NORTHERN
Analytical Services, LLC.
ENVIRONMENTAL CONSULTANTS

# Lead and Copper
# Water Analysis Report
# for

Battle Creek Montessori Academy
399 North 20th Street
Springfield, MI 49037

Performed by

Northern Analytical Services, LLC.
PO Box 1604
Big Rapids, MI 4307

Project Number
200232

Report Date
October 16, 2020

14870 225th Ave., Big Rapids, Michigan 49307
Phone : 231-268-0004 Fax : 866-214-4739 Web : www.northernas.com

# Table of Contents

Battle Creek Montessori Academy
Water Quality Report
Project No. 200232
October 16, 2020

**Executive Summary**

Northern Analytical Services, LLC. (NAS) was hired by the Battle Creek Montessori Academy to sample water fixtures (faucets and drinking fountains) at their site located at 399 North 20th Street, Springfield, MI 49037. Samples were collected as part of an annual inspection to determine the levels of lead and copper present. Sampling was limited to those fixtures that had detectable levels of lead in the most recent round of testing; any fixture that was not previously tested was also included.

The United States Environmental Protection Agency (US EPA) has established an action level for lead and copper in tap water. Action level is defined as the concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect water quality parameter samples, collect source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 15 parts per billion (ppb). The action limit for copper is 1300 ppb.

The EPA has also established a practical quantitation limit (PQL)for lead and copper in tap water. The PQL is defined as the concentration that can be reliably measured with specified limits during routine laboratory conditions using approved methods. The PQL for lead is 5 ppb. The PQL for copper is 50 ppb.

It should be noted that laboratories sometimes report results of this nature in milligrams per liter (mg/L), parts per billion (ppb), or micrograms/L (µg/L).

These units can be converted as follows:
1 mg/L=1,000 ppb
1 mg/L=1,000 µg/L
1 µg/L=1 ppb

**Findings**

The following is a summary of our findings:

Date of sample collection: **9/1/2020**
Number of samples collected during this round of sampling:**1**.
Number of samples above the action level for lead: **none** , copper: **none.**
Number of samples above the PQL for lead: **none**, copper: **1**.

Table 1, found in appendix A, provides a summary of the sample results for each fixture sampled. Laboratory results are included in Appendix B.

**Sample Procedures**

Samples were collected on September 01, 2020 by Juston Rehkopf of NAS. Samples were collected by filling a single 250 milliliter container, pre-treated by the laboratory with acid, at each faucet/drinking fountain and delivering them to the laboratory for analysis. Sample collection was conducted in the morning prior to the water being used by occupants as a “first draw” sample. NAS did not flush or otherwise run each faucet or fountain prior to sample collection; to our knowledge each faucet and fountain sat dormant for at least 6 hours prior to sample collection.

Once delivered to the laboratory (Pace Analytical), samples were analyzed for the presence of copper and lead in accordance with US EPA method 200.8.

**Recommendations**

NAS recommends the following actions for all fixtures that exceeded the PQL for lead:

- Immediately post the public education poster found in appendix A of the Lead and Copper Rule near each fixture and distribute a copy of this information in pamphlet form to all building occupants.
- Immediately take the fixture(s) off line. Flush each of these units (allow water to run for at least 5 minutes) and re-test no sooner than 8 hours after flushing.
- Re-test the water source to determine the level of lead and copper present.
- Consider replacing these units if the re-test results exceed the PQL level.
- Consider the installation of point source (faucet/drinking fountain) water filtration for lead.
- Consider the replacement of all water pipes and fixtures as a permanent solution.
- Re-test each fixture at least annually and following any major changes to the system.

# Appendix A

Battle Creek Montessori Academy
Water Quality Report
Project No.: 200232
October 16, 2020

