ARSENIC IN PRIVATE WELL WATER:
ENGAGING A VARIETY OF STAKEHOLDERS TO CREATE LASTING CHANGE

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March, 24, 2017
Overview

• Private wells and arsenic in New Hampshire
• Current efforts to address arsenic in well water in New Hampshire
• Working with your community to improve well water testing
Section 1: Private wells and arsenic in New Hampshire
Arsenic and Private Wells: The Rundown

- Private wells serve as a primary source of drinking water for approximately 46% of New Hampshire’s population, ~ 520,000 people.
- There is no uniform testing or treatment requirement(s) for private wells in New Hampshire.
- You cannot see, smell or taste arsenic
- 20% of NH private well owners have arsenic levels at or above the U.S. EPA Maximum Contaminant Level (MCL) of 10 parts per billion for public water supplies.
Probability of arsenic in New Hampshire

Most arsenic contamination in NH comes from natural sources.
Arsenic and Health

Low dose, chronic, long term exposure to arsenic in drinking water can lead to:

- Cancers (bladder, skin, kidney, liver, prostate and lung)
- Vascular and cardiovascular disease
- Reproductive and developmental effects
- Cognitive and neurological effects
- Diabetes and other metabolic disorders
- Neuropathy

NH Arsenic Survey
Statewide Online Survey – Summer 2014
• Survey included 31 to 40 questions.
• 700 responses in total.
Survey Analysis
• 82% of respondents drink their tap water “always” or “frequently.”
• Among the 80% of respondents who did test their water:
  • The most common time since testing is 3-10 years ago (29%).
The strongest considerations for testing were:
  • “I wanted to know if the water was safe to drink” (77%)
  • “I had it tested as part of a real estate transaction, or a real estate agent recommended it” (40%).
Survey Analysis

• 74% of respondents understood the test results they received from the lab.

• 64% of respondents initially understood what actions they should take in response to the test results.

• Among the 20% of respondents who did not test their water, the most common reasons for not testing were:

  • “I meant to have it tested but never got around to it” (42%)
  • “I didn’t know how to go about having it tested” (38%)
  • “The water looks, smells, and tastes clean” (33%)

• About 40% of well owners from higher risk arsenic towns have not tested their water for arsenic.
Survey Analysis

• Among the 67% of respondents who treat their water:
  - 39% have never tested their water since starting to use their water treatment system
  - 46% of those who treat their water and state that their intent is to remove arsenic actually do not have treatment systems that are effective at arsenic removal.

• Among the 33% of respondents who do not treat their water:
  - Only 46% have had their water tested, and received results suggesting there was no need to treat.
  - 16% believe a treatment system is too expensive or difficult to install, use, and maintain.
Section 2: Current efforts to address arsenic in well water in NH
A comprehensive public health approach to addressing arsenic in drinking water

Social Ecological Model

- 2015 NH House Bill 498
- EPA EE Grant in 3 NH High Schools
- Hearing an NHPR story about DTMSRP
- Annual Well Water Test Kit Distribution Event
- Talking to your neighbor about her well testing

A single entity can “solve” arsenic in NH. Partners and long-term commitment are key!
Current Efforts – Research

Dartmouth Toxic Metals Superfund Research Program

1. Arsenic uptake, transport and storage in plants
2. Arsenic and innate immunity in human lung
3. Epidemiology, biomarkers and exposure assessment of metals

Partners: Dartmouth SRP, International and national academic partners, federal agencies, the general public, NH DES, The Dartmouth Children Center
Arsonic and Risk Communication

Mental Models

A mental model can be thought of as a causal diagram we all create to help us understand something. This mental model can contain both accurate and inaccurate information. It can also contain personal beliefs, facts and myths about a subject.

**Partners** Dartmouth SRP, State agency partners, academic experts, community members
Current Efforts – Research

US EPA Environmental Education Grant

“Building School and Community Collaborations to eliminate Arsenic from Drinking Water in Maine and New Hampshire: A Model for the US”

Three NH and 4 ME Schools

Partners: Dartmouth SRP, Schools, Students, Towns, US EPA, Mount Desert Island Biological Lab, Maine partners, Southern New Hampshire Health Education Center

NH DHHS Biomonitoring Program – Study # 1

A targeted public health study looking at arsenic and uranium in well water and whether those chemicals are getting into people in NH.

