Supplemental Digital Content

Questionnaire

This questionnaire has 32 items and will take about 10 minutes to complete

ID Number _____

Please circle your answer to each question

I. Questions about your well.

1. Who owns your well?
   a. Me / my family
   b. Share ownership with my neighbors
   c. Landlord / Landlady
   d. Other (please specify)

2. How was your well made?
   a. Drilled
   b. Sandpoint
   c. Bored
   d. Dug
   e. Don't know
   f. Other (please specify) _____

3. Approximately how many feet deep is your well? _____ Don't know_____

4. About how old is your well (i.e. what year was it installed)? _____

6. Are you aware of any lead pipes/service lines, lead soldered copper lines, or old brass fixtures in your well or plumbing system?
   a. Yes If so, how long ago:_____
   b. No

7. Have you added or replaced any interior water pipes while living in your current home?
   a. Yes If so, how long ago:_____
   b. No

8. Have you added or replaced any interior plumbing fixtures while living in your current home?
   a. Yes
   b. No

9. How many years have you lived at this residence? _____

10. What year was your home built (approximately)? _____ Don't know_____

II. Water used in your home

11. Please indicate how you feel about the following statement:

    "My tap water is safe to drink."

    a. I agree strongly
    b. I agree somewhat
    c. I neither agree nor disagree
    d. I disagree somewhat
    e. I disagree strongly

12. Please indicate how you feel about the following statement:

    "Bottled water is safer than my tap water."

    a. I agree strongly
    b. I agree somewhat
    c. I neither agree nor disagree
    d. I disagree somewhat
    e. I disagree strongly

13. What is the most common source of drinking water in your home? Please check one:

    a. Water straight from the tap
    b. Water from the tap, treated with a treatment device
    c. Bottled water
    d. Don't know
    e. Other (please specify)

14. On average, about how many cups of tap water do you drink each day from your home? This includes water used to make hot or cold drinks (8 oz. of water is equal to one cup. One standard 16 oz. bottle of water equals 2 cups.).

    a. None b. 1-3 cups c. 4-7 cups d. 8 or more cups

15. On average, about how many cups of bottled water do you drink each day from your home? This includes water used to make hot or cold drinks (8 oz. of water is equal to one cup. One standard 16 oz. bottle of water equals 2 cups.).

    a. None b. 1-3 cups c. 4-7 cups d. 8 or more cups

16. Do you have any equipment in your home to make the tap water better or safer to drink? If so, please select all that apply:

    a. Yes, it is attached directly to the water pipes: *(<u>select all that apply</u>)*

        i. Reverse osmosis unit
        ii. Distilled water system
        iii. Ultraviolet light system
        iv. Water softener

    b. Yes, I have a device/filter under the sink that hooks up to the taps

    c. Yes, I have water pitchers that contain a filter (Brita, etc.)

    d. Other, please explain _____

    _____

    e. No I do not have any equipment in my home to make tap water better.

17. Have you ever had your water tested for lead? If no, skip to question 20.

    a. Yes If yes, when (mm/dd/yy):_____

    b. No

18. If yes, was a lead problem discovered?

    a. Yes

    b. No

19. Do you cook with: *check all that apply*
    a. Tap water
    b. Bottled water
    c. Filtered (tap) water
    d. All of the above

20. On average, about how many cups of bottled or filtered/treated or unfiltered tap water do you use to cook each day? (8 oz. of water is equal to one cup. One standard 16 oz. bottle of water equals 2 cups.)

a. None b. 1-3 cups c. 4-7 cups d. 8 or more cups

21. Before you enrolled in this study, did you know that well water could be a source of lead?
    a. Yes
    b. No

22. Are you aware of the drinking water problems of people who live in Flint, Michigan?
    c. Yes (continue to question 23)
    d. No (you can skip question 24)

23. Did learning about Flint make you concerned that your well water might have elevated lead levels?
    a. Yes
    b. No

III. This section asks questions about the people who live in your home.

24. How many people live in this house?
    a. who are 0-3 years old? _____
    b. who are 4-5 years old? _____
    c. who are 6-10 years old? _____
    d. who are 11-17 years old? _____
    e. who are18-64 years old? _____
    f. 65 or more years old? _____

25. Have you prepared infant formula using your well water?
    a. Yes If yes, approximately in which years:_____
    b. No

26. How much do you spend each year on upkeep of your well?
    a. Less than $100
    b. $100 or more

27. What is your gender?

a. I am male b. I am female c. Prefer not to answer

28. Please select your race/ethnicity.
    a. Non-Hispanic white
    b. Non-Hispanic black
    c. Hispanic
    d. Other

29. How old are you?

a. 25 and under b. 26-35 c. 36-45 d. 46-55 e. 56-65 f. 66 and over

30. What is the highest level of schooling that you have completed? Please check one:
    a. Some high school
    b. High school graduate
    c. College or technical school graduate
    d. University graduate
    e. Post-graduate degree
    f. Other (please specify)

       _____

    g. Prefer not to answer

31. What is your total household annual income, before taxes? Please check one:
    a. Under $25,000
    b. $25,000-$54,999
    c. $55,000 and over
    d. Prefer not to answer

32. Please tell us anything else you would like to convey about your well and/or plumbing fixtures:

_____
_____
_____
_____
_____
_____

Thank you for completing this questionnaire.