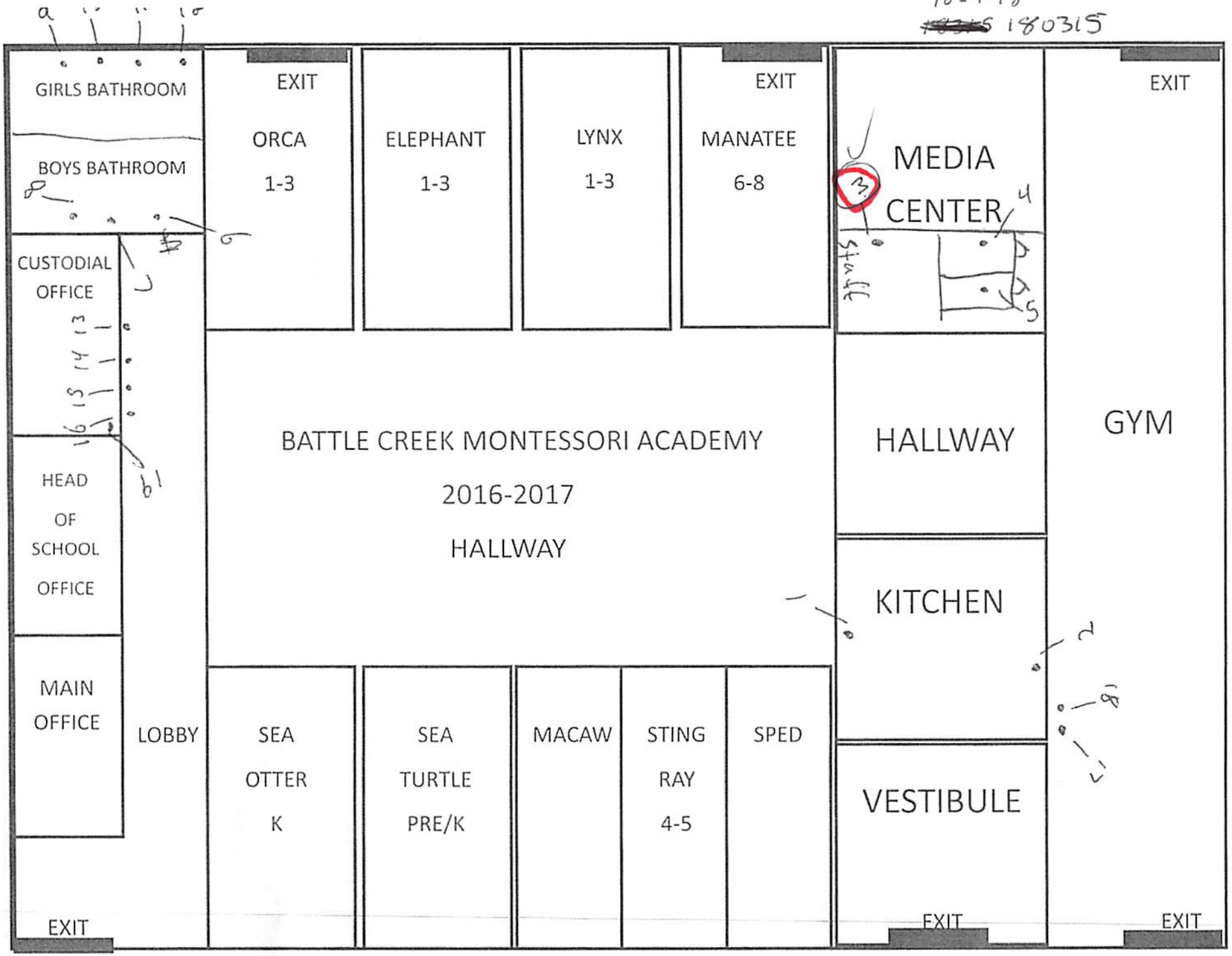
**Table 1-Summary of Sample Results**

| Fixture | Sample Date | Copper Concentration (ppb) | Lead Concentration (ppb) |
|---|---|---|---|
| BC-2 | 10/9/2018 | 340 | 0 |
| BC-2 | 9/26/2019 | 960 | 1.7 |
| BC-2 | 9/1/2020 | 736 | 1.4 |

* samples listed above in red have results above the PQL for copper or lead.

10-9-18

~~[redacted]~~ 180315



# Appendix B

**Pace Analytical Services, LLC**
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

October 16, 2020

John Rehkopf
Northern Analytical Services
14870 225th Avenue
Big Rapids, MI 49307

RE: Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

Dear John Rehkopf:

Enclosed are the analytical results for sample(s) received by the laboratory on October 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Indianapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melanie Booms