Free well water tests for participants

Partners: NH residents in participating towns, members of the Technical Advisory Group
Current Efforts – Laws and Regulations

2015 – NH House Bill 498
An act relative to notification of radon and arsenic testing
Expanded notification (with Purchase and Sales Agreement), adding arsenic and radon in water

Partners: NH DHHS, Members of State Government, Community Members, NH Association of Realtors

Town Regulations
Some towns in NH have created town specific well testing requirements. They include:
Bow, Derry, Pelham, Salem, Windham, Chester

Partners: Members of town government, community members

Private Wells - POTABLE WATER TEST RESULTS.
The Board of Selectmen of the Town of Chester, New Hampshire acting under R.S.A. Chapter 147 Section 1, and by any other power thereto enabling and acting hereunder and in accordance therewith, has, in the interest of and for the preservation of the public health, duly made and adopted the following rules and regulations

Prior to the issuance of a Certificate of Occupancy for any dwelling supplied by a private well system, the owner shall submit to the Building Inspector the water quality test results, from a NH Certified Well Testing Lab, for the NHDES recommended Standard Analysis as stated in Environmental Fact Sheet1,2 WD-DWGB-2-1 dated 2011, as may be amended.
Current Efforts – Tools and Resources

**NH DES Be Well Informed Web Tool**
Provide an interpretation of lab results in terms of water quality standards. Provides health and treatment technology information. 3,000 users to date

**Partners:** NH DES, Community Members, NH DHHS lab, private laboratories, water treatment vendors

**Well Water Community Action Toolkit**
A comprehensive planning tool designed to help communities increase private well water testing and treatment

**Partners** Dartmouth SRP, NH DES, CDC, Technical Advisory Committee, Community Health Institute, Community Members
Current Efforts – Education and Outreach

Community Presentations

Community well testing events and workshops discussing: Private wells, contaminants, testing, treatment and community engagement

• Workshops held in 7 towns in 2016; 8 testing events
• 2 workshops scheduled for April-May 2017

Partners: Dartmouth SRP, NH DHHS PH Lab, NH DES, Community Members
Current Efforts – Education and Outreach

Arsenic and You Website
Comprehensive information on arsenic in food, water, and other sources.

Partners: Dartmouth SRP, Academic partners, community members, Advisory Board

New Hampshire Arsenic Consortium Meeting
Mission: to help the public, private well users, become aware of the presence and health implications of arsenic in the food and water supply, the importance of testing private wells for arsenic and other common contaminants and how to take the appropriate next steps to reduce their exposure to arsenic from their food and water supply.

Partners: NH DES, Dartmouth SRP, NE USGS, NH DHHS, Academic researchers, general public
Section 3: Working with your community to improve well water testing
A 2014/2015 NH DES/Dartmouth grant showed town testing events were effective at increasing testing when preceded by town communications. Testing events held in isolation were ineffective at increasing testing.
Community Toolkit

Toolkit Table of Contents

• Introduction
• Where should you start?
• Creating a plan that works for you and your community
  • Assessment
  • Capacity Building
  • Planning
  • Implementation
  • Monitoring
• Additional Resources and Local Experts
• Appendix A -- Interventions and Communication Materials
• Appendix B -- What works in NH
• Appendix C -- Planning Worksheets
What can you do?

• Test and treat your well as needed
  • Visit Be Well Informed to understand your lab report and learn about treatment technologies

• Educate yourself on the topic
  • Reach out to experts
  • Attend the Arsenic Consortium Meeting
  • Visit the Arsenic and You website

• Work with town partners and community members to:
  • Use the Community Well Water Toolkit to plan
  • Hold a community presentation
  • Discuss town regulation

• Volunteer for the Biomonitoring project (if appropriate)
Thank You!

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DARTMOUTH TOXIC METALS
SUPERFUND RESEARCH PROGRAM

National Institutes of Health

CDC Grant # 1U53/EH001110-01

Grant #P42ES07373