Please put this completed questionnaire in the large zip-lock bag and place the bag in the shipping box.

Detailed description of initial laboratory analyses

Pb and copper were analyzed using USEPA Method 200.9.[1] The minimum detection limit and limit of quantification for this method was 0.76 ppb. Samples were preserved with 0.2% nitric acid and subsequently digested in 3% nitric acid before analysis. Measurements were made using an Agilent Technologies 240Z Graphite Furnace Atomic Absorption Spectrometer, with Zeeman background correction, a PSD 120 Programmable Sample Dispenser, and SpectAA software. Samples with a total WLL ≥ 3ppb were filtered through a 0.45µm filter for dissolved Pb analysis using the same analytical method. Particulate Pb was calculated as the difference between total Pb and dissolved Pb.

Anions (sulfate, chloride, and, for follow-up sampling, nitrate, fluoride, and bromide) were analyzed using USEPA Method 300.0.[2] Only sulfate samples required preservation via cooling to 4°C. Both species were analyzed using a Dionex ICS-5000 ion chromatograph (25-microliter injection loop) with a conductivity detector, an AS-DV automated sampler, and an AERS 500 eluent suppressor. Separations were carried out isocratically on an IonPac AS14 analytical column, with an AG14 guard column, using a mixture of 1.0 mM sodium bicarbonate and 3.5 mM sodium carbonate as an eluant. Chromeleon software was used to collect and process the data. The method detection limit for chloride and sulfate was 0.16 mg/L and 0.21 mg/L, respectively.

Alkalinity measured in the form of calcium carbonate ($CaCO_3$) was determined by titration using Standard Method S2320B.[3] Laboratory pH measurements were analyzed using USEPA Method 150.1[4(p1)] using a combination electrode and a pH meter. The procedure was automated, using a Mettler Toledo T70 titrator, a Mettler DGi111-SC combined glass pH

electrode, and a Rondo autosampler. LabX light software was used to collect and process the data.

Detailed description of additional follow-up laboratory analyses.

A multi-sonde (Hydrolab MS5) was used to measure water temperature, pH, specific conductance (SpC), oxidation-reduction potential (ORP), and dissolved oxygen (DO) in the field. Well water was then passed through a 0.45 μm filter capsule and collected in bottles for chemical analysis. Samples were collected in separate bottles to test for (1) anions, (2) metals, (3) alkalinity, (4) ammonium, and (5) dissolved organic carbon (DOC). The metals, ammonium, and organic carbon samples were preserved in the field with high purity acids. In accordance with laboratory protocol, bottles were put in an ice-filled cooler for transport back to the analytical laboratory in Champaign, Illinois.

Anions (sulfate, chloride, and, for follow-up testing, nitrate, fluoride, and bromide) were analyzed using USEPA Method 300.0.[2] Alkalinity measured in the form of calcium carbonate ($CaCO_3$) was determined by titration using Standard Method S2320B.[3] Laboratory pH measurements were analyzed using USEPA Method 150.1.[4(p1)] Additional analyses for well water samples collected in follow-up sampling included complete cations/metals, DOC, and ammonium. Metals/cations were analyzed using a Varian Vista Pro CCD simultaneous inductively coupled plasma optical emission spectrometer following USEPA Method 200.7. Samples were digested in 2% nitric acid and 5% hydrochloric acid prior to analysis. DOC was analyzed with a Shimadzu TOC-L total organic carbon analyzer, an ASI-L autosampler, and TOC-Control L software, using Standard Methods 5310B. Ammonium analyses were performed using automated colorimetry following USEPA Method 350.1. Reagents and samples were

mixed and analyzed using a Lachat QuikChem 8500 Series 2 Flow-Injection Analyzer with Omnion software.

References

1. Environmental Monitoring Systems. Determination of Trace Elements by Stabilized Temperature Graphite Furnace Atomic Absorption. Published online 1996. Accessed April 18, 2020. https://nepis.epa.gov/Exe/ZyNET.exe/300036HL.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000012%5C300036HL.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL#

2. Environmental Monitoring Systems. *Determination of Inorganic Anions by Ion Chromatography Method 300.0*. US EPA; 1993:388-417.

