

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

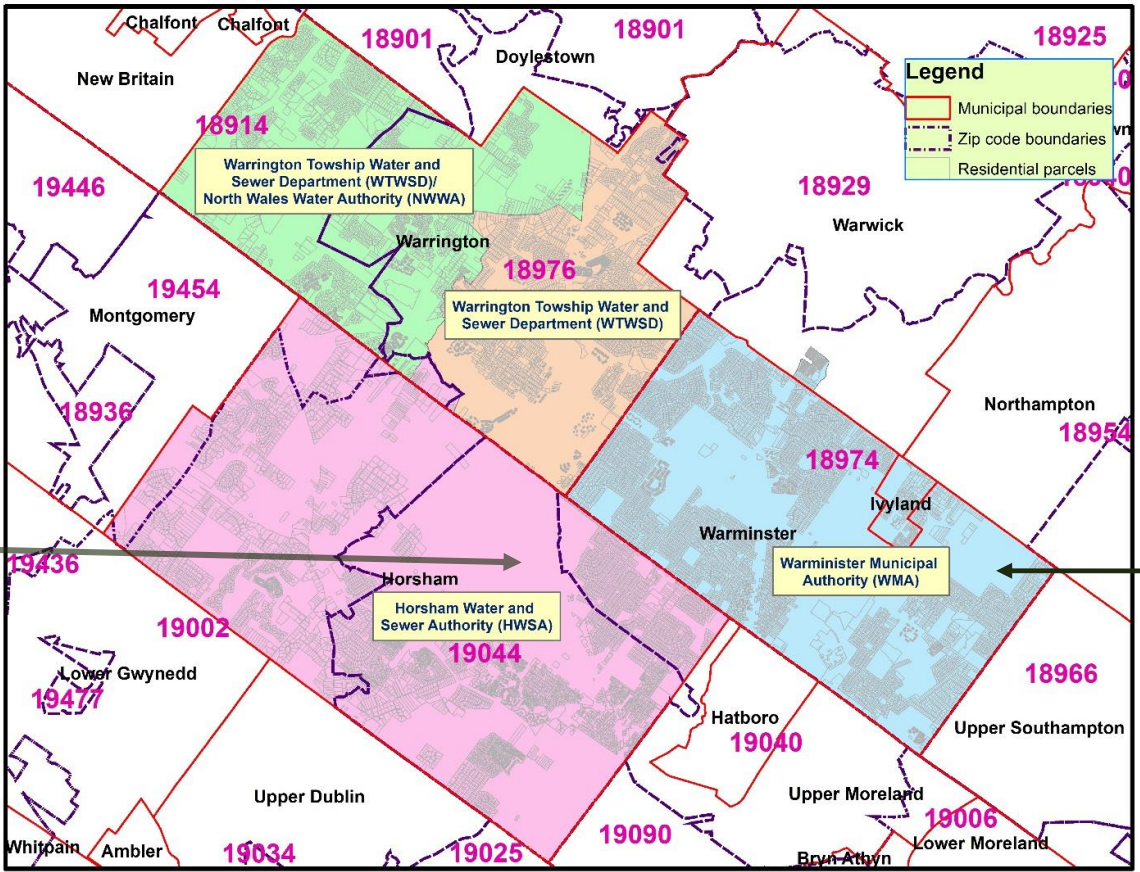
Sharon Watkins, Ph.D.
Director, Bureau of Epidemiology
State Epidemiologist

