

NH Considerations for Biomonitoring Surveillance

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BiomonitoringCA Scientific Guidance Panel Meeting
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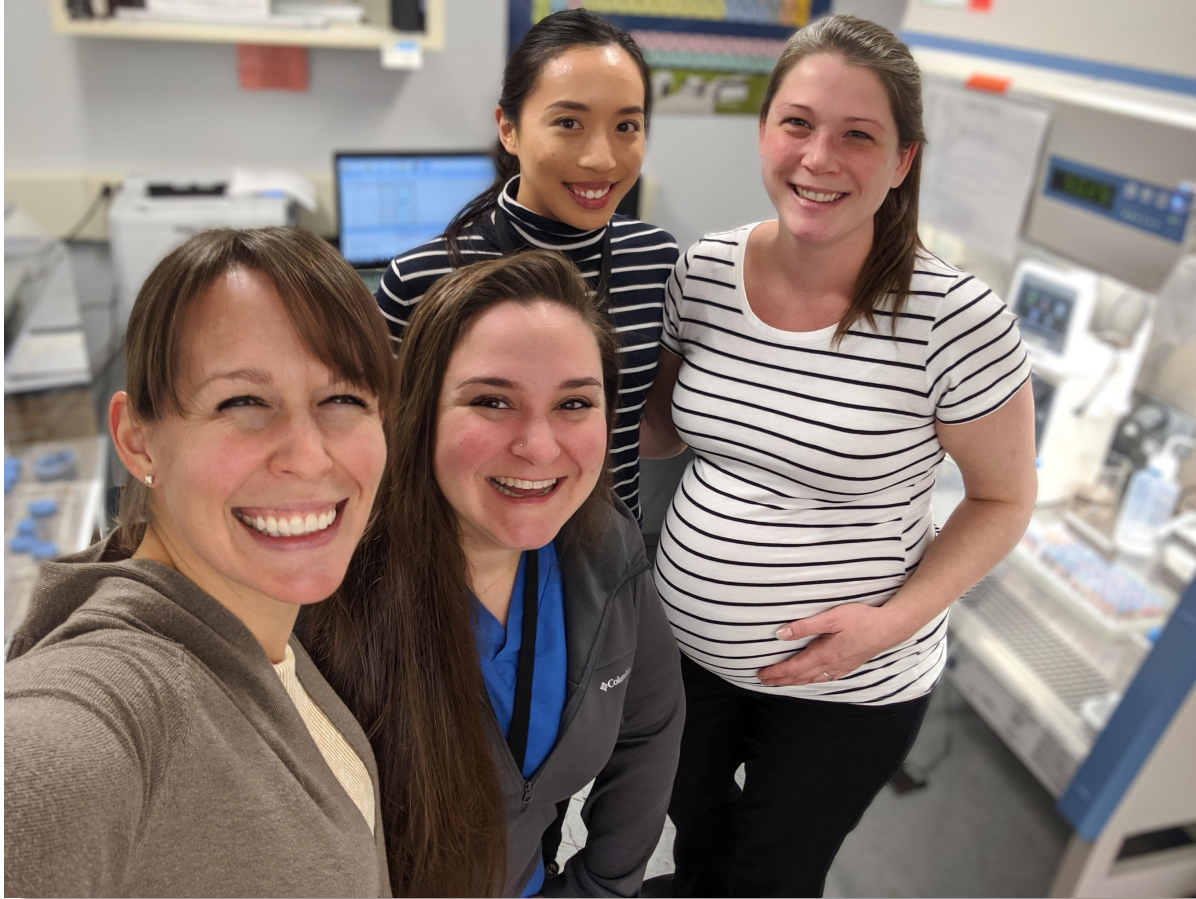


New Hampshire Demographics



US Census Fact	New Hampshire	United States
Population, Census, April 1, 2010	1,316,470	308,745,538
Persons under 5 years	4.70%	6.00%
Persons under 18 years	18.80%	22.30%
Persons 65 years and over	18.70%	16.50%
Female persons	50.40%	50.80%
White alone	93.10%	76.30%
Black or African American alone	1.80%	13.40%
American Indian and Alaska Native alone	0.30%	1.30%
Asian alone	3.00%	5.90%
Native Hawaiian and Other Pacific Islander alone	Z	0.20%
Two or More Races	1.80%	2.80%
Hispanic or Latino	4.00%	18.50%
White alone, not Hispanic or Latino	89.80%	60.10%

