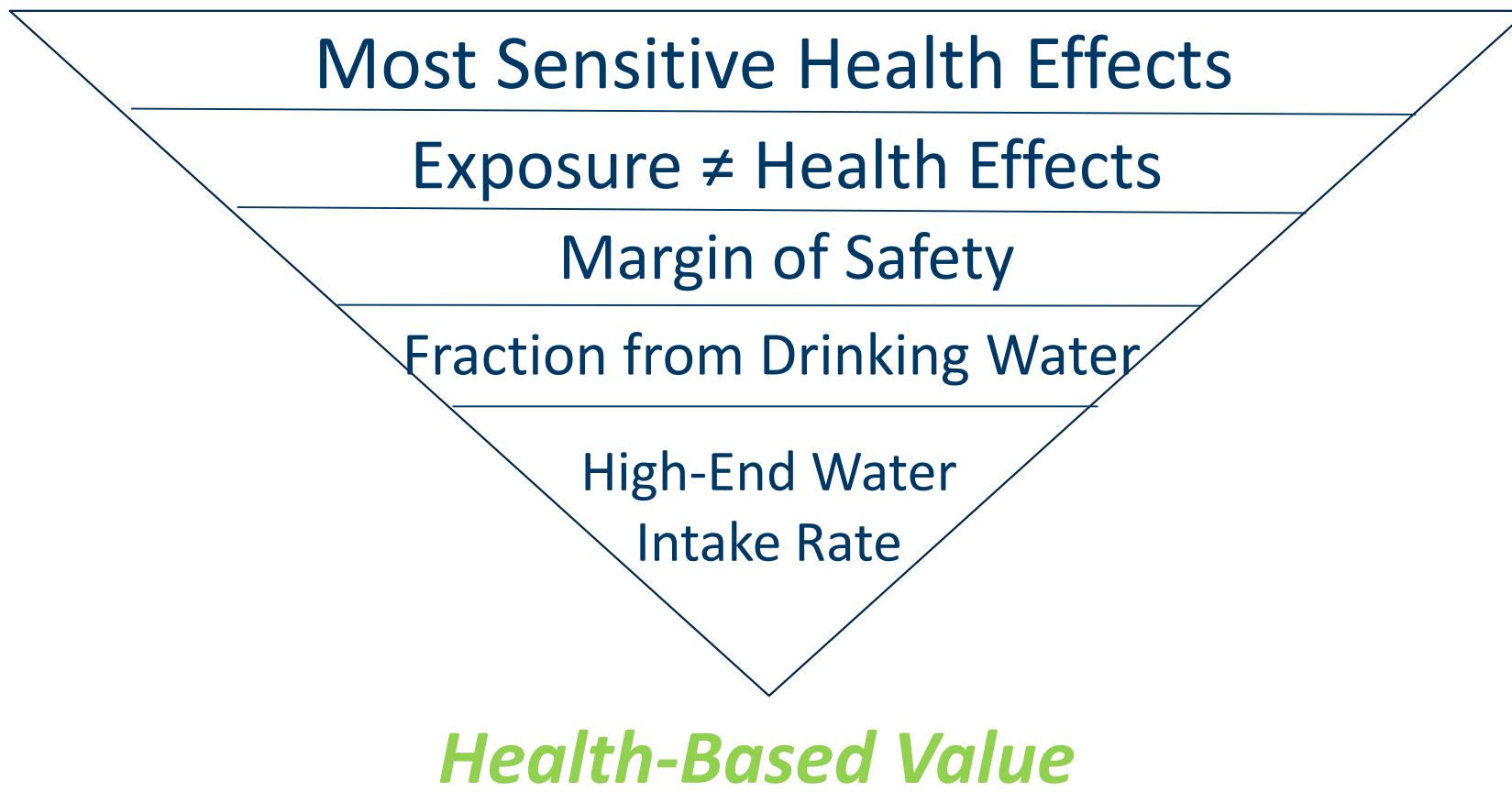
# PFCs in the Environment

- PFCs are persistent in the environment
  - They don't break down and they can accumulate over time
- PFCs can be found in
  - **Food** packaged or processed with PFAS-containing materials or grown in contaminated soil/water
  - **Commercial household products**, including stain-resistant fabrics, nonstick products, polishes, paints, waxes, and cleaning products
  - **Workplaces** that use PFAS
  - **Drinking water**, typically associated with a specific facility or site
  - **Living organisms**, including fish, animals, and humans

