

* A Better Way to Ensure Safe, Potable Water



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NH Health Officers Association
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* Guidance on Clarifying Potable Water Definition

- * Guidance to be developed with NH Building Code Officials, NH Health Officers, and NH Planners Association.
- * Will focus on a more specific local standard and associated permits/policies changes.
- * Timeline - Done by December 2013; published & distributed through associations.

IPC Definition of Potable Water:
"Water free from impurities in quantities sufficient to cause disease..."



* American Academy of Pediatrics Water Testing Recommendations (2009)

- * States
 - * require testing at sale of home
- * Local governments
 - * Provide info about local GW conditions, recommendations for testing
 - * Tests should be convenient, free or inexpensive
- * Pediatricians
 - * Ask patients about private well use
 - * Recommend testing according to algorithm

American Academy of Pediatrics, Committee on Environmental Health and Committee on Infectious Diseases (2009). Drinking Water From Private Wells and Risks to Children. Pediatrics 2009;123:1599-1605.

* We care about our health



❖ When people who hadn't tested their water were asked, **"Why haven't you tested water from your well?"** the top ten reasons they gave were ...

1. We've been drinking it for years - **53%**
2. Didn't know what to test for - **41%**
3. Don't know how to test - **35%**
4. It's probably fine - **25%**
5. Didn't know I should test it - **17%**
6. Testing costs too much - **17%**
7. I'll Wait for others to find problems - **12%**
8. Dealing with problem would be to costly - **12%**
9. Missed the testing program - **8%**
10. I don't want to know - **8%**

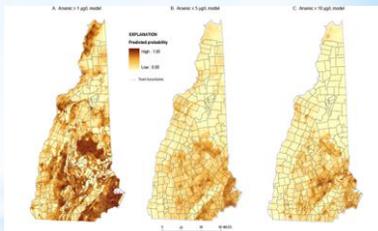
Source: (Barbara Liukkonen, U of MN Extension; Lori Severtson, School of Nursing, UW-Madison; Ruth Kline-Robach, Institute of Water Resources, MSU-East Lansing, 2008)

* Risk Perception & Well Water

Probability of Risk Ranking at 5 PPB or >

1. Barrington
2. Bow
3. Brentwood
4. Chichester
5. Concord
6. East Kingston
7. Epsom
8. Goffstown
9. Hampton Falls
10. Hollis
11. Kensington
12. Londonderry
13. Loudon
14. New Boston
15. Pelham
16. Pembroke
17. Rochester
18. Rollinsford
19. Stratham
20. Weare

"USGS scientists find that widespread occurrence of low-level arsenic is likely in New Hampshire" (2013)



EXPLANATION
Estimated arsenic
High > 100
Low < 500
Non-detectable

- * NH doesn't have a clear definition of potable water
- * Exposure to contaminants in groundwater have harmful effects.
- * Statewide action to test and treat well water is not likely in the near-term
- * Defining potable water is a first step to reducing exposure (through testing and treatment)

* Mitigating Health Risk & Defining Potable Water

- * 520,000 (est.) residents use private wells.
- * No evidence of widespread voluntary water quality testing by well owners.
- * Risk of exposure to natural and anthropogenic contaminants.

* 40% of NH Rely on "Private" (domestic) wells

* Private wells: Contaminants and Testing in NH

- * 1 in 5 private wells expected to exceed the health-based standard for arsenic. (100,000+ people)
- * No state requirements to test when a well is installed, property transferred or when a building is to be occupied.
- * Only a handful of municipalities have any well testing requirements (Salem, Pelham, Windham, Bow)



NH - Known as the "Arsenic State", we once had over 300 arsenic mines

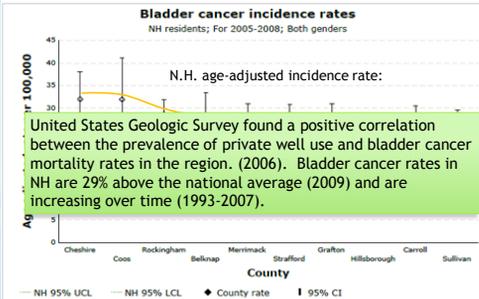
- * "Any rainfall 4 days prior was significantly associated with an 11% increase in AGI visits."

