



January 13, 2016

Mr. Steve Thompson
Director, Buildings & Grounds
Byram Hills Central School District
41 Wampus Avenue
Armonk, NY 10504

Re: Testing for Lead in Water at Byram Hills High School

Dear Mr. Thompson,

At your request on behalf of the Byram Hills Central School District (BHCSD), Louis Berger has conducted a testing program for lead in water at the Byram Hills High School. Louis Berger's team, led by Certified Industrial Hygienist Mr. Joseph L. Sbarra, CIH conducted the testing on October 15, 2016.

Background

On September 06, 2016, Governor Andrew Cuomo signed legislation requiring that school districts and boards of cooperative educational services test their water for lead. Also on September 06, 2016, the NY State Department of Health issued emergency regulations (Subpart 67-4 of Title 10 [Health] of the Official Compilation of Codes, Rules and Regulations of the State of NY) pursuant to new legislation, requiring that school districts test their water for lead contamination:

- ◇ By September 30, 2016, all school buildings serving children in pre-K through grade 5 were required collect a sample from each outlet for testing.
- ◇ By October 31, 2016, all school buildings serving children in grades 6 through 12 must collect a sample from each outlet for testing.

Key Definitions in the Law/Regulations

- ◇ Outlet means a potable water fixture currently or potentially used for drinking or cooking purposes, including but not limited to a bubbler, drinking fountain, or faucets.
- ◇ Action level means 15 parts per billion (ppb). Where exceedances of the Action Level are found, schools are required to develop and implement a lead remediation plan, where applicable.

The NY State Department of Health regulations **do not follow** the EPA program guidelines and criteria established by the "3Ts for Reducing Lead in Drinking Water in Schools". This has resulted in testing and inclusion of outlets that are not used for drinking or cooking purposes: such as bathroom sinks, science/art room sinks, sinks in classrooms with drinking fountains, and hose bibs.

The inclusion of these "outlets" has cost taxpayers in New York State millions of dollars for sampling and analysis of water sources from which children do not drink.

Sampling Methodology

1. The NY DOH Emergency Regulation, Section 67-4.3 – Monitoring states:

- ◇ First-draw samples shall be collected from all outlets. A first-draw sample volume shall be 250 milliliters (mL), collected from a cold water outlet before any water is used. The water shall be motionless in the pipes for a minimum of 8 hours, but not more than 18 hours, before sample collection. Note: The NY DOH stated during a webinar that for outlets which did not have regular use and water was motionless in the pipes for > 18 hours, the outlets were to be sampled as well (to represent “normal use patterns”).
- ◇ Any first-draw sampling conducted consistent Emergency Regulation that occurred after January 1, 2015 shall satisfy the initial first-draw sampling requirement.
- ◇ All first-draw samples shall be analyzed by a laboratory approved to perform such analyses by the Department’s Environmental Laboratory Approval Program (ELAP).

Although not required by the NY DOH Emergency Regulation, Louis Berger also followed methodologies included in EPAs document entitled “3Ts for Reducing Lead in Drinking Water in Schools”.

2. Sampling Plan

- ◇ In developing a sampling plan before testing took place at the School, Louis Berger determined the location of the water service line. Sampling at the School started from location closest to the service line entrance and proceeded outwards from that point.
- ◇ A map, depicting location of the service line entrance and arrows indicating the direction of sampling was provided to and used by the sampling team. The sampling team verified the location of the service line entrance prior to sampling.
- ◇ Louis Berger also included testing of ice machines and plumbed coffee machines, if present, even though they were not required by the NY DOH Emergency Regulation (since they do not meet the definition of an outlet).

3. Laboratory Analysis – Samples were submitted to RJ Lee Group for analysis while maintaining chain-of-custody; RJ Lee is NY State Department of Health approved for analysis of lead in potable water.

Results Discussion

The Assessment Results Exceedance Table provided on the following page details the date of sampling, sample identification, location and laboratory results that exceeded 15 ppb. A copy of the full laboratory results and the chain of custody are presented at the end of this report in Appendix A. Laboratory approvals can be found in Appendix B.

- ◇ For the October 15, 2016, sampling event conducted at the Byram Hills High School, 45 (26.5 %) of the 170 samples collected had a lead concentration above 15 ppb; most were science room sinks.
 - ✓ No drinking fountains were above 15 ppb.
 - ✓ One (1) sink used for food preparation was above 15 ppb (prep sink @ pot filler)
 - ✓ Two (2) sinks potentially used for drinking were above 15 ppb (Rooms 109 and 208).
 - ✓ One (1) ice machine was above 15 ppb.

