

PEATT Pilot Project  
PFAS Testing  
in the  
Warrington, Warminster and Horsham areas  
Pennsylvania Department of Health

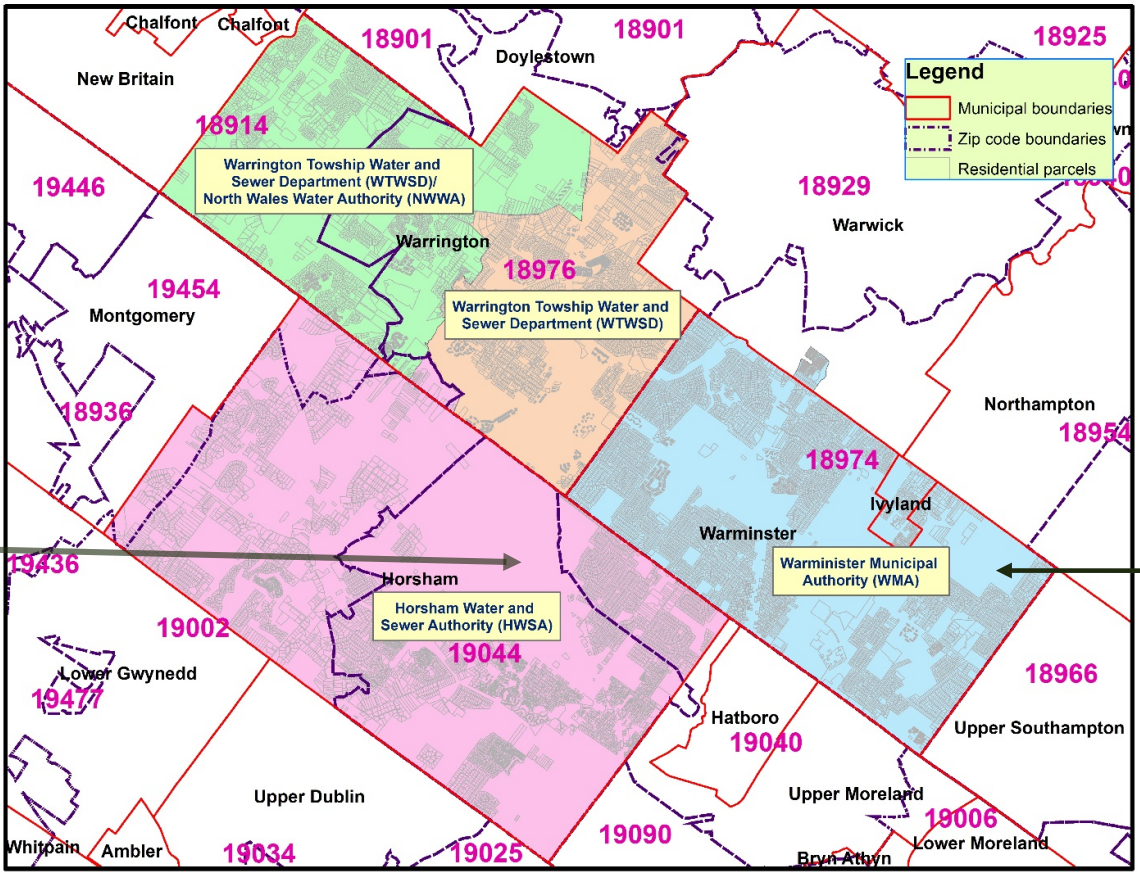
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State Epidemiologist

PFAS Action Team Meeting, April 15, 2019

# ▶ PFAS Exposure in Southeastern PA

- Affected area = population of 84,184 (2010 census)
- 32,595 households in water service area

