The New Hampshire Expanded Biomonitoring Program

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biomonitoringNew Hampshire



Targeted study in southern NH of residents reliant on private wells drinking water (total As, U, speciated As)

Statewide surveillance

- analytes of concern
- nutritional biomarkers



Potential for Arsenic and Uranium Exposure

- Forty-six percent of the state population is reliant on bedrock wells for drinking water
- Geologic formations, past land use practices provide opportunities for exposure
- NHPHL data (2005-2006) 31% of 121 samples collected in southern NH exceeded MCL
- Significant correlation between elevated drinking water arsenic and higher than average total urinary arsenic



Study Design

- Recruit from High Risk Areas
 - Age, race, gender, sensitive sub-populations
 - 500 participants
 - Control population Nashua
- Questionnaire
 - Residential, occupational & recreational histories
 - Food diary and drinking water patterns
 - Demographic, educational, socioeconomic status
 - Behavioral risk factors
- Collect urine & drinking water
 - Incent participation



Surveillance Biomonitoring Project

- Implementation 2017
- Baseline information, NH specific ranges
- Statewide recruitment
- Representative recruitment
 - BRFSS data
- Opportunistic recruitment
 - Blood donation centers
 - College campuses
 - State employee complex
 - Clinical collaborators
 - Academic partners



Biomarker Selection Surveillance Program

Metals

Pesticide metabolites

- Organophosphate
- Pyrethroid
- Environmental tobacco smoke
 - Cotinine
- Industrial chemicals
 - PFCs
- Nutritional biomarkers
 - Iron
 - Folate



Challenges biomonitoringNew Hampshire

- Administrative hurdles
 - Budget
 - Hiring
- Participant Recruitment
- Community Engagement