Melanie Booms
melanie.booms@pacelabs.com
(616)975-4500
Project Manager

Enclosures

**Pace Analytical Services, LLC**
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

## CERTIFICATIONS

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

**Pace Analytical Services Indianapolis**
7726 Moller Road, Indianapolis, IN 46268
Illinois Accreditation #: 200074
Indiana Drinking Water Laboratory #: C-49-06
Kansas/TNI Certification #: E-10177
Kentucky UST Agency Interest #: 80226
Kentucky WW Laboratory ID #: 98019
Michigan Drinking Water Laboratory #9050
Ohio VAP Certified Laboratory #: CL0065
Oklahoma Laboratory #: 9204
Texas Certification #: T104704355
West Virginia Certification #: 330
Wisconsin Laboratory #: 999788130
USDA Soil Permit #: P330-19-00257

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## SAMPLE SUMMARY

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **50269434001** | **BC2** | Drinking Water | 09/01/20 12:39 | 10/07/20 12:30 |

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## SAMPLE ANALYTE COUNT

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **50269434001** | **BC2** | EPA 200.8 | DMT | 2 | PASI-I |

PASI-I = Pace Analytical Services - Indianapolis

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## ANALYTICAL RESULTS

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

**Sample: BC2** **Lab ID: 50269434001** Collected: 09/01/20 12:39 Received: 10/07/20 12:30 Matrix: Drinking Water

| Parameters | Results | Units | Report Limit | Reg. Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **200.8 MET ICPMS** | Analytical Method: EPA 200.8 Preparation Method: EPA 200.8<br>Pace Analytical Services - Indianapolis | | | | | | | | |
| Copper | **736** | ug/L | 10.0 | | 10 | 10/14/20 08:27 | 10/15/20 07:03 | 7440-50-8 | N2 |
| Lead | **1.4** | ug/L | 1.0 | | 1 | 10/14/20 08:27 | 10/15/20 06:45 | 7439-92-1 | N2 |

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

QC Batch: 586615
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50269434001

METHOD BLANK: 2706360 Matrix: Water
Associated Lab Samples: 50269434001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Copper | ug/L | ND | 1.0 | 10/14/20 22:27 | N2 |
| Lead | ug/L | ND | 1.0 | 10/14/20 22:27 | N2 |

LABORATORY CONTROL SAMPLE: 2706361

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Copper | ug/L | 40 | 38.4 | 96 | 85-115 | N2 |
| Lead | ug/L | 40 | 38.8 | 97 | 85-115 | N2 |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2706362 2706363

| Parameter | Units | 50269262003 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper | ug/L | 0.0086 mg/L | 40 | 40 | 43.9 | 44.5 | 88 | 90 | 70-130 | 1 | 20 | N2 |
| Lead | ug/L | ND | 40 | 40 | 38.7 | 39.3 | 96 | 98 | 70-130 | 1 | 20 | N2 |

MATRIX SPIKE SAMPLE: 2706364

| Parameter | Units | 50269440004 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Copper | ug/L | 99.8 | 40 | 140 | 101 | 70-130 | N2 |
| Lead | ug/L | 1.6 | 40 | 40.3 | 97 | 70-130 | N2 |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**

## REPORT OF LABORATORY ANALYSIS

**Pace Analytical Services, LLC**
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Grand Rapids, MI 49512
(616)975-4500

# QUALIFIERS

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## ANALYTE QUALIFIERS

| | |
|---|---|
| N2 | The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request. |

**Pace Analytical Services, LLC**
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Grand Rapids, MI 49512
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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Battle Creek Montessori Acd.
Pace Project No.: 50269434

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **50269434001** | **BC2** | EPA 200.8 | 586615 | EPA 200.8 | 586982 |

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a L

WO# : 50269434

50269434

Page: 1 of 1

2224635

**Section A**
**Required** Client Information:

Company: Northern Analytical Services
Address: 14870 225th Ave
Big Rapids MI 49307
Email To: John@northernas.com
Phone: 231 679 0005 Fax:
**Requested Due Date/TAT:**

**Section B**
**Required** Project Information:

Report To: John Rehkopf
Copy To:
Purchase Order No.:
Project Name: Battle Creek Montessori Academy
Project Number:

Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**

☐ NPDES ☐ GROUND WATER ☒ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MI

**Requested Analysis Filtered (Y/N)**

**Section D**
**Required** Client Information

**Matrix Codes** (MATRIX / CODE)

| | |
|---|---|
| Drinking Water | DW |
| Water | WT |
| Waste Water | WW |
| Product | P |
| Soil/Solid | SL |
| Oil | OL |
| Wipe | WP |
| Air | AR |
| Tissue | TS |
| Other | OT |

