Lead Levels in Drinking Water at Weybridge Elementary School, Weybridge, VT

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SUMMARY
Lead in drinking water was determined for all water outlets (n = 28) at Weybridge Elementary School (WES) in Weybridge, VT. Samples were collected according to the U.S. Environmental Protection Agency (EPA) guidance document 3Ts for Reducing Lead in Drinking Water in Schools. First draw (FD) and flush (FL) samples were collected, acidified (pH<2), and turbidity verified to be <1 NTU prior to Pb determination. Lead concentrations in FD samples were evaluated relative to three standards: the administrative (not health-based) 15-ppb EPA action level for residential water, the health-based 1-ppb American Academy of Pediatrics (AAP) safety recommendation for drinking fountains in schools, and the anticipated Vermont state action level for drinking water in schools of 3 ppb. FL samples were used to determine the likely source of any lead in the water.

Nearly all outlets produced FD samples with detectable lead, but roughly a third of the total (32%) were at 1 ppb or lower and, therefore, met the AAP safety level. Two kitchen sinks/sprayers (RD08, RD10) exceeded the AAP and anticipated Vermont action levels (7-8 ppb), while one classroom sink (RD03) exceeded the EPA action level (46 ppb); these three outlets are considered a highest priority for remediation based on their lead levels and potential use for food preparation or consumption (Table 2). Nine classroom, office, and bathroom sinks (2-9 ppb) were considered a high priority for remediation because they are accessible and convenient for use for consumption. The high lead levels in the source and utility sinks were considered a low priority for remediation because they are not used for consumption and neither students nor regular staff have access to the outlets. High lead levels were observed in the health office shower, presumably due to its non-use. Because it is not in use and is not used for consumption, this outlet was considered a medium priority for consumption.

Recommended permanent remedial actions include replacing fixtures with “lead-free” fixtures/solder with follow-up testing to verify remediation efficacy or removing outlets entirely. Additionally, we recommend that WES communicate the findings of this work and remediation updates with the school community, as well as post this report and remediation updates in a readily accessible location (e.g., school website). A sample letter describing the results for a general audience is provided.

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Weybridge Community School, Weybridge, VT

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BACKGROUND

Lead exposures derive from a variety of sources including dust from older lead-based paint, soil contamination from earlier leaded gasoline, and water contamination from leaded pipes, solder, and fixtures [1]. Dust from leaded paint is believed to be the dominant source of lead exposure, but the EPA estimates that ~20% of lead exposure is through drinking water [2]. Health effects of lead include irreversible developmental neurotoxicity [3], disruption of the endocrine and reproductive systems [4], and gastrointestinal and cardiovascular issues [5]. Even at low levels (<5 μg-Pb/dL-blood), lead has been known to decrease IQ scores [3]. Because of the health risks posed by lead, including that it can bioaccumulate, the U.S. Environmental Protection agency has set a non-enforceable health standard (Maximum Contaminant Level Goal, MLCG) for lead in drinking water of zero [2]. While no level of lead exposure is considered to be safe for anyone, lead exposure is a particular concern in children. Whereas children absorb >50% of Pb that they ingest, adults absorb ~35-50% [6]. Furthermore, lead’s chemical similarity to calcium promotes uptake into children’s bones, which can leach out over time and serve as a long-term source of Pb exposure [7]. The American Academy of Pediatrics recommends a maximum lead level in drinking water of 1 μg/L (referred to as “ppb” or “part-per-billion”) [8]. Because developing children spend much of their time at school and the effects are largely irreversible, exposure to lead through drinking water in schools is a critical issue [9, 10].

