
WATER QUALITY TESTING

FOR

ZION SCHOOL DISTRICT 6

ZION, ILLINOIS

MARCH 30 AND 31, 2017

PROJECT NUMBER: 17-18288

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INTRODUCTION

Zion School District 6 implemented a proactive program of water testing at the following schools:

- Beulah Park
- Central Jr. High
- East
- Elmwood
- Lakewood
- Shiloh Park
- West.

Water sampling was conducted by David Johnson an Aires associate consultant. Mr. Geoffrey J. Bacci, II, PE designed the studied and developed this report.

This report contains a summary of results. Individual reports are also issued by school building and contain sampling maps and laboratory data.

BACKGROUND INFORMATION

The Lead in Drinking Water Testing Bill (LDWTB) was signed into law by Governor Bruce Rauner effective January 17, 2017. The bill amends six (6) different Illinois Codes and Acts including:

- The Illinois School Code
- Illinois Plumbing License Law.

The LDWTB requires School buildings constructed prior to January 1, 2000 to test drinking water sources for lead and provide written notification of the results. The Bill also directs the Illinois department of Public Health to draft rules by 1/1/2018 which may have additional requirements. Although IDPH requirements and direction are still in flux the department has issued guidelines which are attached to this report. The following is a summary of those guidelines:

- All schools housing 5th grade and under built before 1/1/2000 must test drinking sources used for drinking and cooking.
- Results of tests that are 5 parts per billion (ppb) or less can be communicated to parents at minimum by website posting.
- Locations that have results over 5 ppb must be communicated in writing or electronically to affected parents. That communication should also include information on the USEPA website that parents can access for guidance. That website: <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>

According to the LDWTB the testing and notification requirements apply only to covered sources which are:

- Drinking fountain and drinking sources in buildings for grade 5 and under
- Classroom sinks in grades below 1 (kindergarten and pre-kindergarten).

Aires recommends notification extends to all sources tested.

Lead most frequently gets into drinking water by leaching from plumbing materials and fixtures as water moves through a school's distribution system. Even though the drinking water you receive from your water supplier meets federal and state standards for lead and copper, your facility may have elevated lead levels due to plumbing materials and water use patterns. Leaching can occur for several reasons but the most significant is corrosion which can occur if water is acidic. Acidic water has a pH less than 7.0. 100% of Zion's drinking water is supplied from Lake Michigan. Water testing of the supply water is required by the EPA. pH of supplied water is always over 7.0.

Lead in new plumbing and plumbing repairs was banned in 1986. This ban did not entirely eliminate lead as 0.2% lead is still allowed in solder and 8% lead is allowed in piping systems. Pre-1986 plumbing systems have a higher potential to leach lead into drinking water.

Lead is a toxic metal that is harmful to human health. 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.

METHODOLOGY

Water testing followed protocol recommended by IDPH and the LDWTB . All water sources have two samples collected. The first collection at each source is a "first draw" sample. Water collection occurs in first draw samples after sources were unused for at least eight (8) hours but not more than 18 hrs. The second sample at that source is collected after 30 seconds of flushing. Each sample is given an identifier with letters that identify the school and a number that identifies the source. An "A" after the letter indicates a first draw sample and a "B" identifies a flush sample. For example sample BP – 09A was collected at location 9 at Beulah Park School and is a first draw sample.

After collection, samples were transported in a cooler with an ice pack. Samples were analyzed by Prairie Analytical Systems, Inc. Prairie Analytical is accredited by the National Environmental Laboratory Environmental Conference (NELAC).

The EPA recommends taking action to reduce lead levels if sample results exceed 20 ppb. That action could include water treatment or fixture replacement.

Public water supplies are required by the Safe Drinking Water Act to take corrective action if 10% or more of their sources contain lead levels greater than 15 ppb.

RESULTS

The following locations are results that exceeded 5 ppb. Locations that exceeded the EPA action level of 20 ppb are shown in **bold print**.

Beulah Park

- BP-S-01A: first draw kitchen east sink – 5.33 ppb

- BP-S-07A: first draw sample sink outside room 101 – 7.09 ppb
- BP-W-08A: first draw sample drinking fountain outside room 101 – 5.05 ppb.

Central Jr. High School

- CJH-W-01A: first draw drinking fountain maintenance – 12.7 ppb
- CJH-W-01B: flush drinking fountain maintenance – 16.2 ppb
- CJH-03A: first draw kitchen center sink – 10.2 ppb
- **CJH-S-05A: first draw kitchen south sink – 153 ppb**
- **CJH-S-05B: flush kitchen south sink – 68.3 ppb**
- CJH-W-14A: first draw drinking fountain outside room 203 – 7.39 ppb.