**SAMPLE ID**
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test Y/N | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BC2 | DW | G | 9-1 | 12:39 | | | | 1 | | | 1 | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS |
|---|---|---|---|---|---|---|---|
| | Juston Rehkopf | 10-7-20 | 12:30 | | 10/7/20 | 1230 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: Juston Rehkopf
SIGNATURE of SAMPLER:
DATE Signed (MM/DD/YY): 10-7-20

| Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |
|---|---|---|---|
| | | | |

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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# Sample Conditions Upon Receipt Form (SCUR)

**WO# : 50269434**

**PM: MSB** **Due Date: 10/21/20**

**CLIENT: GR-NAS**

| | | | | |
|---|---|---|---|---|
| **Date/Time:** 10/7/20 | **Evaluated by:** JW | | | |
| **Client:** NAS | | | | |
| **Project Manager:** BTH | **Profile ID:** 7942 | | | |
| **Rush TAT Requested:** YES ✓NO **Due Date:** | | | | |
| **Lab Notified of Rush or Short Holds:** YES ✓NO | **Non Conformance Form Required:** YES ✓NO | | | |
| **Samples Received Via:** FedEx UPS Client ✓Pace Courier Other: _____ | | | | **Comments:** |
| **Custody Seals Present and Intact:** | YES | NO | ✓NA | |
| **Received Sample Information Form(s):** Drinking Waters Only | ✓YES | NO | NA | |
| **USDA Regulated Soils:** (AL, AR, CA, FL, GA, ID, LA, MS, NM, NY, NC, OK, OR, SC, TN, TX, WA or Puerto Rico) | YES | NO | ✓N/A | |
| **Short Holds Present** (< 72 Hours): | YES | ✓NO | | |
| **Samples Received in Hold:** | ✓YES | NO | | |
| **Custody Signatures Present:** | ✓YES | NO | | |
| **Collector Signature Present:** | ✓YES | NO | | |
| **Packing Material Used:** | YES | ✓NO | | |
| **Samples Collected Today and On Ice:** | YES | NO | ✓N/A | |
| **IR Gun #:** ✓280 281 | **Digital Thermometer #:** 282 283 | | | |
| **Ice Type:** WET Bagged / WET Loose BLUE NONE | **1.** Cooler Temp Upon Receipt: 18.6/19.1 °C | | | |
| **Ice Location:** TOP BOTTOM MIDDLE DISPERSED | Temp should be 0-6°C (Initial/Corrected) | | | |
| **Temp Blank Received:** | YES | ✓NO | | |
| **Containers Intact:** | ✓YES | NO | | |
| **Correct Containers:** | ✓YES | NO | | |
| **Sufficient Volume:** | ✓YES | NO | | |
| **Sample pH Acceptable:** All containers needing preservation are found to be in complaince with EPA recommendation Exceptions are VOA, coliform, LLHg, O&G, or any container with a septum cap or preserved with HCl | ✓YES | NO | N/A | HCl 1748 |
| **Residual Chlorine Absent:** (SVOC/Pest 625, PCB 608, Total/Amenable/Available Cyanide) | YES | NO | ✓N/A | |
| **VOA Headspace Acceptable** (<6mm): | YES | NO | ✓N/A | |
| **Trip Blank Received:** HCl MeOH TSP OTHER | YES | ✓NO | | |
| **Comments:** | **2.** Cooler Temp Upon Receipt: _____ °C | | | |
| | **3.** Cooler Temp Upon Receipt: _____ °C | | | |
| | **4.** Cooler Temp Upon Receipt: _____ °C | | | |

Pace Analytical™

# Sample Information Fo

WO# : 50269434

PM: MSB Due Date: 10/21/20

CLIENT: GR-NAS

Please complete the **Sample Collection Information** section below and **Chain of Cu** with sample(s). The lab will **only accept samples collected on Monday - Thursday, excluding holidays.** Once samples have been collected, they should be delivered to the lab the same day they are collected. If samples cannot be returned within one hour of collection, the samples should be kept in a cooler on ice or in a refrigerator below 6°C. **Important:** Do not freeze samples as this will invalidate the tests.

