



Montgomery and Bucks County, PA



The PA Multi-site Health Study

Information Session

December 3, 2020

RTI International, PA Department of Health, Temple University, Brown University

INFORMATION TO PROTECT OUR COMMUNITIES



National Center
for Environmental Health
Agency for Toxic Substances
and Disease Registry



PFAS Exposure and Potential Links with Cancer

Presenter:

Dr. Resa M. Jones, Temple University



Community-engaged PFAS research



- Health and psychosocial impacts of PFAS-contaminated drinking water environmental exposure
 - Preliminary qualitative research findings
- Enhanced PFAS Spatial Analysis
 - Purposed research



Health and psychosocial impacts of PFAS-contaminated drinking water environmental



- Formative qualitative research funded by the Water Foundation – Partnered with Buxmont Coalition for Safer Water
- Focus groups with adults, ages 25 – 80 years in Bucks and Montgomery Counties
 - 6, 2-hour group meetings
 - Living in Bucks or Montgomery County with municipal or private well
 - \$50 incentive
- Identify perceived health, psychosocial issues, and financial impacts of PFAS-contaminated water
- In-depth interviews with community stakeholders (8 people)
- Identify community-level issues and areas of need



Health Impact: Preliminary Findings



- Majority mentioned negative health outcomes – particularly cancer
 - “The biggest concerns about PFAS in general is the health effects, undoubtedly it's the health effects. It's the unknown health effects....something to do with this cancer or that cancer health problem that somebody in the town is suffering from.”
 - “They want to get rid of [PFAS] and they want someone to be held accountable for the cancer, the death that they've had to endure because of the water. I think that's everybody's biggest concern is the disease and loss of life.”



Health Impact: Preliminary Findings



- Themes: Worry/fear, uncertainty, wanting answers:
- Worry/Fear:
 - “You know, I don't know what you tell people who are suffering with cancer, who have had cancer, who live in fear like I do every time I go as a doctor is something going to show up again.”
 - “I think those are really the biggest concerns about it...the long-term health effects and honestly not just for adults...one of the things that concerned me, you know, was the effect on children...so I think the long-term health effects for both adults who've lived here for many many years and then for our kids who may have been exposed to this from a very young early age.”
 - “Certainly what I worry about is that there is a direct cause and effect for bad health outcomes that would be a nightmare for any water provider. We know that that fire-fighting foam traveled to all our wells in our community, it's kind of remarkable how extensive that contamination is.”
- Uncertainty/Wanting Answers
 - “So the cumulative and combinations of these chemicals well, I don't know that we'll ever know. In the health, I mean, people are ill, they can't work. It's super sad, and that [they] can't get answers from doctors.”
 - “I would say, it's the lack of information for people they just don't know and I think it's because the health studies, has not been able to be done. So therefore anyone in you know, whatever 25 mile radius and either of these bases, wonders is my cancer due to this.”



Enhanced PFAS Spatial Analysis: PFAS & Cancer



- Cancer is complex and risk factors vary for people over time and geographic location
 - Environmental and socioeconomic risk factors
- Many cancers have decades-long lag times between possible exposure and diagnosis
- PFAS exposure is associated with several cancers
 - Kidney
 - Thyroid
 - Testicular
 - Ovarian
 - Non-Hodgkin lymphomas



Enhanced PFAS Spatial Analysis: PFAS & Cancer



- Previous epidemiologic studies have various limitations
 - Failure to model change in exposure over time
 - Limited inclusion of variables to reduce bias
 - Absence of spatial statistical approaches
- Spatial analysis using advanced statistical approaches is highly informative strategy to address potential health effects of PFAS exposure that varies over time and across locations



