

Exposure to Arsenic and Uranium in Private Well Water in Connecticut, New Mexico, and New Hampshire

Assessment of Potential Exposure from Private Wells for Drinking Water Generic Information Collection Request

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Supporting Statement Part B

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B. Collections of Information Employing Statistical Methods

B.1. Respondent Universe and Sampling Methods

We will create a grid over the identified geographic area for each state (referred to heretofore as “area”) and randomly choose cells from each grid. For each cell, we will work with our state partners to identify private well owners residing within the cells as well as their contact information. Assuming a 30%-50% recruitment rate based on previous U.S. Geological Survey (USGS) experience, we will contact approximately 200-333 randomly selected households per area to recruit one household per cell for a total of 100 households per area. From each enrolled household, we will collect well water and tap water samples to assess arsenic and uranium concentrations. We will also ask an adult from each household to provide a urine specimen to assess arsenic and uranium concentrations and respond to a short exposure survey.

Table B.1.1. Respondent sampling universe and corresponding sample

| Sampling Universe | Corresponding Sample Size |
|---|---------------------------|
| Geographic area of interest defined by each state | 333 |

B.2. Procedures for the Collection of Information

This investigation will involve collecting information from respondents using a survey (Attachment G). USGS reports that they recruit about 30% to 50% of people who receive notification of an upcoming water quality study like this (personal communication, Joe Ayotte, May 2018). Thus, we will send out letters and prepaid postcards to the identified households in the 100 cells (approximately 200 – 333 households) in each state to recruit one household per cell for a total of 100 households per state. We anticipate that 40% of households receiving notification of our study will complete the Response form (part of the Screening form, Attachment C – Screening Survey) and send it back to us. We estimate that 80% of those who respond to our invitation letter will be eligible, and one adult from each household will self-select to respond to the survey.

Team members on any given investigation will be trained public health professionals and will include CDC staff, staff from state, or local, health agencies, and/or staff from USGS. Team members will be trained to administer questionnaires and collect appropriate environmental samples and/or clinical specimens. A code book will be created before the team goes into the field for an investigation. Data will be collected during a telephone interview using a laptop computer and survey software (Epi Info) with appropriate skip patterns built into the survey. All computerized files will be password-protected.

We have added the statement below about COVID-19 precautions that is included in the invitation letter (Attachment B Invitation Letter Response Form), screening survey (Attachment C Screening Survey), and consent form (Attachment D Consent Form):

Please be assured that CDC will take all necessary steps to protect members of your community from COVID-19. The study will be conducted following all state, local, and CDC guidelines in place at the time the study is conducted. CDC team members will be monitored twice daily for fever and any COVID-19-related symptoms. Although we don't anticipate face-to-face contact with study participants, if this does occur (e.g., when a study team member picks up water samples and urine specimens), study team members will wear surgical masks and gloves to ensure the protection of participants. Again, although we do not anticipate face-to-face contact with study team members, if that occurs, participants will be asked to always wear a face covering or mask. If you do not have a mask, one will be provided to you before you enter the facility. If you are unable to wear a mask for medical reasons, please let us know."

Additional precautions: The Survey (Attachment G Survey) will be conducted by phone rather than in-person, study participants will collect the water sample from the tap inside their home and leave that, along with their signed consent form, the food log, the home tap water sample, and urine specimen outside for the study team to pick up.

Unusual problems requiring specialized sampling procedures

CDC does not expect unusual problems requiring specialized sampling.

B.3. Methods to Maximize Response Rates and Deal with Nonresponse

USGS reports that they recruit about 30% to 50% of people who receive notification of an upcoming water quality study like this (personal communication, Joe Ayotte, May 2018). Thus, we will send out letters and prepaid postcards to the identified households in the 100 cells (approximately 200 – 300 households) in each state to recruit one household per cell for a total of 100 households per state. We anticipate that 40% of households receiving notification of our study will complete the Response form and send it back to us. We will assess non-response bias by following up with households that do not complete the Response form and asking them to complete it or why they did not complete it. We estimate that 80% of those who respond to our invitation letter will be eligible.

B.4. Tests of Procedures or Methods to be Undertaken

We pilot-tested our study instruments with fewer than 10 volunteers and made only minor adjustments based on their feedback.

B.5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The investigators leading the data collection and analysis will be trained in biostatistics and epidemiology. Investigators will collaborate extensively with health officials of the agency throughout the process of data collection design, implementation, and analysis. All investigations will be supervised by CDC's experienced epidemiologists. Additional statistical resources will be available at CDC.

Because the investigations will not be research studies, data analysis will be largely descriptive. Statisticians will be consulted if sampling or a more complicated analysis is needed.