East

- EE-S-01A: first draw kitchen east sink – 9.5 ppb
- EE-S-01B: flush sample kitchen east sink – 12.9 ppb
- EE-S-02A first draw kitchen center sink – 12.4 ppb
- **EE-S-03B: flush kitchen west sink – 26.3 ppb**
- EE-S-07A: first draw room 104 sink – 13.4 ppb
- EE-S-08A: first draw room 103 sink – 12.2 ppb.

Elmwood

- ELM-S-02A: first draw kitchen west sink – 5.18 ppb
- **ELM-W-07A: first draw drinking fountain room 203 – 67.9 ppb**
- **ELM-W-07B: flush drinking fountain room 203 – 34.4 ppb.**

Lakeview

- LS-S-01A: first draw 2nd floor conference room sink – 6.52 ppb
- LS-S-02A: first draw kiln room sink – 10.9 ppb
- LS-S-02B: flush kiln room sink – 9.25 ppb
- LS-W-04A: first draw drinking fountain near room 106 – 5.69 ppb
- LS-W-04B: flush drinking fountain near room 106 – 6.47 ppb
- LS-W-05B: flush drinking fountain near room 108 – 9.92 ppb

- LS-S-06A: first draw room 103 sink – 6.44 ppb
- LS-W-07B: flush drinking fountain outside faculty restroom – 13.4 ppb
- **LS-S-09A: first draw sink across from room 10 – 22.7 ppb.**

Shiloh Park

- SH-W-08B: flush drinking fountain across from room 119 – 6.91 ppb
- SH-S-10A: first draw room 111 sink – 6.01 ppb
- **SH-S-11A: first draw room 112 sink – 104 ppb**
- SH-S-12B: flush room 125 sink – 5.43 ppb
- SH-S-13A: first draw room 126 sink – 10.2 ppb
- **SH-S-14A: first draw room 113 sink – 23.7 ppb**
- SH-S-14B: flush room 113 sink – 5.01 ppb.

West

- **WE-W-01B: flush drinking fountain across from 115 – 135 ppb**
- **WE-W-02A: first draw drinking fountain across from 119 – 448 ppb**
- **WE-W-02B: flush drinking fountain across from 119 – 213 ppb**
- WE-W-03A: first draw drinking fountain across from 123 – 6.74 ppb
- **WE-S-05A: first draw kitchen west sink – 26.2 ppb**
- **WE-W-06A: first draw drinking fountain gym – 59.6 ppb**
- WE-W-06B: flush drinking fountain gym – 10.7 ppb
- **WE-S-07B: flush nurses office sink – 21 ppb**
- **WE-S-08A: first draw room 103 sink – 43.3 ppb**
- WE-S-09A: first draw room 104 sink – 7.62 ppb
- **WE-W-10A: first draw drinking fountain outside 104 – 35.1 ppb**
- **WE-W-10B: flush drinking fountain outside 104 – 25.9 ppb**
- WE-S-11A: first draw room 101 sink – 6.04 ppb
- **WE-S-12A: first draw room 106 sink – 35.8 ppb**
- WE-S-12B: flush room 106 sink – 6.62 ppb
- WE-W-14A: first draw drinking fountain near room B1 – 18.0 ppb
- WE-W-14B: flush drinking fountain near room B1 – 18.3 ppb.

Parents with children in affected rooms should be notified within 7 days per IDPH guidelines. The results of all samples should be e mailed to IDPH within 7 days.

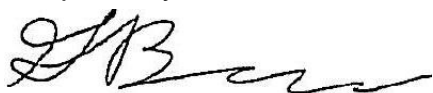
Drinking fountains that exceed the EPA action level of 20 ppb should be taken out of service. Sinks that exceed the EPA action level of 20 ppb should be labeled to avoid using as a drinking or cooking source.

Further investigation and corrective action is necessary to identify the lead source and identify corrective action to reduce lead levels.

PROFESSIONAL CERTIFICATION

Aires Consulting, a division of Gallagher Bassett Services, Inc. conducted this study in the interest of **Zion School District 6** to assist in meeting environmental obligations and regulations. In this respect, we hope the results of this study are useful. *This study was not intended to include every environmental exposure that may be present at the facility; only those items specifically addressed in the report were evaluated.* If you have any questions concerning this study please let us know.