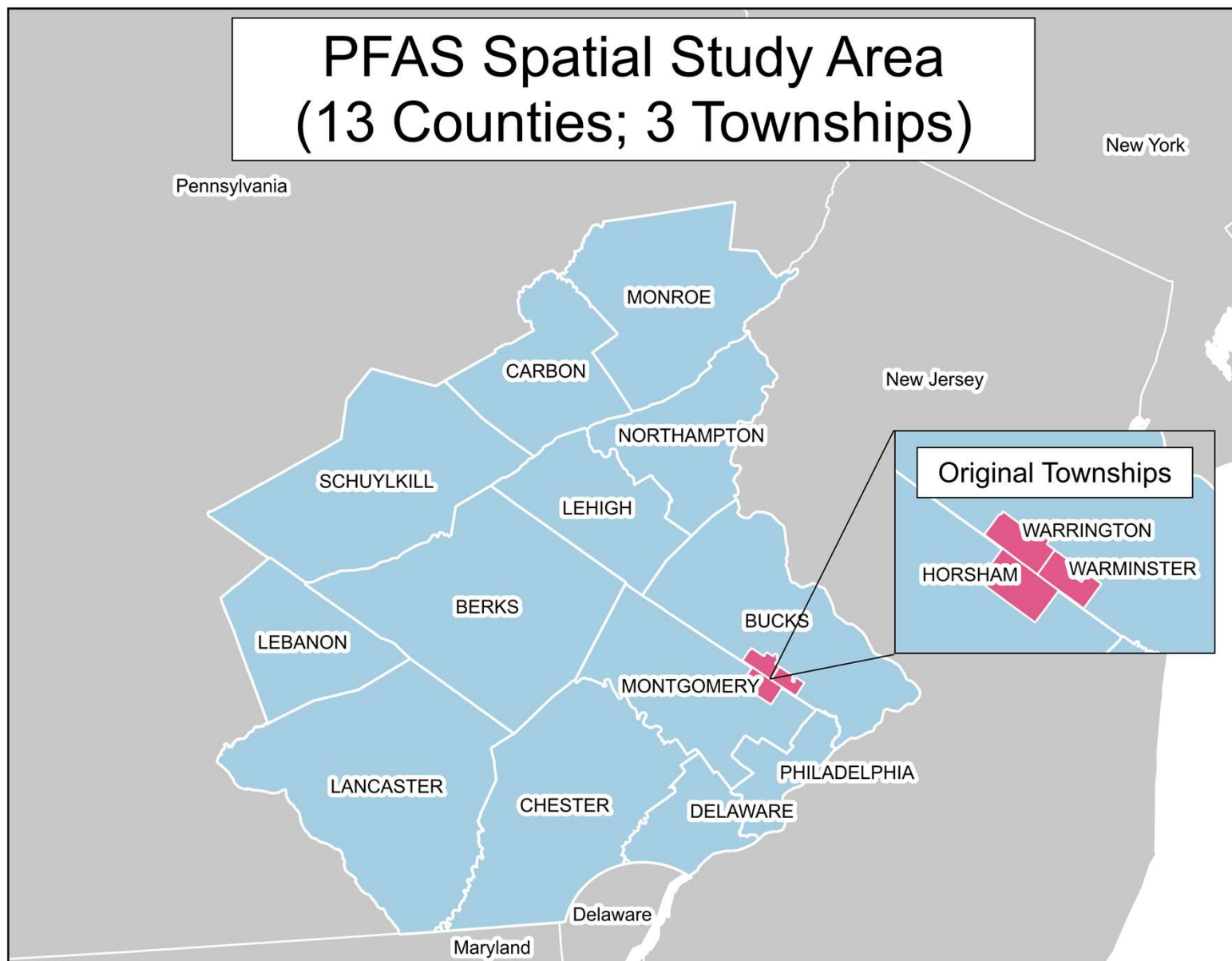
Enhanced PFAS Spatial Analysis: Primary Aim



- Purpose: Conduct enhanced PFAS Spatial Analysis (PFAS-SA) to assess the association between PFAS-contaminated water exposure incorporating residential history and select cancers using population-based incident cases and cancer-free controls
 - **Hypothesis 1:** *Incident cancer cases are more likely to be exposed to PFAS-contaminated drinking water than controls.*
 - **Hypothesis 2:** *There is a dose response relationship between level and duration of exposure to PFAS-contaminated drinking water and cancer.*



Enhanced PFAS Spatial Analysis: Study Area





Enhanced PFAS Spatial Analysis: Cancer Data



- Individual-level incident case data from the population-based, PA Cancer Registry (1990–2018)
 - Cancer Registry has data on all invasive cancers diagnosed throughout PA since Jan 1, 1985
 - Hospital, labs, health care facilities mandated to report cancer cases
 - Will account for cancer latency (20-30 years for many cancers)
- Primary cancer sites (>865,000 invasive cases in adults in study area):
 - Kidney, thyroid, testis, prostate, ovarian, bladder, colon/rectum, and non-Hodgkin lymphoma
- Other variables include, but not limited to:
 - Residential address at time of diagnosis, age at diagnosis, date of diagnosis, stage at diagnosis, and demographics



Enhanced PFAS Spatial Analysis: Control Data



- Cancer-free controls selected to compare to cancer cases:
 - Population-based lists for those living in 13-county study area
 - Controls based on the incident cancer cases' characteristics of address/zip code, sex/gender, and age



Enhanced PFAS Spatial Analysis: Residential History Data



- Residential histories for all cases and controls from public record database
 - Residential history data 1980s–2018
 - Create variable for historical PFAS exposure over time and space



Enhanced PFAS Spatial Analysis: PFAS Water Exposure Data



- PFAS water testing from Bucks and Montgomery Counties, ATSDR water data
- Historical reconstruction data from Multi-site Health Study
- PA Department of Environmental Protection slated to conduct water sampling to test for PFAS throughout PA
- Supplement planned testing using selected water sources (e.g., municipal, private) in targeted areas of 13-county study area to assess PFAS-contaminated drinking water exposure