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

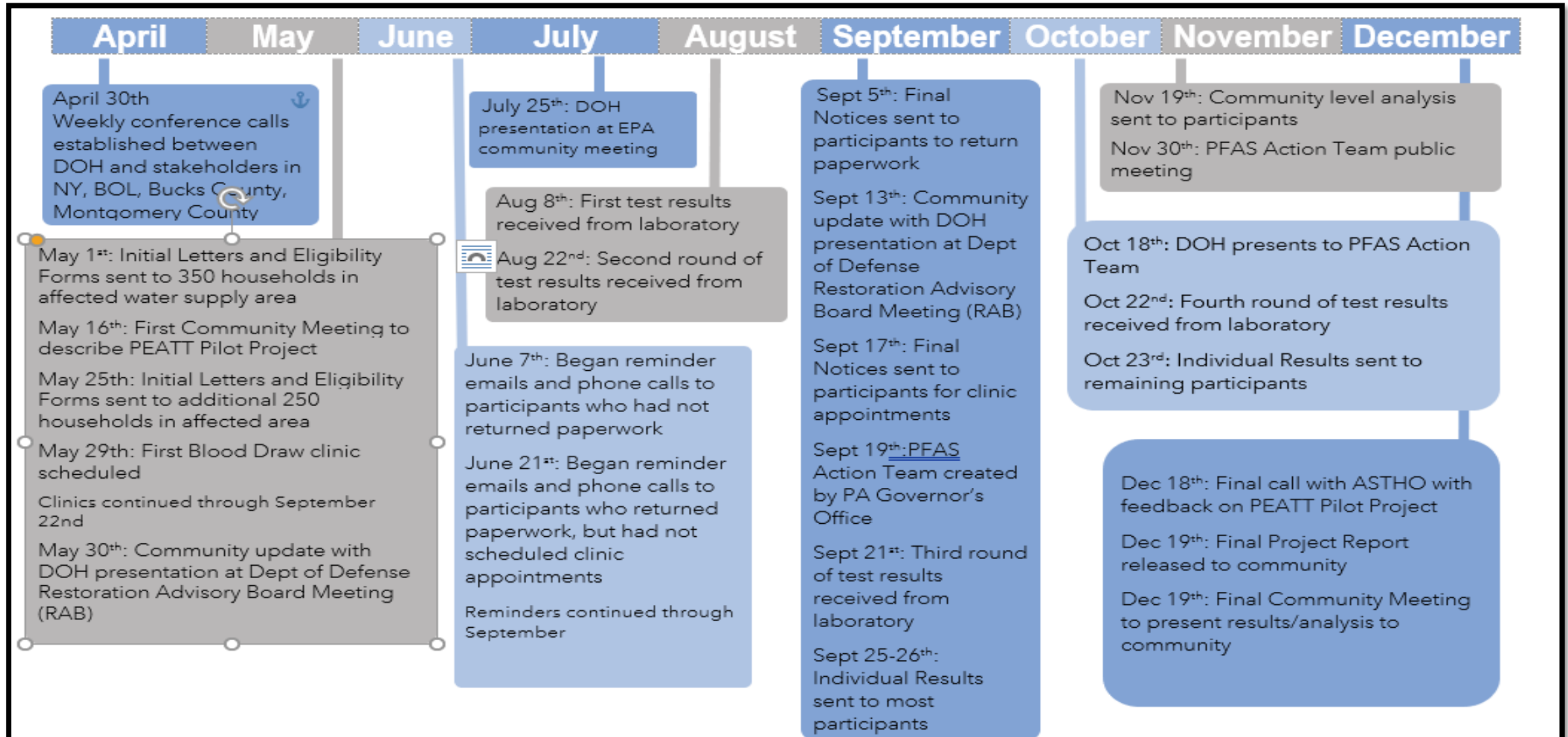
- The Naval Air Warfare Center Warminster and the Horsham Air Guard Station (formerly Naval Air Station Joint Reserve Base Willow Grove)
 - Military and firefighter training
 - Aqueous Film Forming Foam (AFFF) used on bases
 - PFAS in the foam
 - Exact composition of AFFF is proprietary
- PFAS levels 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	3.13	2.81-3.50	3.06	0.55-24.8	1.94	1.76-2.14
PFOS	10.24	8.86-11.83	9.86	1.02-105.00	4.99	4.50-5.52
PFHxS	6.64	5.51-7.99	6.61	0.54-116.00	1.35	1.20-1.52
PFNA	0.74	0.67-0.80	0.76	0.50-2.56	0.68	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

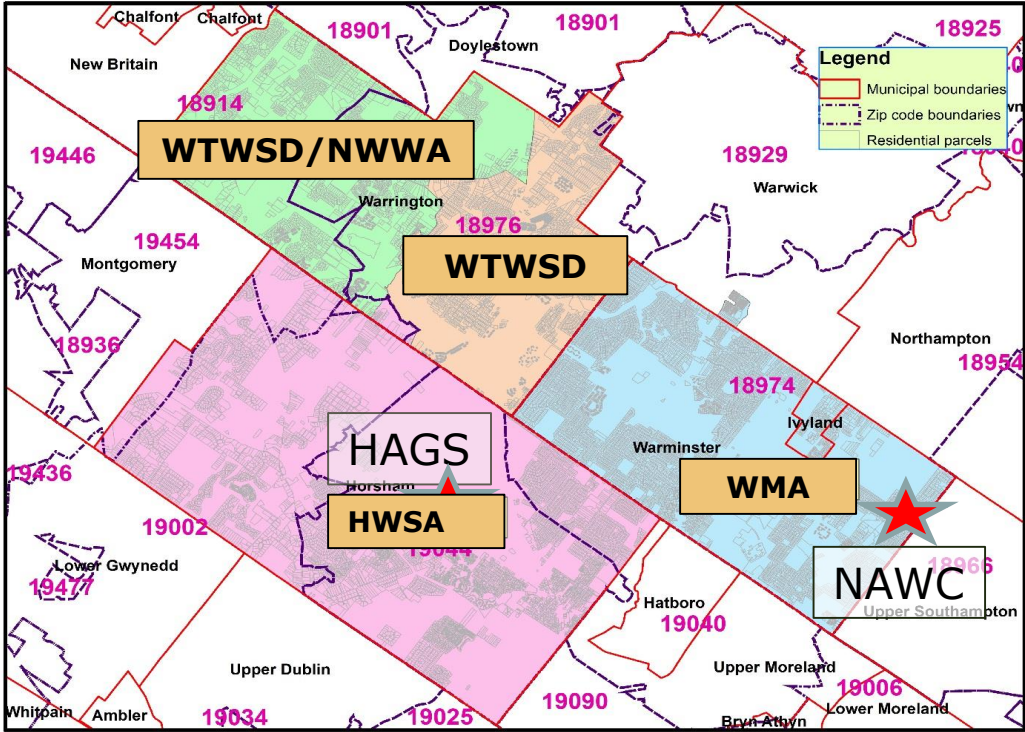
- Higher serum PFAS levels associated with proximity to the HAGS base
- HWSA consumers compared to WTWSD/NWWA consumers:
 - ▮ 157% higher PFOA
 - ▮ 169% higher PFOS
 - ▮ 257% higher PFHxS
 - ▮ 34% higher PFNA

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 15th
- 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 95th 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 29th

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 30th

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 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