Assessment Results Exceedance Table

| Byram Hills High School | | | | |
|-------------------------|-----------|-----------------|----------------------------------------------------|------------------|
| Date | Sample ID | Floor | Location | Lead Level (ppb) |
| 10/15/16 | BHHS-24 | 1 st | Prep Sink (right side) in Kitchen at Pot Filler | 33.4 |
| 10/15/16 | BHHS-39 | 1 st | Sink in Room 111 (#1) | 403 |
| 10/15/16 | BHHS-40 | 1 st | Sink in Room 111 (#2) | 794 |
| 10/15/16 | BHHS-41 | 1 st | Sink in Room 111 (#3) | 26.4 |
| 10/15/16 | BHHS-42 | 1 st | Sink in Room 111 (#4) | 629 |
| 10/15/16 | BHHS-43 | 1 st | Sink in Room 111 (#5) | 33.8 |
| 10/15/16 | BHHS-44 | 1 st | Sink in Teacher's Chemical Storage for Room 111 | 160 |
| 10/15/16 | BHHS-45 | 1 st | Sink in Room 112A | 87.8 |
| 10/15/16 | BHHS-46 | 1 st | Sink in Room 112 (#1) | 15.4 |
| 10/15/16 | BHHS-47 | 1 st | Sink in Room 112 (#2) | 18.3 |
| 10/15/16 | BHHS-49 | 1 st | Sink in Room 112 (#4) | 17.2 |
| 10/15/16 | BHHS-50 | 1 st | Sink in Room 112 (#5) | 16.6 |
| 10/15/16 | BHHS-52 | 1 st | Sink in Room 109 (Kitchen) | 289 |
| 10/15/16 | BHHS-57 | 1 st | Sink in Room 208 (Science Office Kitchen) | 28.9 |
| 10/15/16 | BHHS-60 | 1 st | Sink in Room 209 (#3) | 18.3 |
| 10/15/16 | BHHS-61 | 1 st | Sink in Room 209 (#4) | 25.0 |
| 10/15/16 | BHHS-62 | 1 st | Sink in Room 209 (#6) | 329 |
| 10/15/16 | BHHS-63 | 1 st | Sink in Room 210 (#1) | 17.6 |
| 10/15/16 | BHHS-65 | 1 st | Sink in Room 210 (#3) | 15.0 |
| 10/15/16 | BHHS-67 | 1 st | Sink in Room 210 (#5) | 27.3 |
| 10/15/16 | BHHS-68 | 1 st | Sink in Room 211 (#1) | 70.5 |
| 10/15/16 | BHHS-69 | 1 st | Sink in Room 211 (#2) | 22.7 |
| 10/15/16 | BHHS-70 | 1 st | Sink in Room 211 (#3) | 35.2 |
| 10/15/16 | BHHS-73 | 1 st | Sink in Room 211 (#6) | 19.0 |
| 10/15/16 | BHHS-78 | 1 st | Sink (left side) in Storage Room 310A | 28.1 |
| 10/15/16 | BHHS-79 | 1 st | Sink (right side) in Storage Room 310A | 25.4 |
| 10/15/16 | BHHS-111 | 1 st | Sink (left side) in Prep Room between 313 and 311 | 44.8 |
| 10/15/16 | BHHS-113 | 1 st | Ice Machine in Prep Room between 313 and 311 | 1,120 |
| 10/15/16 | BHHS-120 | 1 st | Wash Sink in Room 311 (#4) | 16.2 |
| 10/15/16 | BHHS-130 | 1 st | Sink in Room 309 at Fume Hood | 26.0 |
| 10/15/16 | BHHS-143 | 1 st | Wash Sink in Room 309 | 56.1 |
| 10/15/16 | BHHS-144 | 1 st | Sink (left side) in Prep Room between 309 and 307 | 326 |
| 10/15/16 | BHHS-145 | 1 st | Sink (right side) in Prep Room between 309 and 307 | 110 |
| 10/15/16 | BHHS-146 | 1 st | Sink (#1 station, left side) in Room 307 | 27.1 |