Horsham Air Guard Station



Naval Air Warfare Center

# ▶ PFAS Exposure in Southeastern PA

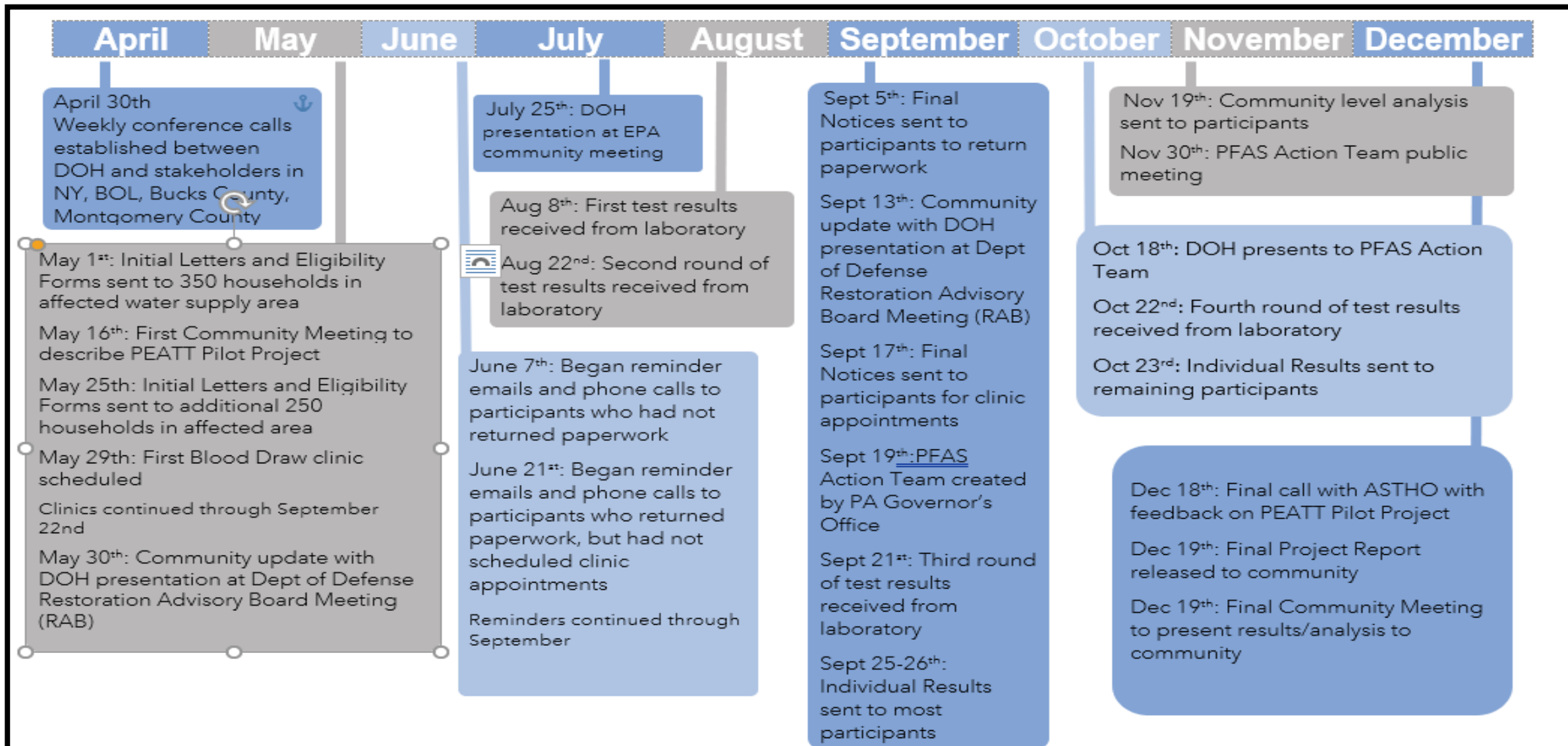
- The Naval Air Warfare Center Warminster and the Horsham Air Guard Station (formerly Naval Air Station Joint Reserve Base Willow Grove)
  - Military and firefighter training
  - Aqueous Film Forming Foam (AFFF) used on bases
  - PFAS in the foam
  - Exact composition of AFFF is proprietary
- PFAS levels in community drinking water
  - 1,440 ppt - about 21 times higher than the Lifetime Health Advisory level (70 ppt) found in a municipal well in Warminster Municipal Authority (WMA) area



# PEATT Project Participation Summary

- Total number of participants: **235** (from 118 different households)
- Participation rate: **40%** (235 out of 584 eligible participants, including 113 children aged 3–17)
- Household-level participation rate: **19.6%** (118 out of 600 households contacted)
- Household-level response rate: **46%** (276 out of 600 households contacted)