BiomonitoringNH Program

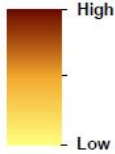


Lessons Learned from the Targeted Arsenic and Uranium Study

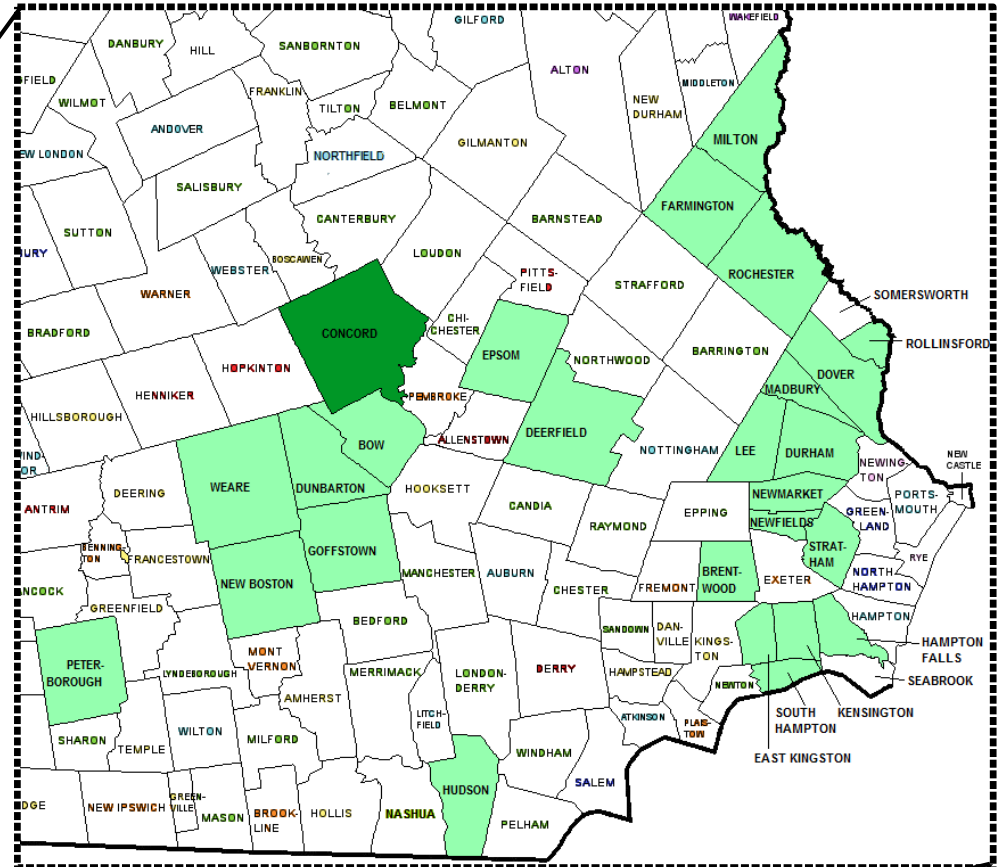
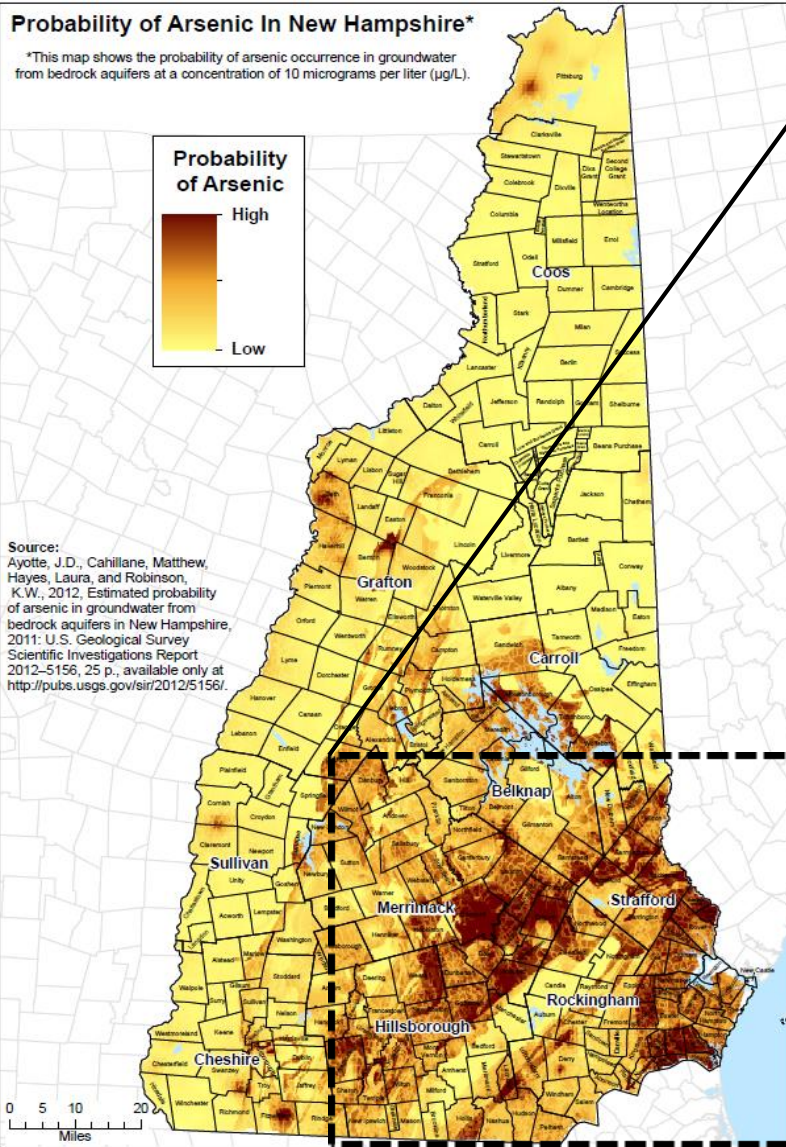
Probability of Arsenic In New Hampshire*