In 1991, the United States Environmental Protection Agency (EPA) established the Lead and Copper Rule, which requires public water suppliers to monitor for lead in drinking water and set an action level for the concentration of lead in drinking water to 15 ppb and a maximum contaminant level goal of 0 ppb [11]. If lead concentrations exceed 15 ppb in more than 10% of customer taps sampled, public water suppliers must take action to control corrosion and inform the public about steps they should take to protect their health. Importantly, this action level is used administratively to evaluate anti-corrosion measures and is not a health-based standard. The American Academy of Pediatrics has issued a health-based recommendation that water fountains in schools not deliver water exceeding 1 ppb lead [8]. Currently, schools are not required to test for lead in drinking water unless they rely on a private water supply and serve more than 25 people daily [12]. This results in water being tested for lead in only ~8-11% of schools nationwide [13]. Previous national legislative efforts, including those by former Vermont Senator Jim Jeffords, to direct the EPA to require states to develop school testing programs and to address any problems found have been unsuccessful. While municipal water must be tested for lead at the site of distribution and at a small number of end-user (typically residential) outlets, lead can leach into the water at various points within the system, including from lead-containing pipes, solder, and individual outlet fixtures. The federal 1986 Safe Drinking Water Act limited the use of lead pipes and lead-containing solders in new drinking water systems, where “lead free” was defined as less than “0.2% lead for solders and fluxes and not more than 8% lead for pipes and pipe fittings” [14]. The amount of lead allowed in “lead-free” products installed after 2010 in Vermont [15] and after 2014 nationally was reduced 33-fold by redefining “lead free” as products in which wetted surfaces of a pipe contain a weighted average of ≤0.25% lead and the wetted surfaces of solder and flux contain a weighted average of ≤0.2% lead. The 2011 federal revision also exempted from lead-free requirements certain products that are used exclusively for non-potable uses “such as
irrigation, outdoor watering or any other uses where the water is not anticipated to be used for human consumption,” as well as other products, including shower or water distribution main gate valves ≥2 inches in diameter [14]. Because of shifting “lead free” definitions, exemptions from lead-free requirements, and uncertainty regarding individual pipe and fixture composition and installation dates, direct testing of water from each outlet is the only way to understand the potential for lead exposure through drinking water.

Data from the U.S. Center for Disease Control and Prevention (CDC) in 2016 indicate that ~8% of Vermont children have blood lead levels that exceed Vermont’s 5 µg/dL (microgram-per-decilititer) standard [16]. Approximately, 150 Vermont schools who are on their own drinking water supply regularly test some water outlets, but few schools have ever had all of their outlets tested. In 2017, the Vermont Department of Health (VDH) and Agencies of Education and Natural Resources launched a pilot project to test all drinking water outlets in 16 Vermont public schools that are on municipal water supplies [17]. Results of that pilot showed substantial differences across schools in the frequency of lead detection and in lead levels [18]. Schools ranged from having 0% up to 54% of outlets exceeding the EPA action level for lead, and from 3-88% of outlets exceeding AAP 1-ppb safety level. In response to the VDH pilot and with the support of the Governor, the Vermont legislature took up a bill (S.40 An Act Related to Testing and Remediation of Lead in the Drinking Water of Schools and Childcare Facilities) in 2019 to require testing of school drinking water for lead. The Senate unanimously passed S.40 in February 2019, which includes a 3-ppb lead action level; the House is considering the bill. The sampling reflected in this report would be accepted as having fulfilled the requirements of testing, but the samples would need to be reanalyzed by a certified laboratory.

Weybridge Elementary School (WES) receives water through its own well and serves more than 25 people; consequently, it tests a handful of outlets for lead every three years [19]. The current study represents the first-time lead levels have been tested in water from all outlets at WES.

METHODS

Site Description

Weybridge Elementary School (WES) is located in the town of Weybridge, VT and provides kindergarten through 6th grade instruction [20]. WES is part of the Addison Central School District, which oversees public schools in the area. WES was constructed in the 1950s with several repairs and renovations since then, including addition of the kindergarten, first grade, and art classrooms in the 1990s. Any replacement of fixtures and other water infrastructure was performed in compliance with the lead-free requirements of the 1986 Safe Drinking Water Act. We worked with ACSD Facilities Manager, Eric Warren, on the study design, including completion of a plumbing questionnaire and mapping of flow paths. All water outlets in the school (n = 28) were mapped by location and type. Outlets sampled at WES included a source sample, sinks (conventional and floor/utility), water fountains, bottle fillers, kitchen sprayers, and a shower (Figure 1). Mapping included noting the flow path of water from the initial water entry point to the school. Knowledge of the water flow path is critical to the integrity of water sampling, as outlets need to be sampled in sequence from upstream to downstream to avoid inadvertent flushing of pipes and fixtures prior to sampling. We did not

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1 The AAP health-based recommendation is made specifically for water fountains, but would reasonably be applied to any outlet used for direct consumption by children. Information regarding use of outlets for consumption was not publicly available for statewide pilot.

