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Mark Margolies
Cold Spring Harbor CSD
75 Goose Hill Road
Cold Spring Harbor, NY 11724

Dear Mr. Margolies,

Executive Summary

Enviroscience Consultants, Inc. has performed lead in water testing throughout the Cold Spring Harbor School District in accordance with United States Environmental Protection Agency's "3T's for Reducing Lead in Drinking Water in Schools", October, 2006 and New York State Department of Health Subpart 67-4 of Title 10, September, 2016. Primary and secondary drinking water source locations in each of the school buildings were assessed. Initial first draw samples were collected at each location tested. Eighteen (18) locations were sampled in the Jr./Sr. High School (including Field House), fifteen (15) locations were sampled at Goosehill Primary School, fourteen (14) locations were sampled at West Side Elementary School, and thirty-four (34) locations were sampled at Lloyd Harbor Elementary School.

First draw samples with concentrations above 15 ppb were identified as found in the Results section below. These locations were then sampled using 15 second and 60 second flush methods, to assess the source of lead contamination. Sample locations were motionless for 8 to 18 hours, in accordance with Subpart 67-4. Results of these samples can be found in the corresponding table for each school as found in each appendix.

Remediation is required in the following locations. The type of remediation is indicated as either fixture replacement (FR), fixture and associated supply lines and valves replacement (FRSLV) or replacement of fixture, supply lines, valves and plumbing assessment (FRSLVPA), or the implementation of signage warning against using the fixture as a drinking water source (SIGN). The district may also choose to simply remove the fixture and/or cap the lines leading to it.

Remediation is required in the following locations.

Junior/Senior High School

Location and Remediation Type	
Maintenance Area Slop Sink	Offline
Fitness Center	Offline

All elevated locations should be taken off line until the remediation is completed. Any other drinking water sources in these locations that have not been tested should be tested.

Background, Methods and Results

Background

Lead is a toxic metal that is harmful to human health. Lead has no known value to the human body. The human body cannot tell the difference between lead and calcium, which is a mineral that strengthens the bones. Like calcium, lead remains in the bloodstream and body organs like muscle or brain for a few months. What is not excreted is absorbed into the bones, where it can collect for a lifetime.

Young children, those 6 years and younger, are at particular risk for lead exposure because they have frequent hand-to-mouth activity and absorb lead more easily than do adults. Children's nervous systems are still undergoing development and thus are more susceptible to the effects of toxic agents. Lead is also harmful to the developing fetuses of pregnant women.

No safe blood lead level in children has been determined. Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system (brain), particularly in children. Lead also damages kidneys and the reproductive system. The effects are the same whether it is breathed or swallowed. Low blood levels of lead (those below 10 µg/dL) have been associated with reduced IQ and attention span, learning disabilities, poor classroom performance, hyperactivity, behavioral problems, impaired growth, and hearing loss. Very high lead level (blood lead levels above 70 µg/dL) can cause severe neurological problems such as coma, convulsions, and even death. The only method to determine a child's lead level is for them to have a blood lead test done by a health provider.

In general, we find widespread presence of lead in drinking water when:

- Lead pipes are used throughout the facility.
- The building's plumbing is less than 5 years old and lead solder was illegally used (i.e., after the "lead- free" requirements of the 1986 Safe Drinking Water Act Amendments took effect). This situation is rare.
- The water is corrosive.
- Sediment or scale in the plumbing and faucet screens contain lead.
- Brass fittings, faucets, and valves were installed throughout the building less than five years ago (even though they may contain less than the "lead-free" requirements of the Safe Drinking Water Act).
- The service connection (i.e., the pipe that carries water from the public water system main to the building) is made of lead.

In general, there may be a localized presence of lead if:

- Some brass fittings, faucets, and valves have been installed in the last five years (even though they may meet the SDWA "lead-free" requirement).
- Drinking water outlets are in line with brass flush valves, such as drinking water fountains near restroom supply piping.
- Lead pipes are used in some locations.
- The water is non-corrosive.
- Lead solder joints were installed in short sections of pipe before 1986 or were illegally installed after 1988 (i.e., after the lead-free requirements of the Safe Drinking Water Act took effect).
- There are areas in the building's plumbing with low flow or infrequent use.
- Sediment in the plumbing and screens frequently contains lead.