*This map shows the probability of arsenic occurrence in groundwater from bedrock aquifers at a concentration of 10 micrograms per liter ($\mu\text{g/L}$).

Probability of Arsenic

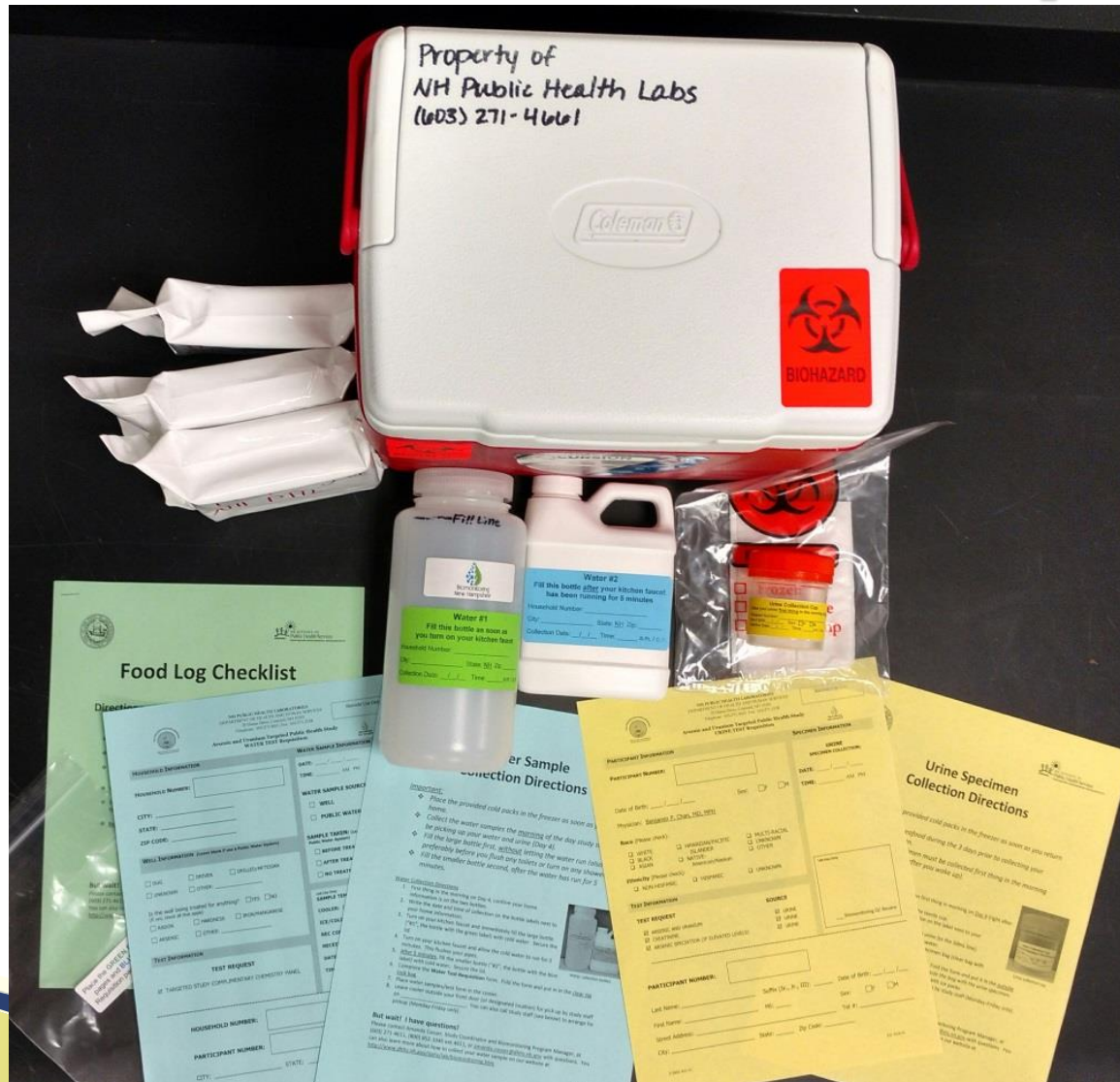


Source:
Ayotte, J.D., Cahillane, Matthew,
Hayes, Laura, and Robinson,
K.W., 2012, Estimated probability
of arsenic in groundwater from
bedrock aquifers in New Hampshire,
2011: U.S. Geological Survey
Scientific Investigations Report
2012-5156, 25 p., available only at
<http://pubs.usgs.gov/sir/2012/5156/>.

