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
• 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

**April**
- **April 30th**: Weekly conference calls established between DOH and stakeholders in NY, BOL, Bucks County, Montgomery County.

**May**
- **May 1st**: Initial Letters and Eligibility Forms sent to 350 households in affected water supply area.
- **May 16th**: First Community Meeting to describe PEATT Pilot Project.
- **May 25th**: Initial Letters and Eligibility Forms sent to additional 250 households in affected area.
- **May 29th**: First Blood Draw clinic scheduled.
- **Clinics continued through September 22nd**
- **May 30th**: Community update with DOH presentation at Dept of Defense Restoration Advisory Board Meeting (RAB).

**June**
- **June 7th**: Began reminder emails and phone calls to participants who had not returned paperwork.
- **June 21st**: Began reminder emails and phone calls to participants who returned paperwork, but had not scheduled clinic appointments.
- **Reminders continued through September.**

**July**
- **July 25th**: DOH presentation at EPA community meeting.
- **Aug 5th**: First test results received from laboratory.
- **Aug 22nd**: Second round of test results received from laboratory.

**August**
- **Aug 25-26th**: Individual Results sent to most participants.
- **Sept 5th**: Final Notices sent to participants to return paperwork.
- **Sept 13th**: Community update with DOH presentation at Dept of Defense Restoration Advisory Board Meeting (RAB).
- **Sept 17th**: Final Notices sent to participants for clinic appointments.
- **Sept 19th**: PEATT Action Team created by PA Governor’s Office.
- **Sept 21st**: Third round of test results received from laboratory.

**September**
- **Sept 25-26th**: Individual Results sent to most participants.
- **Oct 18th**: DOH presents to PEATT Action Team.
- **Oct 22nd**: Fourth round of test results received from laboratory.
- **Oct 23rd**: Individual Results sent to remaining participants.

**October**
- **Nov 19th**: Community level analysis sent to participants.
- **Nov 30th**: PFAS Action Team public meeting.

**November**
- **Dec 18th**: Final call with ASTHO with feedback on PEATT Pilot Project.
- **Dec 19th**: Final Project Report released to community.
- **Dec 19th**: Final Community Meeting to present results/analysis to community.
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

<table>
<thead>
<tr>
<th>PFAS Compound</th>
<th>Community Results</th>
<th>NHANES Results (2013-2014)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Average</td>
<td>95% Confidence Interval</td>
</tr>
<tr>
<td>PFOA</td>
<td>3.13</td>
<td>2.81-3.50</td>
</tr>
<tr>
<td>PFOS</td>
<td>10.24</td>
<td>8.86-11.83</td>
</tr>
<tr>
<td>PFHxS</td>
<td>6.64</td>
<td>5.51-7.99</td>
</tr>
<tr>
<td>PFNA</td>
<td>0.74</td>
<td>0.67-0.80</td>
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</tbody>
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- 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
Multivariate analysis did not account for the location of private wells/bottled water users.

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.
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

<table>
<thead>
<tr>
<th>Comparison</th>
<th>PFOA</th>
<th>PFOS</th>
<th>PFHxS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAGS vs. WTWSD/NWWA</td>
<td>157%</td>
<td>169%</td>
<td>257%</td>
</tr>
<tr>
<td>HAGS vs. WTWSD</td>
<td>105%</td>
<td>94%</td>
<td>137%</td>
</tr>
<tr>
<td>Private well users vs. WTWSD/NWWA</td>
<td>106%</td>
<td>101%</td>
<td>39%</td>
</tr>
<tr>
<td>Bottled water/unknown vs. WTWSD/NWWA</td>
<td>78%</td>
<td>98%</td>
<td>30%</td>
</tr>
</tbody>
</table>
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
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\textsuperscript{th}
• Urine, dust and water sampling of current participants
  - Will collect urine from \textbf{all} of our initial participants (235)
  - Will analyze 10\% of samples
  - If geometric mean exceeds 95\textsuperscript{th} percentile—\textbf{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
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

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