

Eagle Lake + Building Infrastructure: A view of drinking water quality across COA Campus

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Introduction

This study reveals the chemistry of Eagle Lake water once it reaches the faucet of a household. The College of the Atlantic campus was used to compare water chemistry between buildings in a relative close proximity.

Eagle Lake is the water source for the town of Bar Harbor

- Elevated watershed within Acadia National Park boundary
- Low Turbidity and biological activity
- Heavy metals and pesticides are not a concern
- Treatment with chlorine, lime, and fluoride

MCL and Secondary MCL

The Maximum Contaminant Level (MCL) of an element determines the highest allowed limit in the water, and the Secondary MCL determines the concentration limit of an element considering the aesthetics conditions (color, odor, and taste).

LD153: An Act To Strengthen Testing for Lead in School Drinking Water

LD153 is an initiative to test the water in all 12-k schools across Maine for lead concentration, and to maintain them below their limit of 4 ppb. In this study the LD153 initiative is used as a parameter to identify taps on the COA campus containing lead above 4 ppb.

Methods

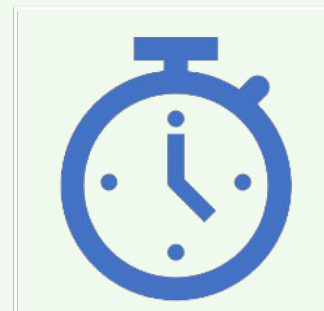
Samples were collected from 16 locations around campus using a first draw test in both taps and water dispensers.

Samples were sent to the Dartmouth Toxicology Laboratory, where they were analyzed by IPC-MS (inductively coupled plasma-mass-spectrometry) for 27 elemental concentrations; 14 elements had concentrations <0.5 ppb and below the detection limit of the instrument.

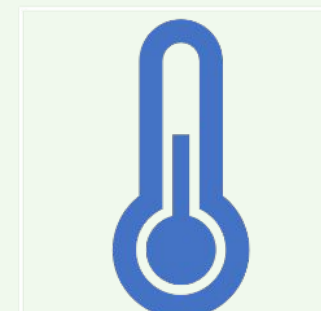
Types of sampling



Single sampling (Once)



