Welcome & Introductions

• Alder Grant Foster
• Amy Barrilleaux – Madison Water Utility
• Joe Grande – Madison Water Utility
• Jeff Lafferty – Public Health Madison & Dane County
• Doug Voegeli – Public Health Madison & Dane County
Meeting Ground Rules

• Be present.
  *Silence phones and avoid side conversations and other behaviors that can prevent others from listening.*

• Share the air.
  *Please don’t interrupt, and help us maintain a space where everyone can participate.*

• Respect individual perspectives and contributions to the discussion.
Q & A Ground Rules

• **Raise your hand** to be recognized by the moderator. Once recognized, address your question to the moderator. Please only ask one question at a time.

• **Please do not interrupt** or engage in side conversations.

• Neighbors who have not yet asked a question will get priority over those who have.

• **Expect unfinished business.** We will be mindful of the time; however, there may be unanswered questions or in-depth discussions that are not finished when the meeting ends.
PFAS in Water

Jeff Lafferty, Doug Voegeli, Joe Grande
PFAS BACKGROUND
What Are PFAS?

- Per- and polyfluoroalkyl substances (PFAS)
- A group of man-made chemicals designed to repel water, oil, and grease
- Present in many consumer products
PFAS Are Widespread in the Environment

From: E.M. Sunderland et al. (2019)
PFAS Occurrence

PFAS Contamination in the U.S.

Source: ewg.org accessed 1/27/2020
Federal PFAS Regulations

• There are none for any media – soil, water, or air

• Drinking Water Health Advisory (HA) – US EPA
  • 2009 – provisional HA for PFOA (400 ppt) and PFOS (200 ppt)
  • 2016 – lifetime HA of 70 ppt PFOA + PFOS individually or summed
  • Basis: developmental effects in pregnant & lactating woman
  • Sensitive populations: fetuses and breast-fed infants
# State Drinking Water Standards

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## PFAS Standard (ppt)

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*Regulation applies to sum of five PFAS: PFOA, PFOS, PFHxS, PFNA, PFHpA
PFAS MONITORING
PFAS Testing – Drinking Water

2012 – Subset of wells (4) – no detections of six PFAS

2015 – All 23 wells tested two times – no detections

2017 – Subset of wells (5)
- Lower detection/reporting limits
- Sample “high-risk” or vulnerable wells
- Two of five wells show low level detections

2019 – All wells using modified EPA Method 537
- Low detection/reporting limits
- Broad range of PFAS tested (24 - 30 PFAS)
- Fourteen of twenty-three wells show presence of at least one PFAS
Maximum PFAS Level At Each Well
WELL 9 SERVICE AREA
You Are Here
What’s In My Tap Water

• First determine which well serves your home
  www.MadisonWater.org/PFAS

• Review water quality reports
  Well 9 Report – includes detailed test results on a wide range of potential drinking water contaminants

• Note: most results in your home would be similar to the well; exceptions include some metals like lead, copper, iron, and manganese
Comparing PFAS in Wells 9 and 15

PFAS Concentration, parts per trillion

Well 9
Well 15

US EPA Health Advisory Level

WI/VT

PFOS
PFHxS
PFBA
PFBS
PFHxA
Other PFAS
Other - in blank
wi
epa

PFOA
PFOS
PFHxS
PFBA
PFBS
PFHxA
Other PFAS
Other - in blank
wi
epa
What Can Be Done To Lower PFAS Levels In Water?

• Change in operations – Reduce the use of some wells
• Source abandonment – Permanently close wells
• Add treatment
  – Granular activated carbon (GAC)
  – Ion Exchange (IX)
  – Reverse Osmosis (RO)
Knowledge Gaps

• What is an acceptable level of exposure?
• Do chemically different PFAS behave similarly in the body?
• Are there interactive effects among PFAS or other contaminants?
• What might the regulatory environment look like in five years?
• How effective are treatment technologies at removing low PFAS levels and the specific mixture observed in Madison?
PFAS & HEALTH
PFAS Exposure Routes

• Drinking water and soil from industrial areas with frequent PFAS manufacture, disposal, or use
• Indoor air or dust from consumer products treated with PFAS to resist stains
• Surface water or groundwater receiving run-off or seepage from areas where firefighting foam was often used
• Fish from contaminated bodies of water
• Grease resistant food packaging and paper products
Potential Human Health Impacts

• Scientists are still learning about the health effects that various PFAS can have on the body.

• Some, but not all, studies in humans with PFAS exposure have shown that certain PFAS may:
  • Affect growth, learning, and behavior of infants and older children
  • Lower a person’s chance of getting pregnant
  • Interfere with the body’s natural hormones
  • Increase cholesterol levels
  • Affect the immune system
  • Increase the risk of cancer
FISH TISSUE & SURFACE WATER
Surface Water Testing

- **Starkweather Creek**
  - Highest level near WI ANG
    - 3700 ppt PFOS
    - 8800 ppt total PFAS
  - Elevated levels downstream
    - 63 - 260 ppt PFOS

- **Lake Monona**
  - 10 – 12 ppt PFOS
  - 35 – 40 ppt total PFAS
### Local Fish Consumption Advisories

#### Starkweather Creek

<table>
<thead>
<tr>
<th>Species</th>
<th>Up to 1 meal/week</th>
<th>Up to 1 meal/month</th>
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<tbody>
<tr>
<td>Bluegill</td>
<td>All sizes</td>
<td></td>
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<tr>
<td>Largemouth bass</td>
<td>All sizes</td>
<td></td>
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<tr>
<td>Northern pike</td>
<td>All sizes</td>
<td></td>
</tr>
<tr>
<td>Walleye</td>
<td>All sizes</td>
<td></td>
</tr>
<tr>
<td>Yellow perch</td>
<td>All sizes</td>
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#### Lake Monona

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<tbody>
<tr>
<td>Bluegill</td>
<td>All sizes</td>
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<tr>
<td>Common carp</td>
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<tr>
<td>Largemouth bass</td>
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<tr>
<td>Northern pike</td>
<td>All sizes</td>
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</table>
Upcoming Community Meetings

• Focus: PFAS in Fish & Surface Water
• Location: East Madison Community Center
  8 Straubel Court
• Dates:
  • Saturday, February 8 from 10:30 to 11:30 am
  • Wednesday, February 12 from 6:30 to 7:30 pm
Questions?

water@madisonwater.org  
(608) 266-4654

health@publichealthmdc.com  
(608) 242-6515

www.publichealthmdc.com/pfas

www.cityofmadison.com/water/water-quality/water-quality-testing/perfluorinated-compounds