On the **Chain-of-Custody (COC)**, the following information is required:

- Sample ID
- Collection Date and Time
- Matrix indicating Drinking Water (DW)
- Requested Analyses
- Residual Chlorine present/absent
- Collector Name and Signature

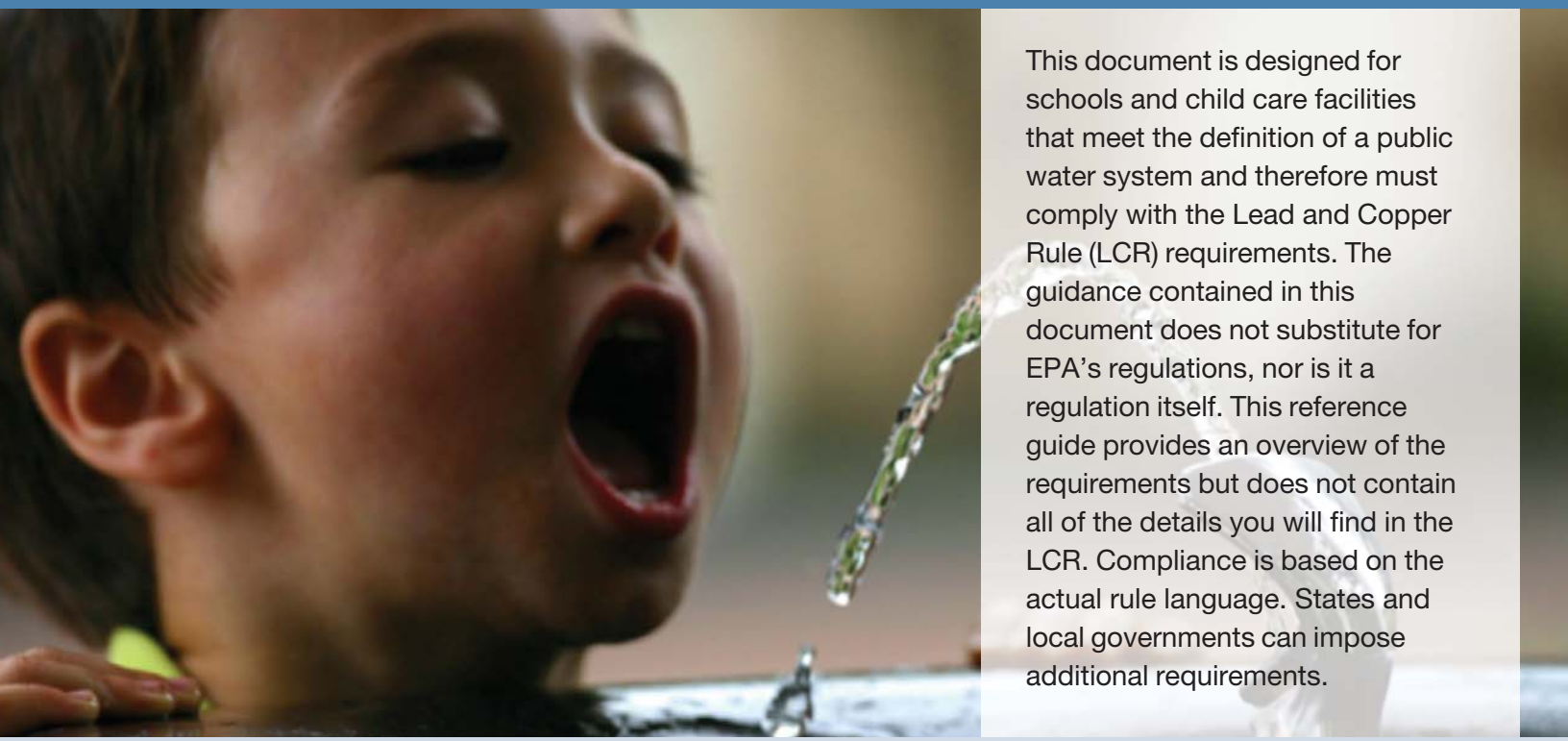
**Sample Collection Information:** *This section is required and must be filled out!