# PEATT Project Timeline



# ▶ PEATT Project Demographics

- Mostly adults with higher education (college degree or more) who lived in area at least 10 years with public water service
  - ▣ Working on comparing demographics of the Warminster, Warrington, Horsham communities to the U.S. population
  - ▣ Working on comparing our study sample (235) demographics to the Warminster, Warrington, Horsham general community

# ➤ Results Overall—4 main compounds

- Average serum PFAS levels (level of PFAS in the blood) were higher compared to NHANES's averages
  - 94% had higher levels of PFHxS
  - 81% had higher levels of PFOS
  - 75% had higher levels of PFOA
  - 59% had higher levels of PFNA
- Results are consistent with other studies on PFAS exposure through drinking water

PFAS Compound	Community Results				NHANES Results (2013-2014)	
	Average	95% Confidence Interval	Median	Range	Average	95% Confidence Interval
PFOA	<b>3.13</b>	2.81-3.50	3.06	0.55-24.8	<b>1.94</b>	1.76-2.14
PFOS	<b>10.24</b>	8.86-11.83	9.86	1.02-105.00	<b>4.99</b>	4.50-5.52
PFHxS	<b>6.64</b>	5.51-7.99	6.61	0.54-116.00	<b>1.35</b>	1.20-1.52
PFNA	<b>0.74</b>	0.67-0.80	0.76	0.50-2.56	<b>0.68</b>	0.61-0.74

• Results shown in ug/L. Range excludes <LOD

# Results Overall – Univariate Analyses

- In general, PFAS levels increased with:
  - Age
  - Male gender
  - Residence time
  - BMI
  - Private well use
  - Quantity of tap water consumed
  - Water service area's proximity to military base
- We are hoping to compare water PFAS levels with serum levels.
  - Need access to water testing data



# ▶ Results—Multivariate analysis

- Multivariate analysis = more than two variables (e.g. age, sex, water source, serum PFAS levels, etc.) are included in the same analysis.
- Analysis determined that average serum levels for PFOA, PFOS, PFHxS and PFNA were **positively associated** with drinking water source, and total length of residence in the study area.

Multivariate analysis did not account for the location of private wells/bottled water users

# Results—Multivariate analysis

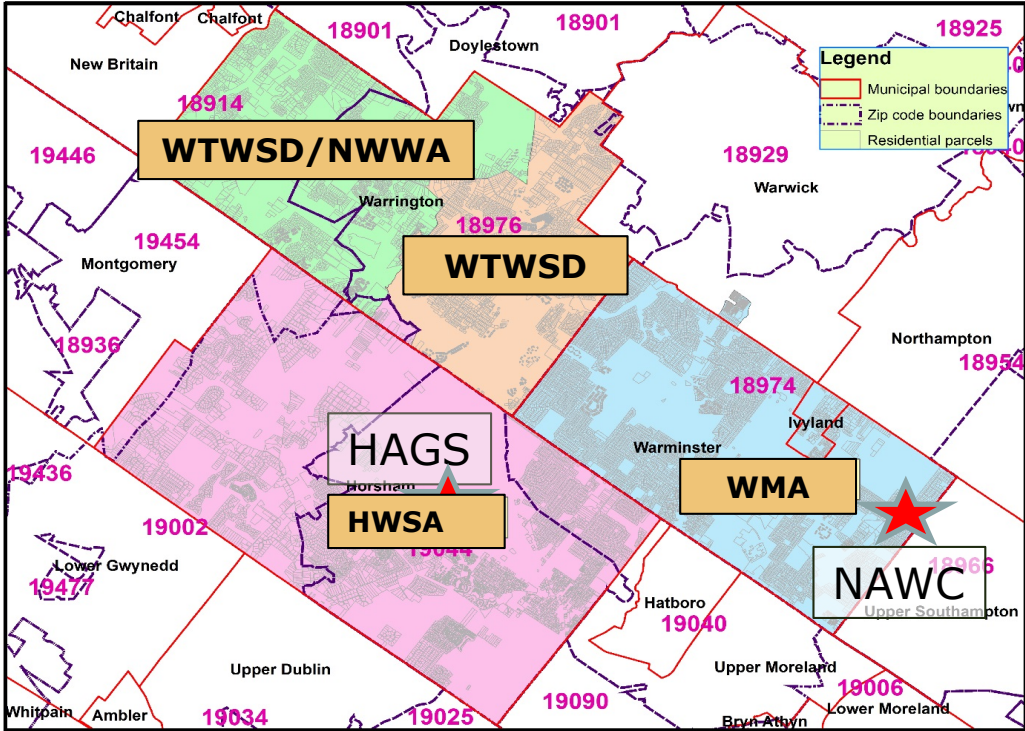
- Higher serum PFAS levels associated with proximity to the HAGA base
- HWSA consumers compared to WTWSD/NWWA consumers:
  - ▣ 157% higher PFOA
  - ▣ 169% higher PFOS
  - ▣ 257% higher PFHxS
  - ▣ 34% higher PFNA