Assessment Results Exceedance Table (cont'd)

| Byram Hills High School | | | | |
|-------------------------|-----------|-----------------|-------------------------------------------|------------------|
| Date | Sample ID | Floor | Location | Lead Level (ppb) |
| 10/15/16 | BHHS-147 | 1 st | Sink (#1 station, right side) in Room 307 | 73.5 |
| 10/15/16 | BHHS-148 | 1 st | Sink (#2 station, left side) in Room 307 | 213 |
| 10/15/16 | BHHS-149 | 1 st | Sink (#2 station, right side) in Room 307 | 904 |
| 10/15/16 | BHHS-150 | 1 st | Sink (#3 station, left side) in Room 307 | 30.2 |
| 10/15/16 | BHHS-151 | 1 st | Sink (#3 station, right side) in Room 307 | 15.5 |
| 10/15/16 | BHHS-152 | 1 st | Wash Sink in Room 307 (#4) | 28.5 |
| 10/15/16 | BHHS-154 | 1 st | Sink (#5 station, right side) in Room 307 | 16.8 |
| 10/15/16 | BHHS-155 | 1 st | Sink (#6 station, left side) in Room 307 | 23.5 |
| 10/15/16 | BHHS-156 | 1 st | Sink (#6 station, right side) in Room 307 | 31.7 |
| 10/15/16 | BHHS-157 | 1 st | Sink (#7 station, left side) in Room 307 | 16.5 |
| 10/15/16 | BHHS-159 | 1 st | Sink in Room 307 at Fume Hood | 48.7 |

Upon receipt of the results, Louis Berger made the following recommendations to the BHCS D as required by Subpart 67-4 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York:

- ✓ Either remove sinks from service or keep them in service. If sinks remain in service, signage must be posted (NOT FOR DRINKING + picture, such as a cup with a line through it).
- ✓ Report the test results to the local health department within 1 business day of receipt of results.
- ✓ Notify all staff and all persons in parental relation to students of the test results, in writing, as soon as practicable but no more than 10 business days after receiving the laboratory report.

Summary and Recommendations

A total of 45 (26.5 %) of the 170 samples collected had a lead concentration above 15 ppb. No drinking fountains were above 15 ppb. Three (2) sinks potentially used for food preparation/drinking were above 15 ppb.

Remediation Plan

As there were outlets where 15 ppb was exceeded, Louis Berger makes the following recommendations to BHCS D for remediation:

- ✓ For the ice machine in the Prep Room between 313 and 311, the prep sink in the Kitchen, and the sinks in the Science Office Kitchen (Room 208) and in the Room 109 Kitchen, consider replacing the fixtures/piping or installing a water filter system to reduce lead levels.
 - ◇ If replacing plumbing/fixtures, verify that replacement pipes/joints/solder/fixtures are certified lead-free. On January 4, 2014 EPA changed the definition of lead free from not more than 8% lead content, to not more than a weighted average of 0.25% lead with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and plumbing fixtures.

Remediation Plan (cont'd)

- ◇ If choosing the filter system option, **below counter** water filters are recommended, as faucet attached filters are far less effective at reducing lead levels. Prices range from \$150 - \$700 for these types of systems, depending upon the model. Manufacturers include: GE, Whirlpool, Aquasana, Everpure, 3M, and Watts. What to look for: Filters certified under **NSF Standard 53** specifically for lead reduction. Avoid generic replacement filters advertised as replacement parts for any of the name brands, as their filters are not independently certified. These systems will also need periodic maintenance and filter changes, which will also have a cost, typically ½ of the system cost.
- ✓ For sinks not used or potentially used for drinking water or for food preparation – these may remain in service with permanent signage:
 - ◇ NOT FOR DRINKING + picture, such as a cup with a line through it.These include sinks in restrooms, laboratories, art rooms, and custodial areas where access can be controlled and limited.

Limitations, Exceptions and Assumptions

Louis Berger advises the BHCS D that it is possible that not every outlet in the School was tested, as some were not working at the date/time of testing. Therefore, Louis Berger cannot act as insurers and cannot “certify” that all drinking water outlets within the School have been identified or are “safe”. The BHCS D should thoroughly review the testing data to identify any outlets not tested and arrange for additional testing if/when those outlets are put into service.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of Louis Berger’s site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which Louis Berger is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions based solely upon Louis Berger’s visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose state herein, at the sites indicated, and for the project indicated.

No expressed or implied representation or warranty is included or intended in our reports, except that our services were performed, within the limits prescribed by our client, with the customary thoroughness and competence of our profession.

If you have any questions concerning this information, please feel free to contact me at (212) 612-7943 or Mr. Craig Napolitano, CHMM at (212) 612-7961.

Sincerely,

Joseph L. Sbarra, CIH

Joseph L. Sbarra, CIH
Manager, Industrial Hygiene

cc: C. Napolitano