2 EPA Plumbing Profile Questionnaire can be found on p 96 of EPA 2006, and includes questions regarding pipe and fixture type and composition, building age, and dates of renovation, among other information.
independently verify information provided to us regarding plumbing and water flow in the school.

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**Figure 1.** Weybridge Elementary School floor plan showing water flow paths (arrows) and water outlet (sample) locations, with colors representing main branch lines. The location of water input to the school is in the marked with a star. Marker shapes indicate fixture type. The sample-naming scheme associated with outlets is provided in (Appendix A). The floor plan with outlet locations labeled by Outlet ID is provided in Appendix B.

**Sample Collection**

Water was sampled on a Saturday morning (September 29, 2018) during the regular school year and prior to any use for the day.³ Water should ideally sit stagnant in the pipes and fixtures for least 8 h, but no more than 12 h before collection.⁴ Water samples were collected in certified clean HDPE Nalgene bottles (250 mL).⁵ Two types of samples were collected: first draw (FD) and flush samples (FL) (Table 1). The two types of samples collectively provide information on the source of lead in the water and therefore, on appropriate remediation measures. First draw (FD) samples were obtained by collecting the first 250 mL of water from each outlet. After all FD samples were collected, FL samples were obtained by flushing water out of the outlets for 30 seconds and then collecting another 250 mL. Two field blanks were collected at Middlebury College the day before sample collection using ultra-purified water and were exposed to the sampling conditions of WES. The sample

³The U.S. EPA (2006) recommends against sampling during holidays or periods of time that the school is not in regular use in order to avoid collecting samples that have non-representative high levels of lead.

⁴Some outlets are used infrequently and had likely been sitting for longer than 8-12 h. We considered this to be in keeping with the goals of the EPA guidance in that our samples are representative of what a student might encounter at that particular outlet on a given day.

⁵School samples are smaller than the 1-L sample collected by public water suppliers for compliance with the Lead and Copper Rule. A smaller sample is more effective at identifying the sources of lead at an outlet because lead sample is also more representative of water per serving consumed by a child. (EPA 2006)
naming scheme and WES floor plan showing outlet locations labeled by outlet ID are provided in Appendix A and B, respectively.

### Table 1. Types, descriptions, and rationale for samples collected.

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Description and Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Draw (FD)</strong></td>
<td>First 250 mL of water to exit outlet after sitting stagnant in pipes for 8-12 hours (see footnote 2 on p. 3). Provides information on Pb in the drinking water from all sources, including water coming in to the school, water pipes, and the outlet fixtures and connections.</td>
</tr>
<tr>
<td><strong>Flush (FL)</strong></td>
<td>First 250 mL of water to exit outlet after sitting stagnant in pipes for 8-12, having taken a FD sample, and subsequently having been flushed for 30 seconds. Provides information on Pb in the drinking from all sources excluding the outlet fixtures and immediate connections (i.e., from more distant connections, pipes, and/or incoming water).</td>
</tr>
</tbody>
</table>

**Sample Preparation and Lead Analysis**

After collection, samples were placed in a cooler and within 48 hours were acidified to 0.5% (1.25 mL trace-metal grade HNO₃) for preservation. After 16 h or more, sample turbidity was verified to be <1 NTU and acidity pH<2. Samples were analyzed for lead using inductively coupled plasma mass spectrometry, manufacturer-recommended conditions, and conventional quality control and quality assurance methods.⁶ Lead concentrations are reported to the nearest part-per-billion (ppb, i.e., μg-Pb/L-water) for samples at/above the limit of quantification (LOQ, 0.5 ppb); as <0.5 ppb for samples with detectable lead below the LOQ; and as non-detect (n.d.) for samples with lead levels below the limit of detection (0.1 ppb).

