

SUPPORTING INFORMATION

Profiling private water systems to identify patterns of waterborne lead exposure

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DESCRIPTION OF SUPPORTING INFORMATION

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Figure S1. LSI values and pH measurements plotted against 1 L first draw lead concentrations

Table S1. Plumbing characteristics documented during site inspection.

Table S2. Lead measurements collected at the 15 households in follow-up study

Previous extension efforts have recorded the Langelier Saturation Index (LSI) to communicate water corrosivity as this index is a measure of the water's potential to form calcium carbonate scale.¹ In this study, alkalinity and pH measurements were used in section 4.2. The Virginia Cooperative Extension no longer reports LSI values to homeowners, but rather discusses pH as a potential indicator of aggressive water and corrosion concerns. Figure S1 shows 1 L first draw lead concentrations collected at the kitchen cold-water tap compared to LSI values and pH measurements.

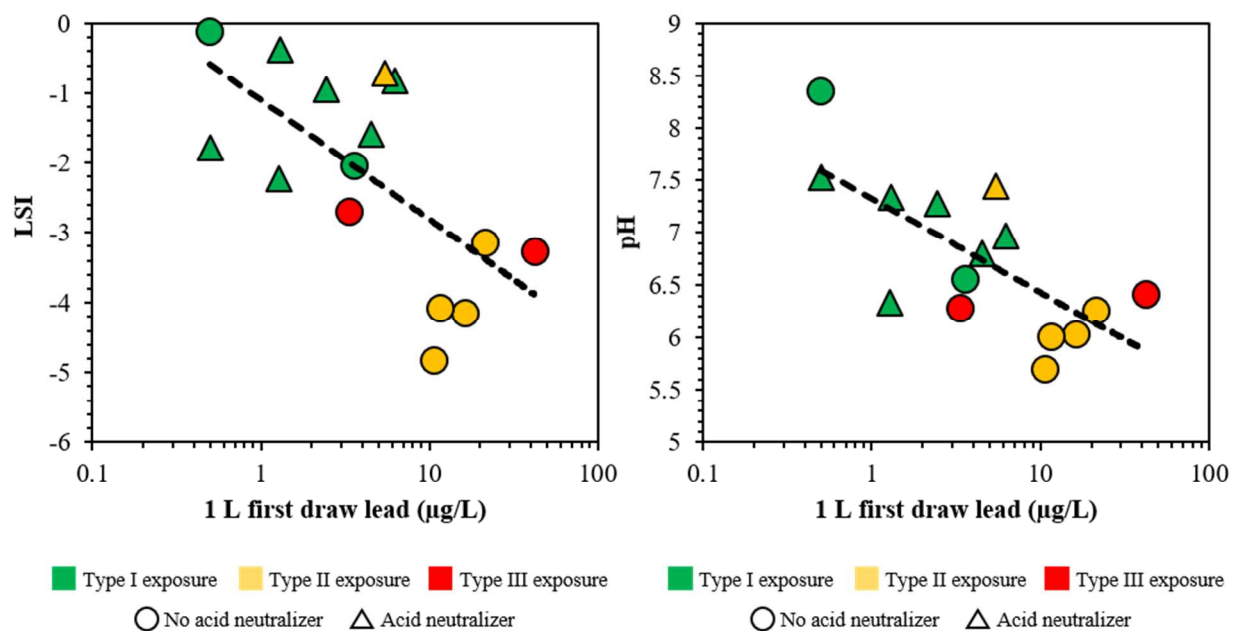


Figure S1. (a) LSI values plotted against 1 L first draw lead concentrations and (b) pH measurements plotted against 1 L first draw lead concentrations. The colors correspond to the different types of exposure observed, and different shapes correspond to the presence/absence of an acid neutralizer within the home.

Table S1. Characteristics of the plumbing network were documented during site inspection. Plumbing at the kitchen and bathroom sinks ('outlets') and pressure tank was inspected. The ditch pipe refers to the horizontal pipe connecting the premise plumbing and the well plumbing.