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2957926/> (Association between Rainfall and Pediatric Emergency Department Visits for Acute Gastrointestinal Illness, 2010. Children's Hospital of Wisconsin ED in Wauwatosa, Wisconsin)




* How may this affect our health?

* Chronic exposure to Arsenic - Bladder cancer and other diseases...



United States Geologic Survey found a positive correlation between the prevalence of private well use and bladder cancer mortality rates in the region. (2006). Bladder cancer rates in NH are 29% above the national average (2009) and are increasing over time (1993-2007).

Source: NH Environmental Health Tracking Program (2012)

New Private Wells Drilled, 1998-2012

(N= 56,852)
Trend line (moving average)



- * New Privately Owned Housing Units Authorized
- * New Hampshire 2296 (all) units (2012)
- * <http://www.census.gov/construction/bps/stateannual.html>

* Every year new bedrock wells are drilled. Potable?

*** Safe, Potable Water**



What is potable water?

* It meets quantifiable health-based (MCL) standards set by DES/EPA for specific contaminants (like arsenic)



* If not, it is treated to reduce contaminants using appropriate treatment technology

*** Define potable water in measurable terms**

* IPC Definition of "Potable Water":
"Water free from impurities in quantities sufficient to cause disease...huh"



*** What impurities? How "free from impurities"?**

*** How to define Potable Water?**

* Guide municipalities to define "potable" as (at a minimum) meeting all DES recommended tests (16 analytes)

* AND - Additional parameters based on local "circumstances" (nearby contamination, land uses, etc.)

DES recommends having the following tests done every 3 to 5 years, except for bacteria and nitrate, which are recommended annually.

Standard Analysis	
Arsenic	Iron
Bacteria	Lead
Chloride	Manganese
Copper	Nitrate/Nitrite
Fluoride	pH
Hardness	Sodium
Radiological Analysis	
Radon	
Uranium	
Analytical Gross Alpha	
VOCs	

*** What if Water Doesn't Meet Standards? Treatment**

* In medieval times, ale was safer to drink than (treating water through fermentation was common practice)

* Treatment - "point of use" or "whole house" to MCL standards

* Treatment - either "point of use" or "whole house" to MCL standards



* Building permit - Could address whether there is adequate amount of water with a "pump test" done by a licensed hydrologist.



*** Building Permit (with pump test attached)**

- *The Town of Salem requires water supplies in new construction to meet water quality standards before obtaining a certificate of occupancy.



- *The testing requirement also applies to replacement wells. (Town of Salem Disposal Systems and Wells §253-10 D)

*Certificate of Occupancy

- *The town's subdivision regulations require the applicant to present evidence of suitable water supply to the code enforcement officer

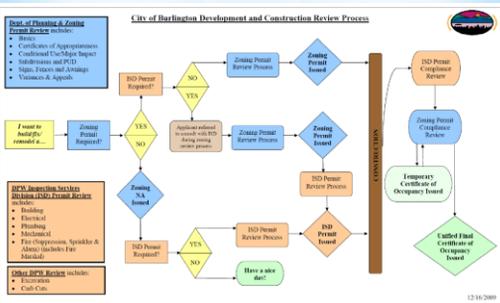


- *Indicating adequate potable water to supply the foreseeable needs of the subdivision prior to a building permit Town of Wakefield, New Hampshire - "Subdivision Regulations" and "Subdivision Plan Application"

*<http://www.wakefieldnh.com/Forms.htm>

*Plan Approvals

*Where in the Process? (Test/Treat)



Burlington has a bifurcated 2-step process where Zoning Permits are issued by the Planning and Zoning Office first, and then a Construction Permit is issued by the Dept. of Public Works. This process allows for substantial concurrency, in order to speed up processing times. The final step occurs once all the work is finished, when a Unified Certificate of Occupancy is issued by the Code Enforcement Office. Source: <http://www.burlington.gov/2272/ zoning/Permitting-Process/Review-UCO-unchi.htm>

Questions!