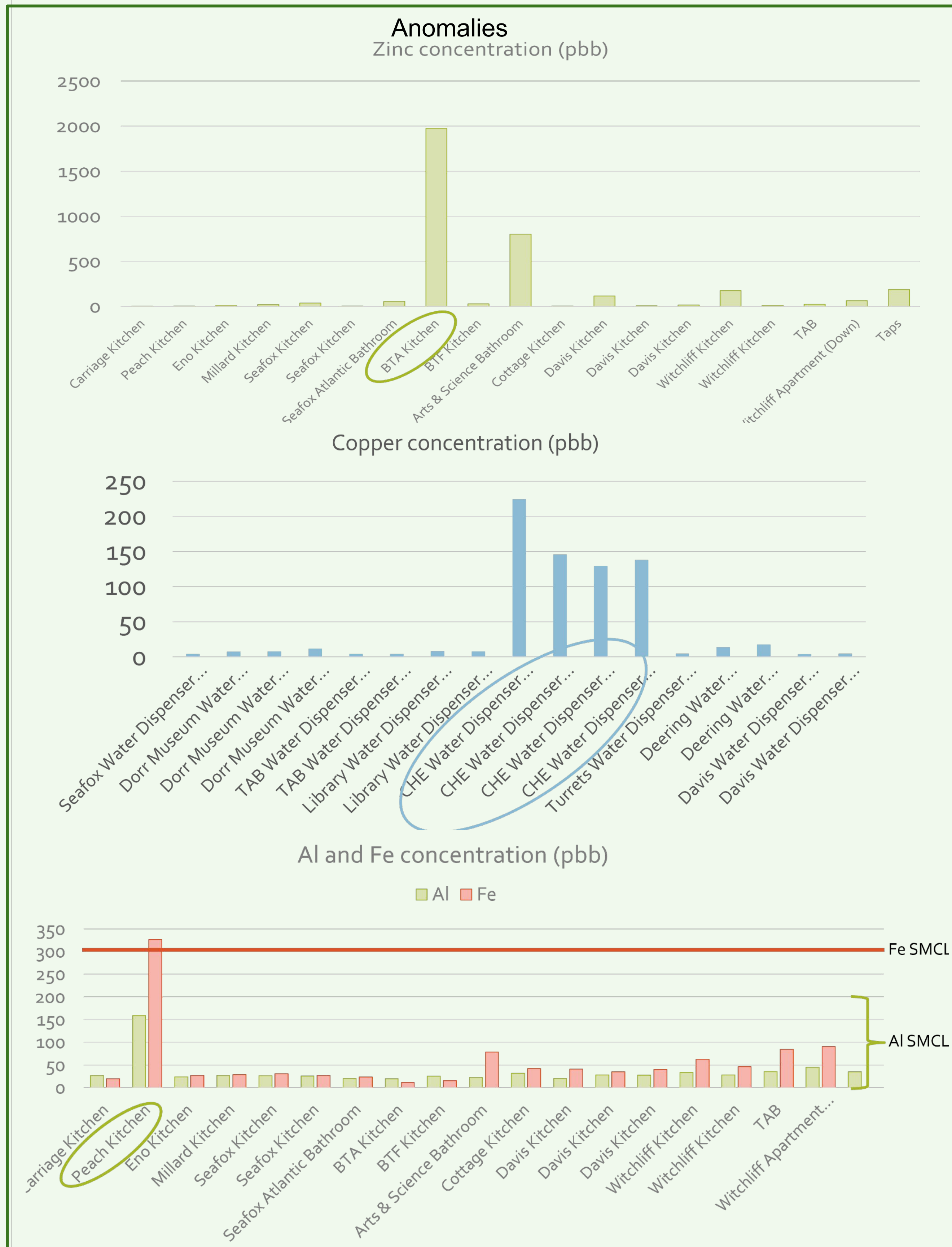
Immediate and post- 5 min



Hot and Cold samples

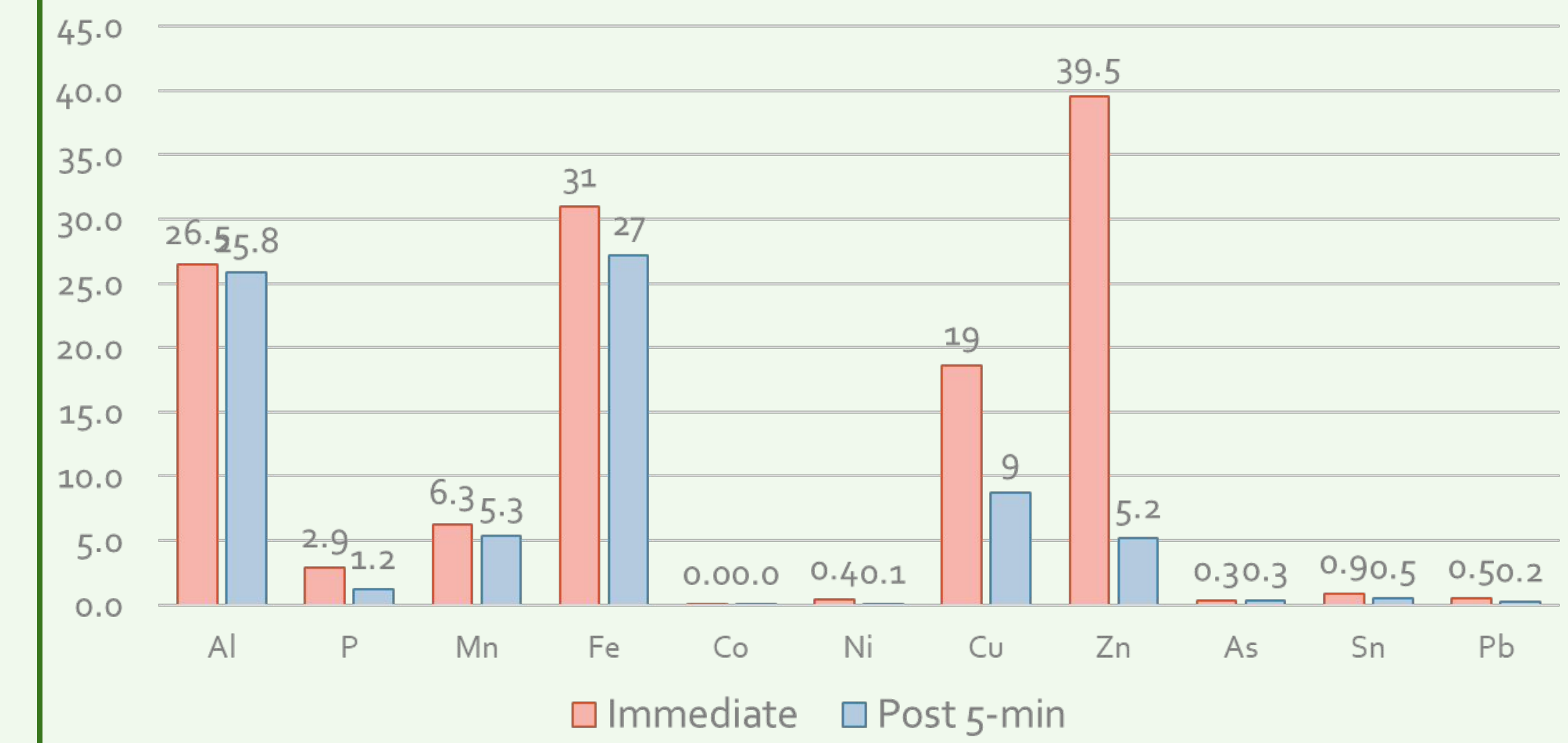
Results

- No elements above MCL

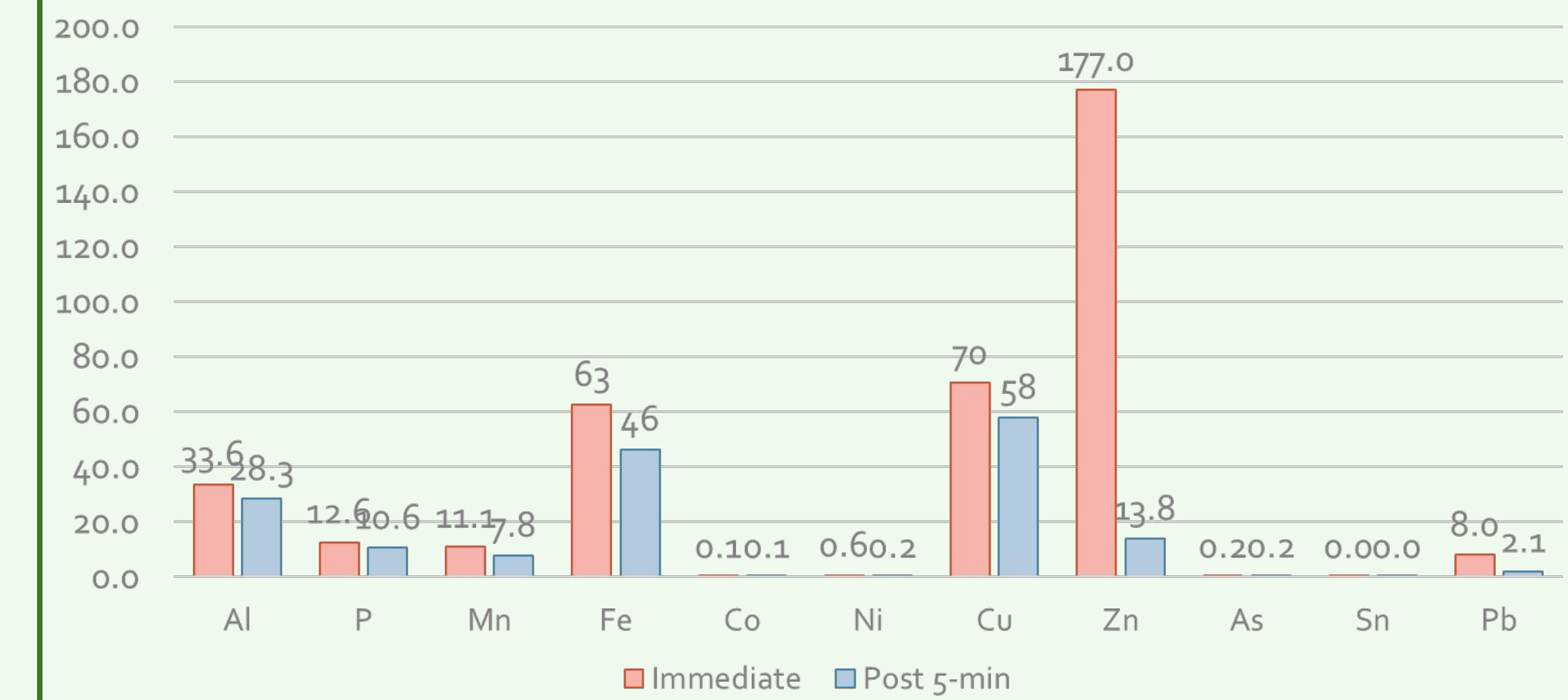


Immediate Draw vs Post-5 Minutes Draw

Seafoxf Kitchen (PPB)



Witchcliff Kitchen (ppb)



Conclusion

Concentrations of analytes decrease after running the faucet suggesting that the piping is contributing to the water chemistry.

Elemental concentrations in water from filtered dispenser stay constant regardless of time of draw or temperature of water.

Bar Harbor receives clean water from Eagle Lake, the concentration of analytes depends on each household's plumbing system.

Residents should be aware of the need for additional testing to ensure household lead levels are acceptable for consumption