**WMA compared to WTWSD/NWWA**  
 105% higher PFOA  
 89% higher PFOS  
 137% higher PFHxS

**WTWSD compared to WTWSD/NWWA**  
 94% higher PFOA  
 99% higher PFOS  
 114% higher PFHxS

**Bottled water/unknown category compared to WTWSD/NWWA**  
 78% higher PFOA  
 98% higher PFOS  
 30% higher PFNA

**Private well users compared to WTWSD/NWWA**  
 106% higher PFOA  
 101% higher PFOS  
 39% higher PFNA



# ➤ Multivariate analysis - Results

- Participants with more than 10 years' residence time generally had higher PFAS mean serum levels than reference group (less than 10 yrs.)
- Mean PFHxS serum levels were 32 percent higher in men than women
- Mean PFHxS serum levels were 35 percent higher in those employed in the area

# ➤ Multivariate analysis - Results

- Mean serum levels of PFOA, PFOS and PFNA were positively associated with age
- Mean PFOA serum levels of participants consuming 4-7 cups of tap water daily were 29% higher than participants consuming 0-3 cups daily

# ▶ CDC/ASTHO Report Presentation

- Atlanta, March 18–19, 2019
  - ▣ PA DOH and NY DOH presented PEATT findings
  - ▣ New York saw similar results to ours
  - ▣ New York had many more resources available to them

# Community Meeting

**A community meeting to present final results is scheduled**

**April 29, 2019, 6:30 to 8:30 pm**

**at**

**Horsham Township Public Library  
435 Babylon Rd, Horsham, PA 19044**

# ▶ PEATT Expansion—Exposure Assessment

- Expansion project – Kickoff call April 15<sup>th</sup>
- Urine, dust and water sampling of current participants
  - ▣ Will collect urine from **all** of our initial participants (235)
  - ▣ Will analyze 10% of samples
  - ▣ If geometric mean exceeds 95<sup>th</sup> percentile—**all** samples will be analyzed
- Dust and water sampling on 10% of current participating households

# ▶ PEATT Expansion—Exposure Assessment

- PA DOH will collect and ship urine samples
- CDC will store and analyze urine (no cost)
- PA DOH will contract with outside lab to collect and analyze dust and water
- Community meeting—Horsham Library April 29<sup>th</sup>



# ▶ Multi-Site Health Study Opportunity

- CDC/ATSDR taking applications to participate in Multi-Site National Health Study
- Will study health implications of exposure to PFAS-contaminated drinking water
- Six sites will be accepted and given grants
- Goal is to enroll at least 6,000 adults and 2,000 children (in total across all sites)

# ▶ Multi-Site Health Study Opportunity

- Historical reconstruction of water and serum PFAS concentrations using models
- Will study health conditions including high cholesterol, immunity issues and thyroid function
- Can propose additional research questions for study
- Application due May 30<sup>th</sup>

# Our Partners

- Centers for Disease Control and Prevention (CDC)
- Association of State and Territorial Health Officials (ASTHO)
- Agency for Toxic Substances and Disease Registry (ATSDR)
- Bucks County Health Department
- Montgomery County Health Department
- New York State Health Department Laboratory
- Pennsylvania Department of Environmental Protection

# Contact Information

**Should you have any questions or concerns, feel free to contact us at [env.health.concern@pa.gov](mailto:env.health.concern@pa.gov) or by phone at 717-787-3350**

**For more information:**

**<https://www.health.pa.gov/topics/envirohealth/Pages/PFAS.aspx>**

# ▶ PEATT Pilot Project Team

- Dr. Sharon Watkins
- Dr. Anil Nair
- Dr. Farhad Ahmed
- Dr. Marshal Ma
- Susan Schrack Wood