A health-based prioritization of outlet remediation (highest, high, or moderate priority) is made based on the measured lead levels in FD samples and the potential use of the outlet for consumption or cooking. Lead levels are evaluated relative to three standards: the administrative (not health-based) EPA action level for lead of 15 ppb, the American Academy of Pediatrics health-based safety standard for school water fountains of 1 ppb, and the anticipated Vermont state action level for drinking water in schools of 3 ppb.

**RESULTS & DISCUSSION**

**Lead Level Summary**

Water from 28 outlets was sampled, including collecting one FD and one FL sample from each outlet. FD samples are used to evaluate lead exposures, while FL samples are used to evaluate the potential source of any lead found. Complete sample data are provided in Appendix C. Summary results for FD samples are shown in Figure 2. Most outlets (93%) produced FD samples with detectable lead, but in 35% of those cases, the lead was at 1 ppb or lower and, therefore, meets the AAP recommended safety level. Four outlets produced FD samples that exceeded the EPA action level, while 13 additional outlets exceeded either the AAP safety level (>1 ppb) or both the AAP and the anticipated VT action level (>3 ppb). Locations of outlets that exceed the AAP or other guidelines are shown in Figure 3. The potential health concerns posed, and therefore, the prioritization of outlets for remedial action, depend on the measured lead concentration and the potential use of the outlet for direct consumption.

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⁶ Reliability was ensured by use of a 7-point calibration (r²>0.999) with use of internal standards; analysis of field and calibration blank samples; analysis in triplicate (±10%); and Pb recovery for a National Institutes of Standards and Technology certified reference material (±10%) after every 10 samples.
Four outlets produced FD samples that exceed the administrative EPA action level of 15 ppb: the source (RD01, 53 ppb), a utility sink in a custodial closet (20 ppb), a sink in an art storage room (46 ppb), and the health office shower (BL15, 201 ppb). Because neither the source nor utility sink is accessible to students and regular staff, they are considered as low priorities for remedial actions. Although not currently in use, a fact that likely accounts for its high lead level, the art storage room is accessible to staff and could conveniently be used in the future. Accordingly, we considered it as we would any classroom sink and placed highest priority on its remediation. The health office shower is similarly not in current use, nor would it be used for consumption; because of its extremely high lead levels, however, we considered it to be a medium priority for remediation.

Outlets that produced FD lead levels that exceeded the AAP recommendation and the anticipated Vermont action level included two kitchen sinks/sprayers (7-8 ppb), four classroom or office sinks (4-9 ppb), and two utility sinks contained in custodial closets (5 and 12 ppb). The kitchen outlets are considered as a highest priority for remediation because of their use in food preparation. The classroom and office sinks are considered a high priority, because although they are not intended for consumption, they are accessible and convenient for such use by children and staff. The utility sinks are not accessible by children and regular staff and are considered a low priority for remediation.

Six classroom, office, and bathroom sinks delivered FD samples at 2 ppb, slightly exceeding the AAP safety level. As described above, the kitchen and classroom sinks are considered as high priorities for remediation. Priority outlets for remediation are summarized and appropriate remedial actions are discussed below in the Summary & Recommendations section.
Figure 3. Floor plan showing locations and lead levels for Weybridge Elementary School outlets that exceeded the American Academy of Pediatrics recommended safety level of 1 ppb or other guidelines.

**Source of Lead in Water**

FL samples generally had lower lead levels as compared to their associated FD sample, but four outlets still exceeded the AAP safety level upon flushing. The generally low FL concentrations suggest that the predominant source of the lead in FD samples is the outlet fixtures or immediate connections (e.g., solder), rather than incoming water or pipes within the school. In fact, most of the outlets with FL samples that were high in lead still had levels that were much lower than their corresponding FD samples, again implicating the fixtures as the dominant source of lead rather than the pipes. The only outlet in which the FL sample had higher lead was a bathroom sink (BL01), which may due to flushing-induced release of particles from inside the pipe.