| *Source Code: 3 | *Purpose Code: 0 | *Point Code: 4 |
|---|---|---|
| 0 - Single Family Dwelling<br>1 - Type 1 (25 or more residents year round)<br>2 - Type 2 (25 or more persons 60 days or more per year)<br>3 - Type 3 (All other public supplies; duplex, small office)<br>7 - Surface Water (includes bathing beach and wastewater discharge)<br>8 - Swimming pool/Spa<br>9 - Other | 0 - Routine Testing<br>1 - Real Estate Transaction<br>2 - Repeat Sample<br>3 - Construction or New Well<br>5 - Water Quality Problem<br>9 - Other | 1 - Public System Well<br>2 - Public System Surface Water<br>3 - Untreated Public Distribution<br>4 - Treated Public Distribution<br>5 - Untreated Private Well<br>6 - Treated/Softened Private Well<br>7 - Pressure Tank/Plant Tap<br>9 - Other |
| *Collection Location (Business/Owner name): Battle Creek Montessori Academy | WSSN/ Pool ID #: | |
| *Street Address: 399 N 20th St. | *City: Springfield | *County: Calhoun |

# Appendix C

# Lead and Copper Rule:

## A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act



This document is designed for schools and child care facilities that meet the definition of a public water system and therefore must comply with the Lead and Copper Rule (LCR) requirements. The guidance contained in this document does not substitute for EPA's regulations, nor is it a regulation itself. This reference guide provides an overview of the requirements but does not contain all of the details you will find in the LCR. Compliance is based on the actual rule language. States and local governments can impose additional requirements.

## OVERVIEW OF THE RULE

Schools and child care facilities that have their own water supply and are considered non-transient, non-community water systems (NTNCWSs) are subject to the Lead and Copper Rule (LCR) requirements.

The LCR was developed to protect public health by minimizing lead and copper levels in drinking water. The most common source of lead and copper in drinking water is corrosion of plumbing materials. Plumbing materials that can be made with lead and copper include pipes, solder, fixtures, and faucets.

The LCR established an action level of 0.015 mg/L (15 ppb) for lead and 1.3 mg/L (1300 ppb) for copper based on the 90$^{th}$ percentile level of tap water samples. This means no more than 10 percent of your samples can be above either action level. If lead or copper levels are found above the action levels, it does not signal a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement. An explanation of how to calculate the 90$^{th}$ percentile level is provided on page 3 of this guide.

## HEALTH RISKS OF LEAD AND COPPER

### CHILDREN

Children are especially susceptible to lead and copper exposure because their bodies absorb these metals at higher rates than the average adult. Children younger than six are most at risk due to their rapid rate of growth. Exposure to high levels of lead can cause damage to the brain, red blood cells, and kidneys. Exposure to even low levels of lead can cause low IQ, hearing impairment, reduced attention span, and poor classroom performance. Exposure to high levels of copper can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.

Because children spend so much time in school and child care facilities and their bodies are developing rapidly, it is important to provide safe drinking water to avoid health problems linked to lead or copper exposure.

### ADULTS

High lead levels in adults have been linked to increased blood-pressure. Pregnant women and their fetuses are especially vulnerable to lead exposure since lead can significantly harm the fetus, causing lower birth weight and slowing down normal mental and physical development.

## SOURCES OF LEAD AND COPPER IN DRINKING WATER

When lead and copper are found in tap water it is typically due to leaching from internal plumbing materials. If the water is too corrosive, it can cause lead or copper to leach out of the plumbing materials and enter the drinking water.

The potential for leaching increases the longer the water is in contact with the plumbing components. School water supplies tend to have extended periods of no water use (e.g., overnight, weekends, holidays, summer) that increase the likelihood of elevated lead levels at the tap.

## LEAD AND COPPER TAP SAMPLING REQUIREMENTS

KEY POINTS

- "First draw" samples must be collected.
- Samples must be collected after the water has had time to sit in the pipes for at least 6 hours.
- If either action level is exceeded, water quality parameter (WQP) and source water sampling may be required.
- The number of lead and copper or WQP samples collected depends on the daily population served by the school or child care facility (see Table 1).
- Lead and copper samples must be collected every 6 months, unless the system qualifies for reduced monitoring (see Table 2).
- Samples for subsequent rounds of monitoring must be collected from the same sites used in the initial round.