# Why are PFCs important?

- Most people have been exposed to PFCs because they are in so many products
- PFCs can accumulate and stay in the human body for long periods of time
- There is some evidence that exposure to PFCs at high levels is associated with negative health outcomes

# MDH Health-Based Values



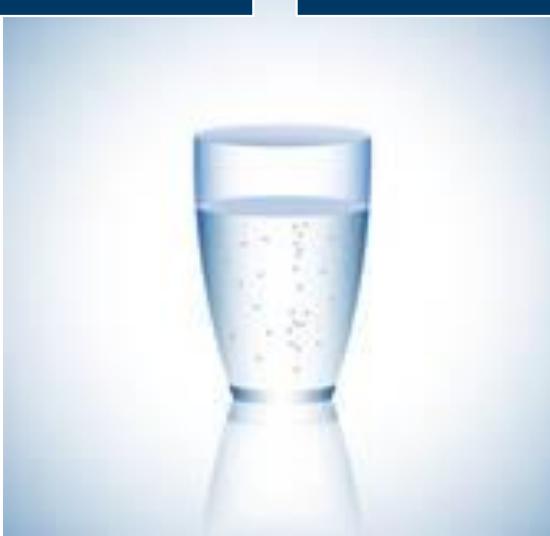
# MDH Health-Based Values

PFOS:  
0.027 ppb

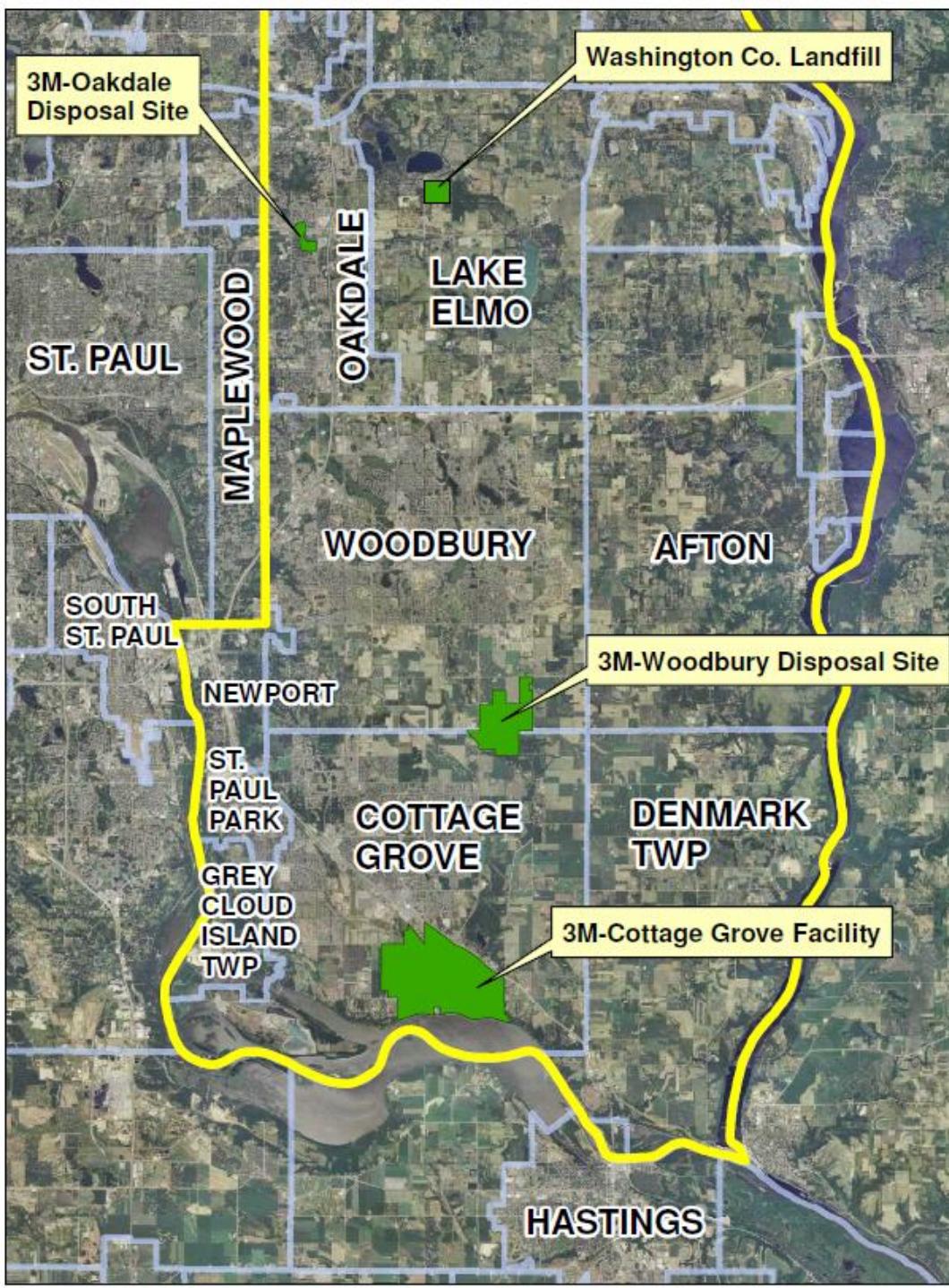
PFOA:  
0.035 ppb