**SUMMARY & RECOMMENDATIONS**

Nearly all outlets produced FD samples with detectable lead, with roughly a third of the total, nevertheless, meeting the AAP safety level. Two kitchen sinks/spayers (RD08, RD10) exceeded the AAP and anticipated Vermont action level (7-8 ppb), while one classroom sink (RD03, 46 ppb) exceeded the EPA action level; these three outlets are considered a *highest priority* for remediation based on lead levels and potential use for food preparation or consumption (Table 2). Nine classroom, office, and bathroom sinks (2-9 ppb) were considered a *high priority* for remediation because they are accessible and convenient for use for consumption. The high lead levels in the source and utility sinks were considered a *low priority* for remediation because they are not used for consumption and neither students nor regular staff have access to the outlets. High lead levels were observed in the health office shower, presumably due to its non-use. Because it is not in use and is not used for consumption, this
outlet was considered a *medium priority* for consumption.

**Table 2.** Summary of Weybridge Elementary School outlets that exceeded the EPA or anticipated Vermont action level or AAP recommended safety level (i.e., “priority outlets”), with prioritization for remediation based on lead level and likelihood and frequency of use for consumption.

<table>
<thead>
<tr>
<th>Priority level</th>
<th>Concern</th>
<th>Rationale</th>
<th>Outlet ID</th>
<th>Outlet type &amp; location</th>
<th>First Draw (ppb)</th>
<th>Flush (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>First draw exceeds administrative EPA action level</td>
<td>High lead levels and potentially accessible for consumption</td>
<td>RD03</td>
<td>Art storage room sink (off gym)</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>First draw exceeds anticipated VT action level and AAP safety level</td>
<td>Potential use for consumption or food preparation</td>
<td>RD08</td>
<td>Kitchen sink</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First draw exceeds anticipated VT action level and AAP safety level</td>
<td>Accessible &amp; convenient use for consumption</td>
<td>RD10</td>
<td>Kitchen sprayer</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>High</td>
<td>First draw exceeds AAP safety level</td>
<td></td>
<td>GN02</td>
<td>Classroom sink</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First draw exceeds AAP safety level</td>
<td></td>
<td>GN03</td>
<td>Art classroom sink</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Medium</td>
<td>First Draw Exceeds EPA action level</td>
<td>High levels with some potential for consumption</td>
<td>RD02</td>
<td>3rd/4th grade classroom sink</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL07</td>
<td>Office sink (off library)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL08</td>
<td>Classroom sink</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL14</td>
<td>Health office sink</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>RD06</td>
<td>Boys’ bathroom sink (near gym)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL02</td>
<td>Boys’ bathroom sink (main hall)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL13</td>
<td>Health office bathroom sink</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Low</td>
<td>First Draw Exceeds EPA action level</td>
<td>Virtually no student/staff access; low potential use for direct consumption</td>
<td>BL15</td>
<td>Health office shower</td>
<td>201</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>RD01</td>
<td>Source outlet in mechanical room</td>
<td>53</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL11</td>
<td>Utility sink in custodial closet</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>RD05</td>
<td>Utility sink in custodial closet</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>First Draw Exceeds EPA action level</td>
<td></td>
<td>BL12</td>
<td>Utility sink in custodial closet</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Results suggest that the predominant source of the lead in the FD samples is the outlet fixtures or immediate connections (e.g., solder), rather than incoming water or pipes within the school.

We recommend that WES pursue the following *permanent* remediation approaches for priority outlets:

1) replace with “lead-free” fixture/solder or remove the outlet entirely
2) if replaced, verify remediation efficacy via follow-up lead testing
Until the priority outlets are permanently remediated, we suggest the following temporary approaches:

1) disconnect water supply to priority outlets, if at all possible
2) If priority outlets are needed for non-consumption uses, place signage instructing against its use for consumption or food preparation and with educational outreach regarding the policy and its rationale

Finally, we recommend that WES communicate the findings of this work and remediation updates with the school community, as well as post this report and remediation updates in a readily accessible location (e.g., school website). A draft letter describing the results for a general audience is provided as Appendix D.