Respectfully Submitted,



Geoffrey J. Bacci, II, PE
Director Operations

Sampling Protocol for Drinking Water in Schools



*A Guidance Document for
Drinking Water Testing*

- ❖ Schools must use an Illinois Environmental Protection Agency (IEPA) accredited laboratory for the testing.
- ❖ Schools must provide the Illinois Department of Public Health (IDPH) with sample results within 7 days of receipt. Results should be emailed to DPH.LeadH2O@illinois.gov.

SB 0550 was signed by Governor Bruce Rauner on January 16, 2017. It requires all schools (Pre-K through 5th grade) to test for lead in water used for drinking and cooking. Schools built after January 1, 2000 are not required to test at this time.

Sampling must be completed by:

- ❖ December 31, 2017 — Schools constructed prior to January 1, 1987
- ❖ December 31, 2018 — Schools constructed between January 2, 1987 and January 1, 2000



Action Steps Prior to Sampling

1. Your local water supply can be a great resource. Contact them to request assistance in establishing your sampling plan.
2. Obtain a general floor plan for each school building. Floor plans are available in the schools' asbestos management plan.
3. Identify all fixtures to be sampled on the general floor plan. All plumbing fixtures that are used for cooking or drinking must be sampled. Bathroom and utility sinks do not need to be sampled.
4. Assign a unique alphanumeric identifier to each fixture.
5. Label fixture identifiers on the floor plan. Make sure all samples are labeled with the corresponding alphanumeric identifier for each fixture.
6. Determine which IEPA accredited laboratory you will utilize for the analysis. A list can be found at <http://www.epa.illinois.gov/citizens/citizens-information/in-your-home/resources-on-lead/index>.
7. Contact the laboratory to obtain enough 250 mL sample bottles and Chain of Custody forms to allow you to collect 2 samples from each fixture. The laboratory will also provide sample shipping instructions.



Sample Collection Procedure

PROCEDURE

- ❖ Do NOT collect samples on Mondays or after extended holiday/break periods.
- ❖ Schools should develop a program to routinely flush plumbing fixtures after extended school closings.
- ❖ Do NOT flush plumbing fixtures in advance of sampling.



1. Each fixture must be sampled twice:
 - a. First draw sample
 - b. Second draw sample after 30 seconds
2. Ensure water has been idle and unused in pipes and fixtures for at least eight hours, but not more than 18 hours.
3. Prior to sampling, label the sample bottles with the alphanumeric identifier. Do not open the sample bottles until you are ready to collect each sample.
4. Position the first sample bottle beneath the fixture and turn the water on. Do not allow any water to spill.
5. Fill the bottle to the shoulder or the line marked 250 mL and turn the water off. Cap the bottle tightly.
6. Turn the water back on and allow the water to run for 30 seconds before filling the second sample bottle. Cap the bottle tightly.
7. Make sure both bottles are labeled with the date and time, alphanumeric identifier, and sample description (first or second draw).
8. Fill out Chain of Custody for each sample.
9. Continue sampling all fixtures until all samples are collected. Prepare the samples for shipping per laboratory instructions.

WARNING! Use caution when collecting samples. Some sample containers may contain a nitric acid preservative that can cause skin irritation.

[illegible]

Test Results

How to interpret your test results

1. Test results will be reported in either parts per billion (ppb) or micrograms per liter (ug/l). Both units of measure are appropriate.
2. If any sample exceeds 5 ppb of lead, the notification requirements are triggered.



Reporting and Notification Requirements

- ❖ Within 7 business days of receipt of test results, schools must email all results to IDPH at DPH.LeadH2O@illinois.gov.
- ❖ If all sample results are less than 5 ppb, schools may use their website (at minimum) to notify parents of the results.
- ❖ If any of the sample results exceed 5 ppb, schools must notify parents in writing or electronically, and include :
 - The location and source exceeding 5 ppb, and
 - The USEPA website for information about lead in drinking water: <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

Parents should be advised to contact their health care provider with any concerns about their child's health, including blood tests for lead exposure.

Next Steps

Test results will likely generate questions from parents, guardians, and the public about steps the school is taking to address lead in water.

Removing fixtures from use may not be an immediate option. Establishment of a water management plan, including identification of lead-containing plumbing, scheduled flushing, fixture replacement, and monitoring is the best course of action for schools addressing positive lead test results.

Additional guidance for interim (short-term) and permanent lead control measures is provided in the USEPA 3Ts for Reducing Lead in Drinking Water in Schools. This document can be found at:

www.epa.gov/sites/production/files/201509/documents/toolkit_leadschools_guide_3ts_leadschools.pdf



The Illinois Department of Public Health supports the efforts of Illinois Section AWWA to educate schools about lead testing. For additional information see dph.illinois.gov.