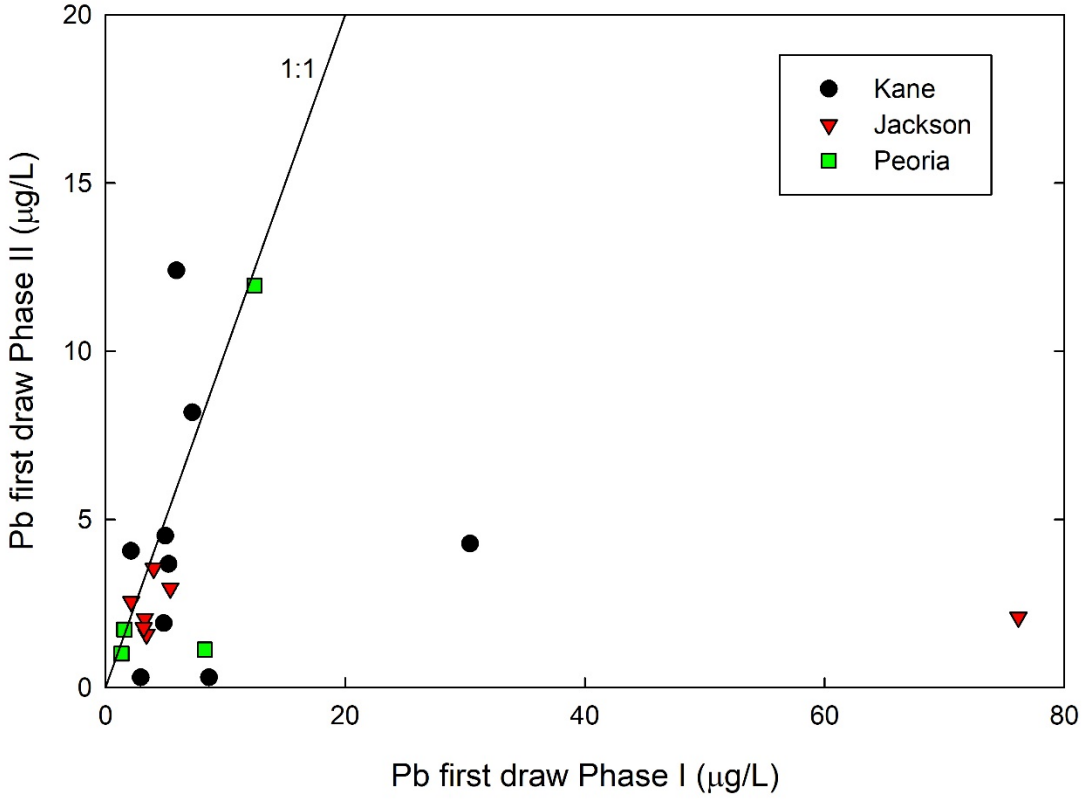
3. American Public Health. *Standard Methods for the Examination of Water and Wastewater.*; 1999.

4. *US EPA Method 150.1 Methods of Chemical Analysis of Water and Wastes*. U.S. Environmental Protection Agency; 1983.

Supplemental Table 1: Summary of WLLs in 1st liter (first draw) and 7th liter for initial sampling.

County	Sample	N	Detectable Pb (N > 0.76 ppb, %)	Pb > action limit (N > 15 ppb, %)	Maximum (ppb)
Jackson	1st liter, total	38	20 (52.6)	2 (5.3)	76.2
	7th liter, total	38	11 (28.9)	0 (0.0)	3.93
	1st liter, dissolved	7	4 (57.1)	0 (0.0)	4.49
	7th liter, dissolved	1	1 (100.0)	0 (0.0)	3.01
Kane	1st liter, total	62	27 (43.5)	2 (3.2)	47.0
	7th liter, total	62	8 (12.9)	0 (0.0)	3.37
	1st liter, dissolved	9	5 (55.6)	0 (0.0)	5.79
	7th liter, dissolved	0	0 (0.0)	0 (0.0)	-
Peoria	1st liter, total	51	26 (51.0)	1 (2.0)	15.4
	7th liter, total	51	15 (29.4)	0 (0.0)	5.00
	1st liter, dissolved	7	5 (7.1)	0 (0.0)	13.0
	7th liter, dissolved	2	2 (100.0)	0 (0.0)	3.41
All Counties	1st liter, total	151	73 (48.3)	5 (3.3)	76.2
	7th liter, total	151	34 (22.5)	0 (0.0)	5.00
	1st liter, dissolved	23	14 (60.9)	0 (0.0)	13.0
	7th liter, dissolved	3	3 (100.0)	0 (0.0)	3.41

Supplemental Figure 1: Dissolved lead (Pb) vs. total lead (Pb) for selected Phase I first draw samples. Line represents 1:1 relationship.



Supplemental Figure 2: First draw lead (Pb) and copper (Cu) concentrations vs. pH for samples collected in follow-up.