Site ID	Flow rate at kitchen faucet (L/min)	Premise plumbing material observed at outlets and pressure tank	Fitting material observed at outlets and pressure tank	Ditch pipe material observed at pressure tank
P-1	4.4	Plastic	Brass	Plastic
P-2	5.8	Plastic	Brass & Plastic	Black plastic
P-3	4.2	Copper & Plastic	Brass & Plastic	Plastic
P-4	5.2	Plastic	Brass & Plastic	Black plastic
P-5	3.4	Copper & Plastic	Brass	Plastic
P-6	3.5	Plastic	Brass	Black plastic
P-7	4.2	Copper & Plastic	Brass	Copper
P-8	9.5	Plastic	Brass & Plastic	Black plastic
P-9	3.9	Copper & Plastic	Brass & Plastic	Black plastic
P-10	4.9	Copper & Plastic	Brass	Black plastic
P-11	5.0	Plastic	Brass	Black plastic
P-12	5.7	Plastic	Brass	Black plastic
P-13	4.6	Plastic	Brass	Black plastic
P-14	4.2	Copper	Brass & Plastic	Black plastic
P-15	3.8	Plastic	Brass	Black plastic

Table S2. Lead data for 15 households in follow-up study. The patterns of waterborne lead exposure (Type I-III) correspond to the patterns discussed in the lead profiling effort in section 4.4. Further information regarding collection of samples C1-B2 can be found in section 3.2 and Figure 1. Lead measurements below the detection limit of 1 µg/L were recorded as “BDL”. If the volume of water stored in the plumbing between the kitchen sink and pressure tank was less than 3 L, no sample was collected and is recorded as “NS”.

Site ID	Exposure Pattern	C1	C2	C3	C4	PT1	PT2	F1	F2	F3	F4	F5	H1	H2	B1	B2
P-1	Type I	3.7	BDL	NS	NS	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.4	BDL	3.8	BDL
P-2		3.6	BDL	BDL	1.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.1	BDL	21.6	1.5
P-4		12.6	4.1	1.8	NS	3.1	2.4	1.3	BDL	BDL	BDL	BDL	4.5	7.3	11.8	2.3
P-5		BDL	BDL	BDL	NS	BDL	2.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
P-9		5.2	4.3	1.7	NS	BDL	BDL	BDL	BDL	BDL	1.3	BDL	2.7	BDL	3.9	1.1
P-10		2.5	2.4	NS	NS	4.1	BDL	BDL	BDL	BDL	BDL	BDL	2.5	3.6	4.1	1.8
P-11		1.1	BDL	BDL	NS	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.1	1.3
P-15		2.3	4.0	2.9	NS	2.5	BDL	1.3	BDL	BDL	BDL	BDL	1.8	2.7	BDL	BDL
P-3	Type II	4.4	3.0	NS	NS	BDL	BDL	BDL	3.3	2.9	43.1	1.4	7.2	8.6	19.7	2.7
P-8		3.7	54.9	67.0	NS	3.5	7.5	BDL	BDL	BDL	BDL	BDL	410.7	122.6	23.5	132.5
P-6	Type III	4.2	5.9	NS	NS	4.2	2.1	2.2	2.1	2.1	1.8	1.7	6.6	4.0	13.4	11.5
P-7		8.0	11.4	11.0	NS	5.1	4.9	4.3	3.4	3.2	2.9	2.5	2.3	BDL	17.5	2.8
P-12		26.0	19.6	NS	NS	11.3	6.3	3.4	3.5	3.3	2.9	2.4	10.0	5.5	21.0	4.3
P-13		23.4	13.9	NS	NS	11.4	7.0	4.8	2.2	2.0	2.8	2.7	15.7	15.9	131.3	17.7
P-14		12.9	11.1	NS	NS	8.8	7.4	6.1	4.3	3.9	3.8	4.6	11.0	9.4	18.0	6.5

REFERENCES

1. Snoeyink, V. L.; Wagner, I., Principles of corrosion of water distribution systems. In *Internal Corrosion of Water Distribution Systems*, Second ed.; American Water Works Association Research Foundation: Denver, CO, 1996.