Methods

EPA recommends that a two-step sampling process be followed for identifying lead contamination. Lead in a water sample taken from an outlet can originate from the outlet fixture (the faucet, bubbler etc.), plumbing upstream of the outlet fixture (pipe, joints, valves, fittings etc.), or it can already be in the water that is entering the facility. The two-step sampling process helps to identify the actual source(s) of lead.

In Step 1, initial samples are collected to identify the location of outlets providing water with elevated lead levels and to learn the level of the lead in the water entering the facility (i.e., at the service connection). In Step 2, follow-up flush samples are taken only from outlets identified as problem locations to determine the lead level of water that has been stagnant in upstream plumbing, but not in the outlet fixture. Sample results are then compared to determine the sources of lead contamination and to determine appropriate corrective measures.

The protocol, which consists of an established sample size volume and water retention time, is designed to identify lead problems at outlets and upstream plumbing within school facilities, and in the water entering the facility.

Step 1: Initial Sampling

In Step 1, initial samples are taken from prioritized outlets (e.g., bubblers, fountains) in the facility. These samples determine the lead content of water sitting in water outlets that are used for drinking or cooking within your building(s). Initial samples taken from bubblers, fountains, and other outlets used for consumption are all first-draw samples (i.e., the stagnant water is sampled before **any** flushing or use occurs). The goal of Step 1 is to compare the lead level of water from your facility's service connection to water that has remained stagnant between 8 and 18 hours in an outlet or fixture.

Step 2: Follow-Up Flush Sampling
If initial test results reveal lead concentrations greater than 15 ppb in a 250 mL sample for a given outlet, follow-up flush testing described in Step 2 is recommended to determine if the lead contamination results are from the fixture or from interior plumbing. EPA has established this trigger for follow-up flush testing to ensure that the sources of lead contamination in drinking water outlets are identified.

In Step 2, follow-up flush samples are collected and analyzed from outlets whose initial first draw results revealed lead concentrations greater than 15 ppb. The purpose of Step 2 is to pinpoint where (i.e., fixtures or interior plumbing) lead is getting into drinking water so that appropriate corrective measures can be taken.

As with initial first draw samples, follow-up flush samples are to be taken before a facility opens and before any water is used. Follow-up flush samples generally involve the collection of water from an outlet where the water has run for 15 seconds to assess water coming from supply lines and valves, and a second sample after a 60 second flush designed to analyze the lead content in the water in the plumbing behind the wall. The sampler induces a small (e.g., pencil-sized) steady flow of water from the outlet or other sample location.

A comparison of initial and follow-up samples is used to assess where the lead may be getting into the drinking water.

Sample analysis was performed at NY Environmental & Analytical Labs, Inc., a New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP #11510).

Results

Water samples were collected on March 21 and 22, 2016 from each school within the district.

The samples were collected in laboratory-supplied containers, preserved properly, and transported to a certified laboratory for analysis of lead in drinking water. A chain-of-custody was prepared to document the sequence of sample possession.

A table for each school summarizes the results, and a copy of the laboratory reports is provided in each corresponding appendix.

Based on the results, the following locations have exceeded the USEPA Action Level of 15 parts per billion (ppb) for first draw (the results are reported in parts per billion). The results are as follows:

Junior/Senior High School

Location and Result (ppb)	
Maintenance Area Slop Sink	12.1
Fitness Center	54.9

Results of second draw (15 second flush) and third draw (60 second flush) of elevated first draw sample locations are as follows:

Junior/Senior High School

Location	Result for Second Draw (ppb)
Maintenance Area Slop Sink	20.0
Fitness Center	4.39

Conclusion & Recommendations

In locations where only first draw samples exceed 15 ppb, the district should replace the fixture (bubbler, faucet, pot filler, etc.) with a fixture certified by the manufacturer as lead free, in accordance with US EPA definitions contained in 1986 Safe Drinking Water Act.

In locations where the first draw sample and the second draw sample are both elevated, and the first draw sample exceeds the second draw, the fixture, supply lines and valves leading from the wall to the fixture should be replaced with lead free components, including lead free solder.

In locations where first, second and third draw samples are all elevated, assessment must be made of the plumbing behind the wall leading to the fixture location.

Upon implementation of the corrective actions, first draw samples must be recollected to assess the effectiveness of the repairs. Upon completion of remediation, response and retesting, the results will be incorporated into the final appendix.