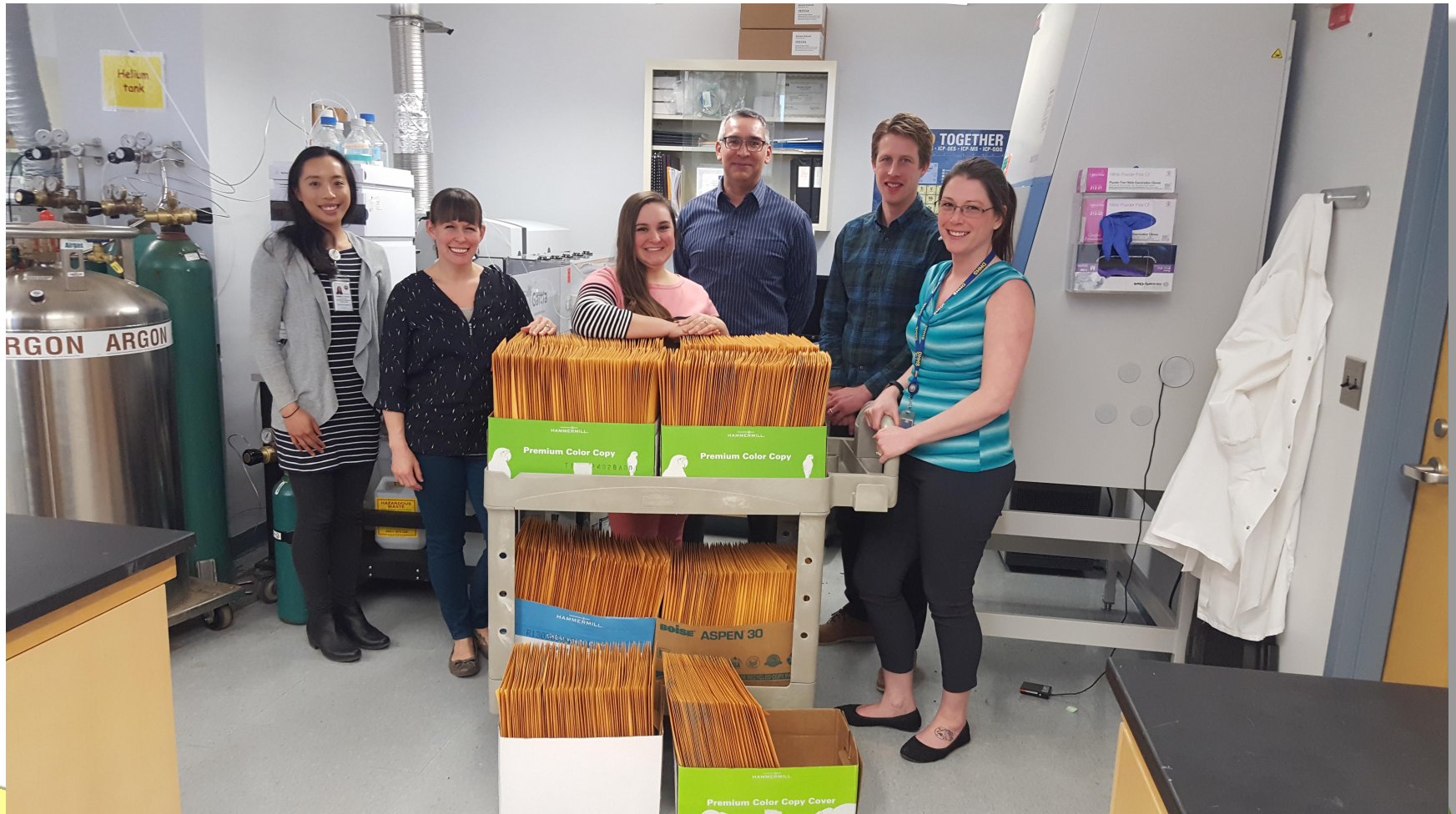


Biomonitoring
New Hampshire

Lessons Learned from the Targeted Arsenic and Uranium Study



Lessons Learned from the Targeted Arsenic and Uranium Study



2019 NH TrACE Study Analytes

Water Testing

Copper and Lead
(stagnant and flushed)

Iron	Sodium
Chloride	Fluoride
Uranium	pH
Nitrate	Nitrite
Total coliform bacteria	
Hardness	<i>E. coli</i>

PFAS

8:2 FTS	6:2 FTS	PFBA
PFDS	PFHpS	PFHxDA
PFTTrDA	PFPeA	PFTeDA

Other

- Many pesticides, herbicides, and insecticides and their environmental breakdown products
- Corrosives (dissolved solids, alkalinity, pH, sulfur)
- Radionuclides (expanded list: gross alpha, gross beta, radium 226, radium 228, radium 226+228, radon)
- Chromium-6
- 1,4 dioxane
- Perchlorate
- VOCs

Clinical Testing

Paired Testing

Metals

Antimony	Arsenic	Lead
Barium	Beryllium	Cobalt
Cadmium	Manganese	Uranium
Selenium	Strontium	Thallium

PFAS

PFOA	PFOS	PFHxS	PFBS	PFNA
PFDA	PFDoA	PFHxA	PFOSA	PFHpA
PFUnDA	EtFOSAA	MeFOSAA		

Pesticides/Herbicides/Insecticides*

Cypermethrin	Methyl parathion
Chlorpyrifos	Permethrin
Cyfluthrin	2,4-D

Metals

Cesium	Tungsten
Mercury, Total	Platinum
Molybdenum	Tin
Arsenous (III) acid	Arsenic (V) acid
Arsenobetaine	Arsenocholine
Dimethylarsinic acid (DMA)	
Monomethylarsonic acid (MMA)	