PFBA:  
7.0 ppb

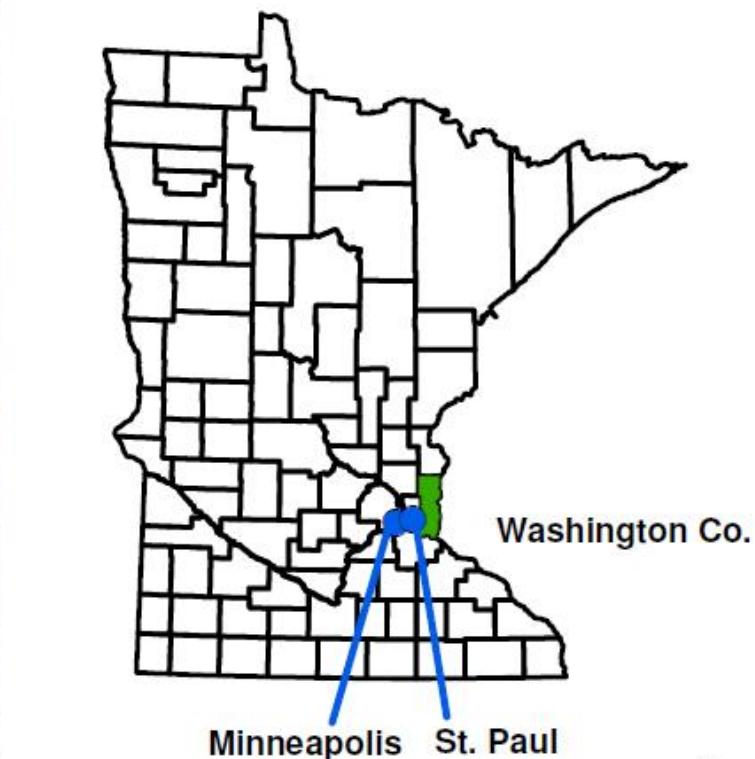
PFBS:  
2.0-3.0 ppb



- MDH evaluates the combined effects of PFCs: Health Risk Index (HRI)
  - Allows us to account for differing levels of toxicity in similar chemicals
- Protective for people who are exposed over their lifetimes
- Protective for fetuses
- Based on animal studies showing slight liver and thyroid effects (adults) and immune system and developmental effects (infants/children)