ACKNOWLEDGEMENTS
The authors are grateful to Mr. Eric Warren, ACDS Facilities Manager, and Mr. Bruce MacIntire, ACSD Director of Facilities, for providing access to and technical and historical information about WES, and for assisting in communicating with the school community about the project. We would like to thank Dr. Peter Burrows, ACSD Superintendent for his support of the work. Finally, we gratefully acknowledge the assistance of Jody Smith, Senior Instrument Technician at Middlebury College, for instrument support, maintenance, and student training. This project was funded by the Dept. of Chemistry and Biochemistry and the Senior Work Fund at Middlebury College.

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2. EPA. Basic information about lead in drinking water. 2018; Available from: https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water.
12. EPA, 3Ts for reducing lead in drinking water in schools. 2006, U.S. Environmental Protection Agency.


17. VDH, Vermont launches initiative to help schools test drinking water for lead. 2017: Vermont Digger.


Appendix A – Sample Naming Scheme

Samples collected at WES were assigned unique sample IDs as presented below. The IDs are composed of the school code, sampling date, flow path identification, outlet ID, and the type of sample.

Outlet ID = water flow path code (color) + outlet number, indicating location along flow path

WES_09202018_RD01_FD

Date of sample collection  Sample type (FD = first draw; FL = flush)
Appendix B – WES Floor plan showing Outlet Locations and Outlet IDs
Appendix C – Complete Lead Concentration Results for WES

Samples were collected as described in the Methods; sample names are as described and located in Appendix A and B, respectively. Lead concentrations are reported in parts-per-billion (ppb, i.e., μg-Pb/L-water) for samples at/above the limit of quantification (LOQ, 0.5 ppb); as <0.5 ppb for samples with detectable lead below the LOQ; and as non-detect (n.d.) for samples with lead levels below the limit of detection (i.e., <0.1 ppb). Samples that exceed the EPA action level are shown in red; those that exceed the anticipated Vermont action level, but not the EPA level, are shown in pink; those that exceed only the AAP safety level are shown in blue.

<table>
<thead>
<tr>
<th>School</th>
<th>Outlet ID</th>
<th>Outlet Type</th>
<th>Outlet Description/Location</th>
<th>First Draw Lead Conc (ppb)</th>
<th>Flush Lead Conc (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WES</td>
<td>BL01</td>
<td>bathroom sink</td>
<td>boy's bathroom sink (main hall)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>WES</td>
<td>BL02</td>
<td>bathroom sink</td>
<td>boy's bathroom sink (main hall)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>BL03</td>
<td>water fountain or bottle filler</td>
<td>water fountain in main hall</td>
<td>n.d.</td>
<td>n.d.</td>
</tr>
<tr>
<td>WES</td>
<td>BL04</td>
<td>water fountain or bottle filler</td>
<td>bottle filler in main hall</td>
<td>n.d.</td>
<td>n.d.</td>
</tr>
<tr>
<td>WES</td>
<td>BL05</td>
<td>bathroom sink</td>
<td>girls' bathroom sink (main hall)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>BL06</td>
<td>bathroom sink</td>
<td>girls' bathroom sink (main hall)</td>
<td>1</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL07</td>
<td>classroom/office sink</td>
<td>office sink (off library)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>BL08</td>
<td>classroom/office sink</td>
<td>classroom sink</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL09</td>
<td>classroom/office sink</td>
<td>faculty workroom sink</td>
<td>1</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL10</td>
<td>bathroom sink</td>
<td>bathroom (near faculty workroom)</td>
<td>1</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL11</td>
<td>utility sink</td>
<td>utility sink in custodial closet</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>BL12</td>
<td>utility sink</td>
<td>utility sink in custodial closet</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>BL13</td>
<td>bathroom sink</td>
<td>health office bathroom sink</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL14</td>
<td>classroom/office sink</td>
<td>health office sink</td>
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<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>BL15</td>
<td>other</td>
<td>health office shower</td>
<td>201</td>
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<tr>
<td>WES</td>
<td>GN01</td>
<td>classroom/office sink</td>
<td>1st/2nd grade classroom sink</td>
<td>1</td>
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</tr>
<tr>
<td>WES</td>
<td>GN02</td>
<td>classroom/office sink</td>
<td>classroom sink</td>
<td>9</td>
<td>1</td>
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<tr>
<td>WES</td>
<td>GN03</td>
<td>classroom/office sink</td>
<td>art classroom sink</td>
<td>6</td>
<td>2</td>
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<tr>
<td>WES</td>
<td>RD01</td>
<td>source</td>
<td>source</td>
<td>53</td>
<td>4</td>
</tr>
<tr>
<td>WES</td>
<td>RD02</td>
<td>classroom/office sink</td>
<td>3rd/4th grade classroom sink</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>RD03</td>
<td>classroom/office sink</td>
<td>art storage room (off gym) sink</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>WES</td>
<td>RD04</td>
<td>water fountain or bottle filler</td>
<td>gym water fountain</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>WES</td>
<td>RD05</td>
<td>utility sink</td>
<td>utility sink off gym in custodial closet</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>RD06</td>
<td>bathroom sink</td>
<td>boys' bathroom sink (near gym)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>WES</td>
<td>RD07</td>
<td>bathroom sink</td>
<td>girls' bathroom sink (near gym)</td>
<td>1</td>
<td>1</td>
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<td>WES</td>
<td>RD08</td>
<td>kitchen sink or sprayer</td>
<td>kitchen sink</td>
<td>8</td>
<td>1</td>
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<td>WES</td>
<td>RD09</td>
<td>kitchen sink or sprayer</td>
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<td>1</td>
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<td>RD10</td>
<td>kitchen sink or sprayer</td>
<td>kitchen sprayer</td>
<td>7</td>
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</table>
We provide here a sample letter for sharing the study results with the school community.