PFAS

GenX

Pesticides/Herbicides/Insecticides*

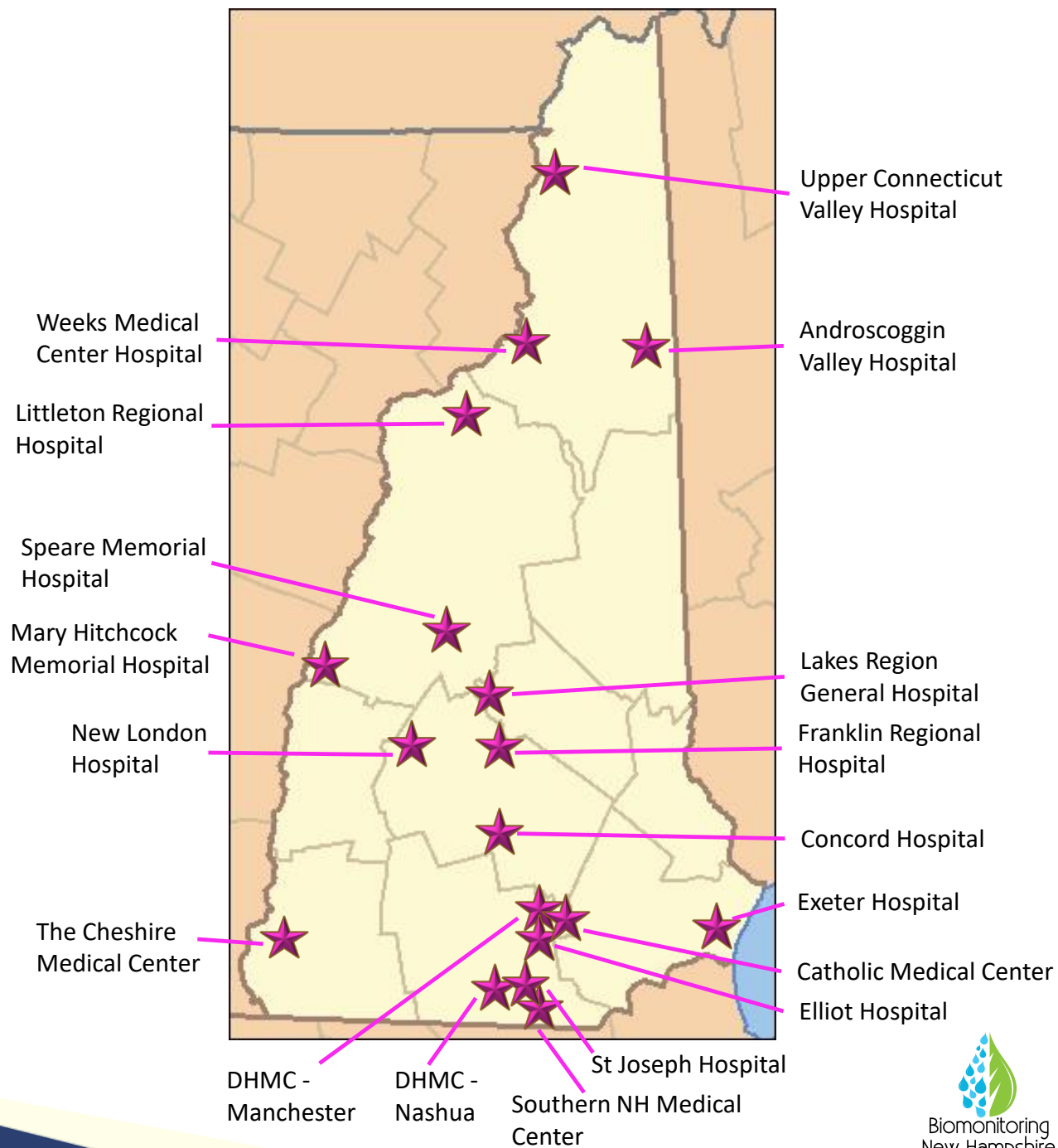
Chlorpyrifos methyl
Deltamethrin
Parathion