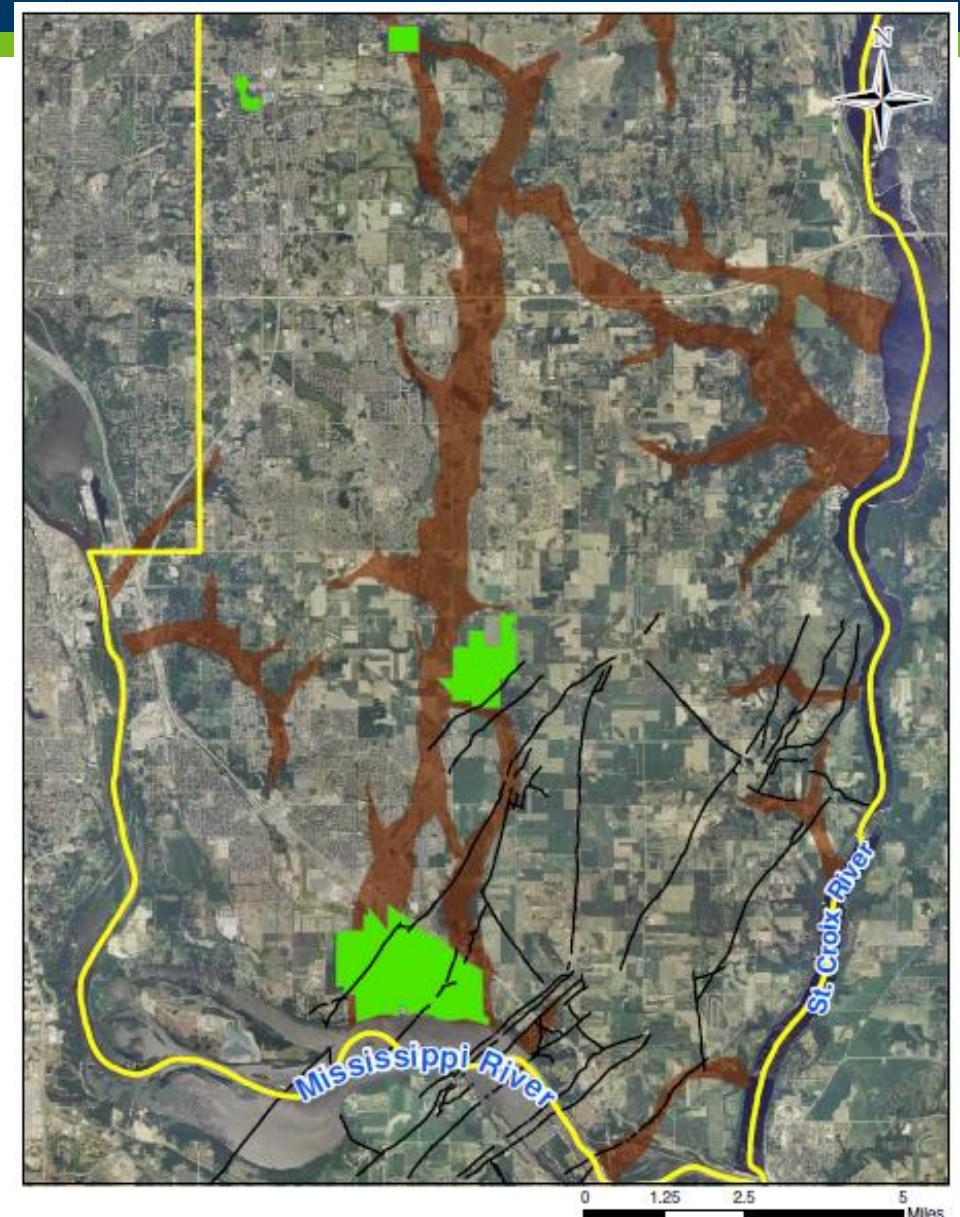


# Location of 3M PFC Sites in Washington Co., Minnesota



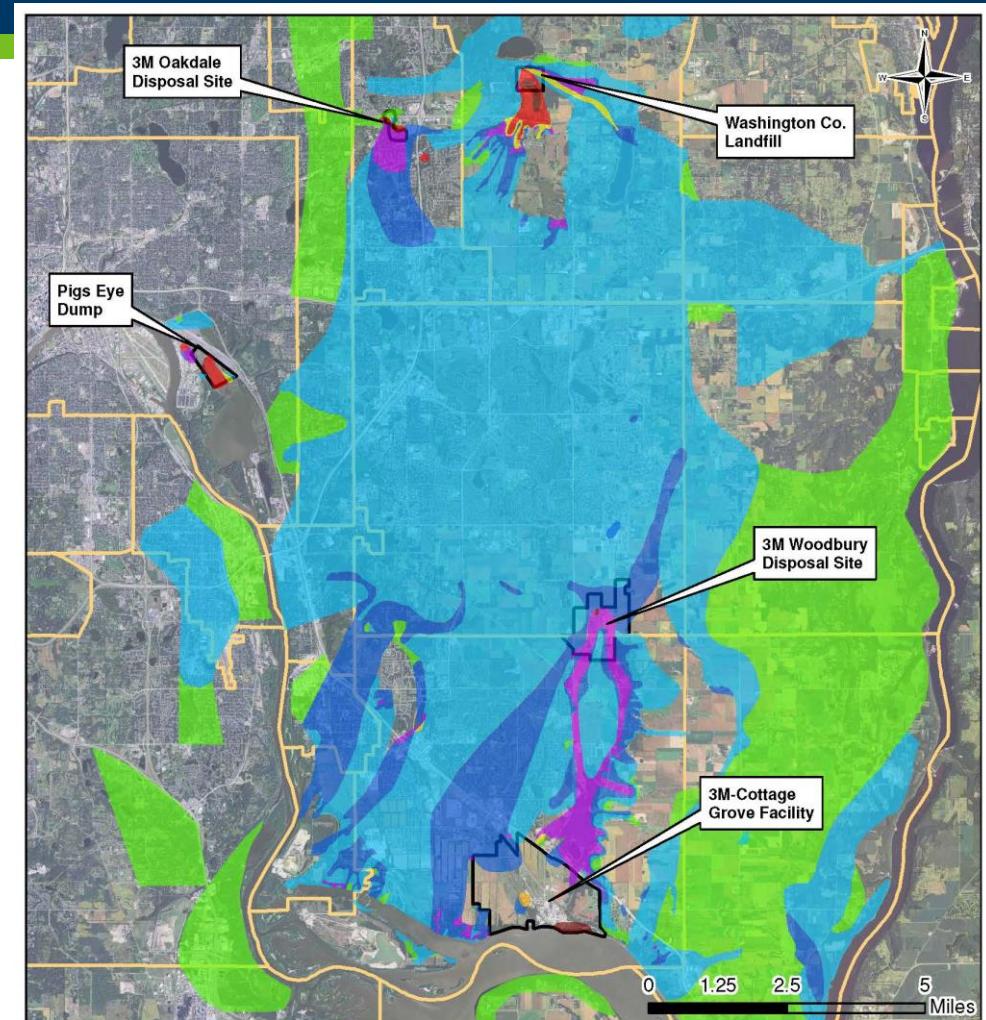
# Groundwater Flow

- In the eastern half of the county, groundwater flows to the St. Croix River
- In the western half of the county, groundwater flows to the Mississippi River
- Locally, groundwater flow may be influenced by pumping wells



# Result: Extremely Large “Co-Mingled” Plumes

- Over 130 sq. mi.
  - 4 major aquifers
  - 8 municipal systems & >1,800 private wells
  - Much larger than predicted by models
- PFBA most widespread
  - More PFBA in source areas
  - More mobile
- Movement of PFAS affected by several factors
- Several unusual areas



**PFBA - All Aquifers**

Phone: 651-201-4897  
or 1-800-657-3908

PFBA exceeds HRL (>70ppb)  
PFBA exceeds HRL (7-70ppb)  
PFBA 75-100% HRL (5.25-7ppb)

PFBA 50-75% HRL (3.5-5.25ppb)  
PFBA 25-50% HRL (1.75-3.5ppb)  
PFBA 10-25% HRL (0.7-1.75ppb)