Dear Parents,
As we shared earlier this year, Weybridge Elementary School (SES) partnered with students and faculty researchers from Middlebury College to test all the sources of drinking water at SES for lead, including water from water fountains, bottle fillers, sinks, and showers -- a total of 28 outlets.

Why is it important to screen to test the school’s drinking water for lead?
Although most lead exposure occurs when people eat paint chips and inhale dust, the U.S. Environmental Protection Agency (EPA) estimates that up to 20% of lead exposure may come from drinking water. Even though the public water supply to the school meets EPA’s lead standards, lead can still get into a school’s drinking water. As water moves through a school’s plumbing system, lead can leach into the drinking water from plumbing materials and fixtures that contain lead. Testing is the best way to know if there are elevated levels of lead in the school’s drinking water.

What were the results of the study?
Roughly 1/3 (32%) met the American Academy of Pediatrics (AAP) recommended safety level of 1 ppb for lead in school drinking water. One classroom storage sink exceeded the EPA action level (46 ppb) and two kitchen sinks/sprayers exceeded the AAP safety level (7-8 ppb); these three outlets are considered a highest priority for remediation based on lead levels and potential use for consumption or for food preparation. Nine classroom, office, and bathroom sinks (2-9 ppb) were considered a high priority for remediation because they are accessible and convenient for use for consumption. High lead levels in the source and utility sinks were considered a low priority for remediation because they are not used for consumption and neither students nor regular staff have access to the outlets. High lead levels were observed in the health office shower, presumably due to its non-use. Because it is not in use and is not used for consumption, this outlet was considered a medium priority for consumption.

What comes next?
We have accepted the researchers’ recommendations that we:
(1) replace the kitchen sink sprayer with a new lead-free spray fixture
(2) verify remediation efficacy via follow-up lead testing after fixture replacement

Where can I get more information?
For more information regarding the testing project or sampling results:
- Call Bruce MacIntire at 802-382-1500
- Access the full report at [INSERT URL FOR ACCESSING THE FULL REPORT]

For information about the health effects of lead:
- Call the Health Department at 800-439-8550
- Visit http://healthvermont.gov/drinking-water/lead

To request a drinking water test kit:
- Call the Health Department Laboratory at 802-338-4736 or 800-660-9997