Tobacco

Cotinine

* The NH PHL tested for the metabolites of the pesticides, herbicides, and insecticides listed here

TrACE Collection Sites



Water Incentive Lessons Learned

- ▶ “The Water Study”
- ▶ Oversampled wells



TrACE BRFSS Recruitment

State-Added Section 6: Biomonitoring

NH6_1

Are you aware that some chemicals from the environment can enter your body and affect your health?

NH6_2

Are you willing to be contacted by a member of the Division of Public Health to learn more about a project looking at environmental chemicals in NH residents?

INTERVIEWER NOTE: If the respondent wants more information regarding Biomonitoring please provide the following information: **Amanda Cosser, Program Manager for Biomonitoring, 1-800-852-3345 Ext. 4611.**

NH6_3

Can I please have your first name so we will know who to ask for when we call back?

NH6_4

What is the best number to reach you?

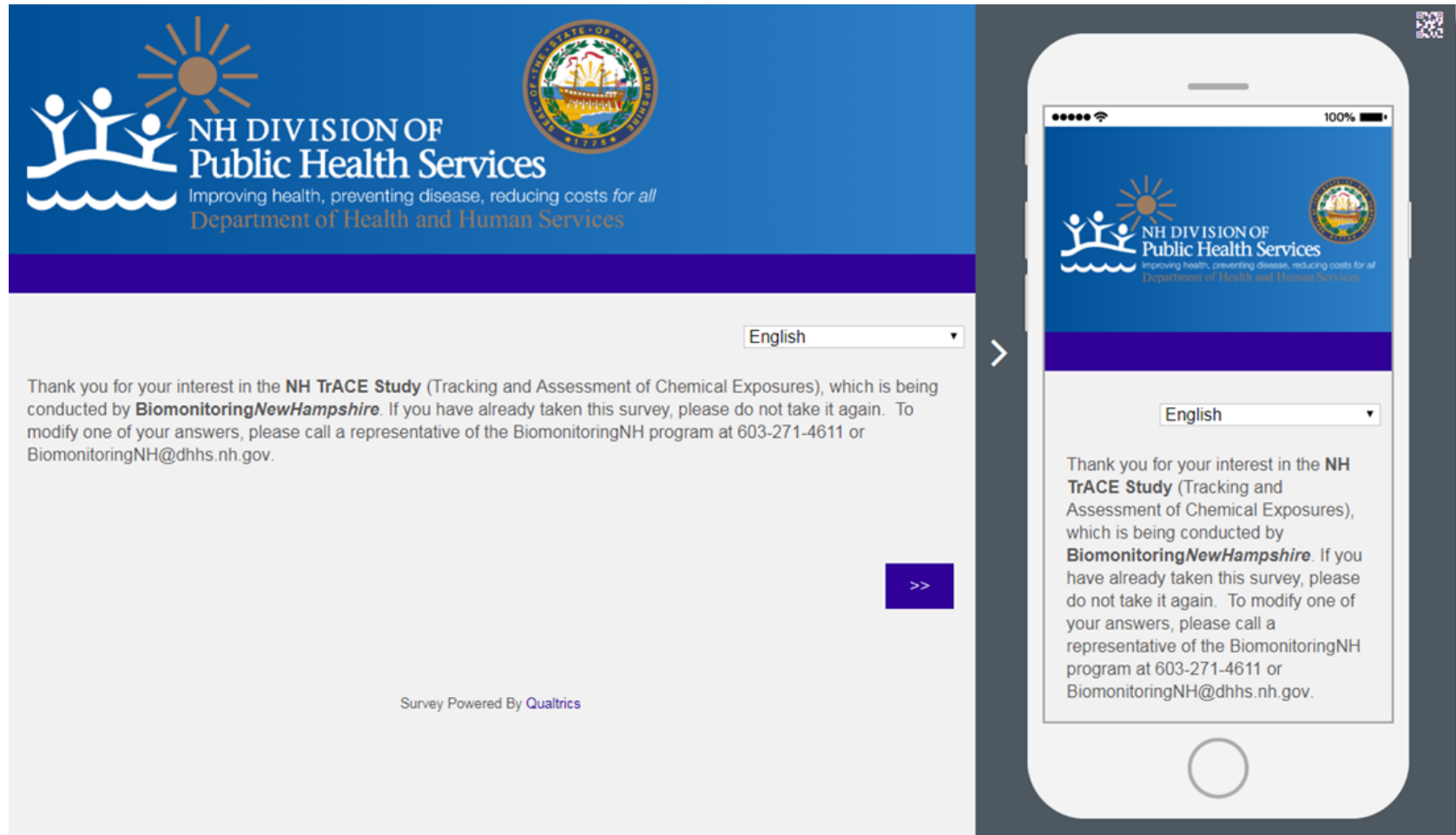
NH6_5

What is the best time of day to reach you?

University of New Hampshire Survey Center

- ▶ 3577 positive BRFSS responses
- ▶ 3085 UNH calls completed
- ▶ 433 completed Informed Consent
 - 37 screen failures (8.5%)
 - 46 lost to follow-up (10.6%)
 - 14 withdrew (3.2%)
- ▶ 336 completed the study (77.6% of those who completed the IC)

TrACE Informed Consent and Exposure Questionnaire



The image displays the TrACE Informed Consent and Exposure Questionnaire on both a desktop and a mobile device. The desktop version features a blue header with the NH Division of Public Health Services logo and seal, followed by a white section with a language dropdown set to 'English'. The mobile version shows the same content adapted for a smartphone screen, with a QR code in the top right corner. Both versions include a thank you message and a 'Next' button.

NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs for all
Department of Health and Human Services

English

Thank you for your interest in the **NH TrACE Study** (Tracking and Assessment of Chemical Exposures), which is being conducted by **BiomonitoringNewHampshire**. If you have already taken this survey, please do not take it again. To modify one of your answers, please call a representative of the BiomonitoringNH program at 603-271-4611 or BiomonitoringNH@dhhs.nh.gov.