PFBA <10% HRL (0.007-0.7ppb)  
PFBA not detected  
city

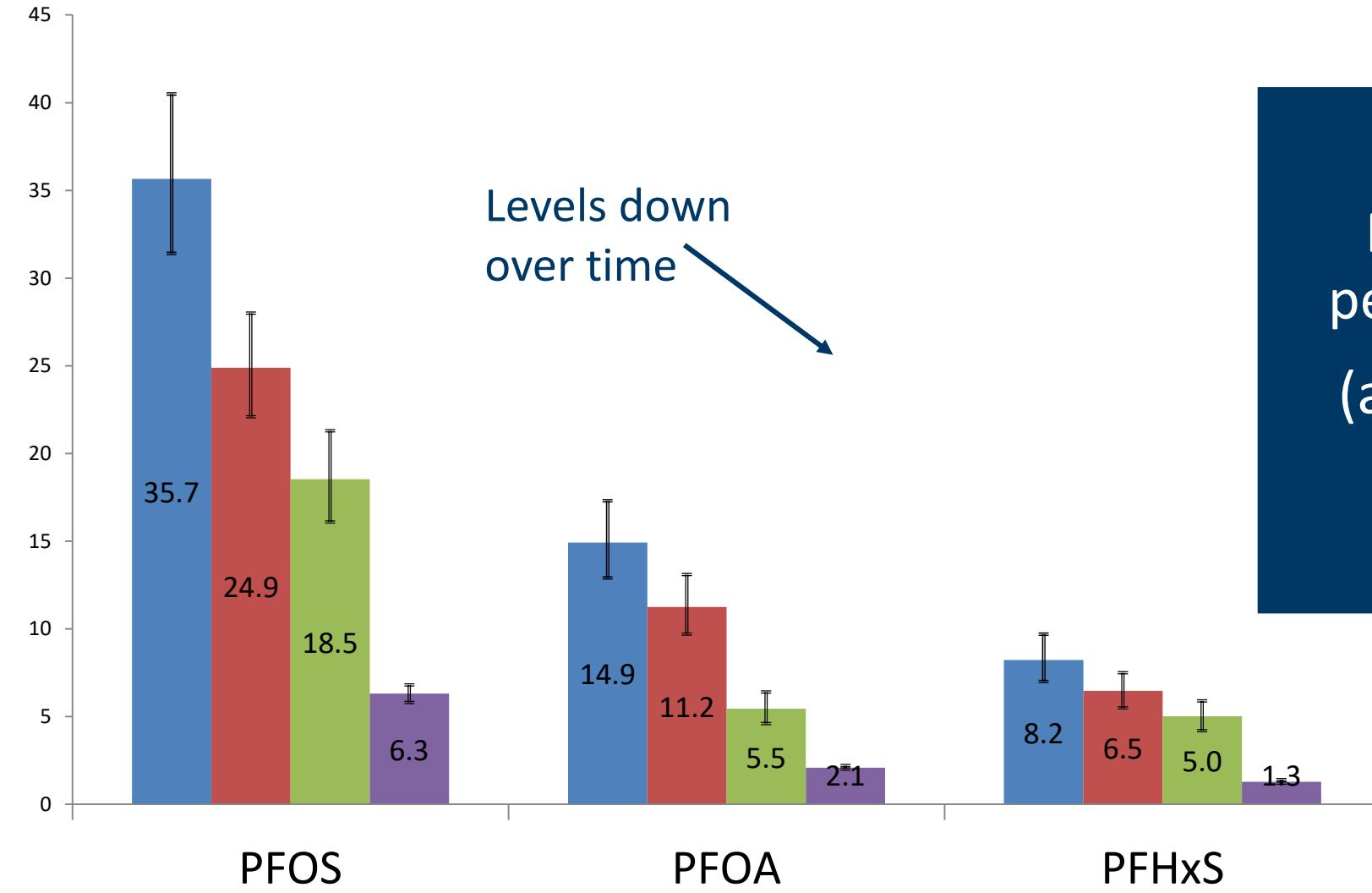
# Response Actions – East Metro

- Removal & proper disposal of contaminated soil
- Treatment of groundwater
- Treatment of drinking water where Health-Based Values exceeded



# Biomonitoring Shows Effectiveness of Response

■ 2008 ■ 2010 ■ 2014 ■ NHANES 2011-12



PFCs decreased in blood of people drinking treated water  
(average concentrations still above national averages)

## More Information

- **MDH General PFAS Information:**  
<http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/index.html>
- **ITRC Factsheets:** <https://pfas-1.itrcweb.org>
- **US EPA information:** <https://www.epa.gov/pfas>
- **MDH Health Risk Limits:**  
<http://www.health.state.mn.us/divs/eh/risk/guidance/gw/table.html>
- **MPCA PFC Investigations:**  
<https://www.pca.state.mn.us/waste/perfluorochemicals-pfcs>

# Questions?

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