>>

Survey Powered By Qualtrics

English

Thank you for your interest in the **NH TrACE Study** (Tracking and Assessment of Chemical Exposures), which is being conducted by **BiomonitoringNewHampshire**. If you have already taken this survey, please do not take it again. To modify one of your answers, please call a representative of the BiomonitoringNH program at 603-271-4611 or BiomonitoringNH@dhhs.nh.gov.

Qualtrics Lessons Learned

► Electronic signature policy

“By checking this box, I acknowledge that the information I (or my dependent) have/has provided is accurate and true to the best of my knowledge and belief. I certify that I (or my dependent) am/is the individual who is identified in this document, and that the date indicated on the document is the date that I signed this document. If applicable, I further certify that I am providing consent for a dependent of mine and that I have the authority to do so. I understand that I may be found guilty of a misdemeanor, under RSA 641:3, for any unauthorized signature or indication that I make.”

TrACE Enrollment Restrictions

- ▶ Monitored enrollment and specimen collection completion by geographic area and age group
- ▶ Compared to 2010 NH census data
- ▶ Potential for multiple loss to follow-up steps made monitoring difficult
- ▶ $n = 336$

TrACE Sample Size Considerations

- ▶ Collaborated with NH Bureau of Public Health Statistics and Informatics
- ▶ Determined $n = 400$
- ▶ No stratification by age, sex, race, or ethnicity

Data Analysis and Sample Size

Lessons Learned

- ▶ Recruitment goals not met (age, county)
- ▶ Buckets get small
- ▶ Major issues
 - Reference population
 - Comparison to NHANES
 - Outliers

2024 TrACE Study

- ▶ No BRFSS
- ▶ Considering
 - Three stage cluster sampling
 - Survey center random recruitment
 - USPS random mailers
- ▶ Better or multiple incentives
- ▶ Mobile specimen collection contract
- ▶ Remote recruitment, electronic consent, and online exposure questionnaires

Questions



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