### Table 1: Lead and Copper Tap and WQP Tap Monitoring

| School or Child Care Facility Daily Population Served | Number of Lead and Copper Tap Sample Sites | | Number of WQP Tap Sample Sites | |
|---|---|---|---|---|
| | Standard | Reduced | Standard | Reduced |
| 10,001 - 50,000 | 60 | 30 | 10 | 7 |
| 3,301 - 10,000 | 40 | 20 | 3 | 3 |
| 501 - 3,300 | 20 | 10 | 2 | 2 |
| 101 - 500 | 10 | 5 | 1 | 1 |
| ≤ 100 | 5 | 5 | 1 | 1 |

### Table 2: Criteria for Reduced Lead and Copper Tap Monitoring

| ***Can monitor...*** | ***If...*** |
|---|---|
| Annually | The 90$^{th}$ percentile is less than both action levels (ALs) for 2 consecutive 6-month monitoring periods; or |
| | Optimal water quality parameter specifications are met for 2 consecutive 6-month monitoring periods and the primacy agency approves. |
| Triennially (every 3 years) | The 90$^{th}$ percentile is less than both ALs for 3 consecutive years of monitoring; or optimal water quality parameter specifications are met for 3 consecutive years of monitoring and the primacy agency approves; or |
| | The 90$^{th}$ percentile lead levels are ≤ 0.005 mg/L and 90$^{th}$ percentile copper levels are ≤ 0.65 mg/L; or |
| | The system is deemed to have optimized corrosion control by meeting the copper action level and showing:<br>• for 2 consecutive 6-month periods that the difference between the lead 90$^{th}$ percentile tap water level and the highest lead source water sample is less than the Practical Quantitation Limit for lead; or<br>• the highest source water lead level is below the Method Detection Level and the 90$^{th}$ percentile tap water lead level is ≤ the Practical Quantitation Limit for lead for 2 consecutive 6-month periods. |
| Once every 9 years | The school or child care facility population is ≤ 3,300, the system meets monitoring waiver criteria, and a waiver is approved by the primacy agency. |

## CALCULATING THE 90TH PERCENTILE FOR LEAD AND COPPER

| | |
|---|---|
| If you collect 5 samples... | rank the results from the lowest to the highest value, and then average the two highest results. This value is the 90th percentile. |
| If you collect 10 samples... | rank the results from the lowest to the highest value, numbering each from 1 to 10. The 9th value is the 90th percentile. |
| If you collect 20 or more samples... | rank the results from the lowest to the highest value, numbering each from 1 up to the number of samples taken. Multiply the number of samples taken by 0.9. The resulting number is the value that is the 90th percentile.<br>*Example calculation*: 20 samples x 0.9 = 18. The 18th value in a ranked set of sample values is the 90th percentile. |

## COMPLIANCE REQUIREMENTS IF ACTION LEVEL IS EXCEEDED

KEY POINTS

Four compliance areas must be addressed within certain time frames following an action level exceedance:

- Public education
- Water quality parameter (WQP) monitoring
- Source water monitoring and source water treatment
- Corrosion control treatment (CCT)

Contact your primacy agency in the event of an action level exceedance to ensure you follow the required steps. Failure to do so may result in a compliance violation.

### Public Education within 60 Days

When the AL for lead is exceeded, a water system must issue public education print materials (no public education is required if only the copper AL is exceeded). (See Appendix A for an example public education poster.)

- Display informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and
- Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the system.

You have the option of using the alternative mandatory language provided in §141.85(a)(2) or using the original language now contained in §141.85(a)(1). You do not need State approval before using this alternative language.

| Public Education Requirement | Poster | Pamphlet | Compliance Letter to State |
|---|---|---|---|
| Within 60 days of exceedence[1] | ✓ | ✓ | |
| Every 12 months for as long as exceedence occurs | ✓ | ✓ | |
| Within 10 days after the end of each period in which public education was required | | | ✓ |

[1]Applies first time action level is exceeded, and applies any subsequent time that a system exceeds the lead action level when it is not already providing public education.

### Water Quality Parameter Sampling within same Lead and Copper monitoring period

Collect water quality parameter (WQP) tap samples.

- See Table 1 for number of samples required.
- WQP samples are collected at taps and at each entry point to the distribution system.
- WQPs include: pH, alkalinity, calcium, and in the initial sample, conductivity and temperature as well. If treatment is currently installed, other parameters may also be included depending on the treatment type.
- After follow-up monitoring, the primacy agency will set a range of optimal WQPs.

**Entry Point to Distribution System Monitoring within 6 months**

System must:

- Collect samples at each entry point to the distribution system. (You may want to use the same sampling points designated for chemical sampling – check with your primacy agency.)
- Make a recommendation for source water treatment.

**Corrosion Control Treatment**

| | |
|---|---|
| within 6 months: | Recommend optimal corrosion control treatment. |
| within 18 months: | Complete corrosion control treatment study if required by primacy agency. |
| within 24 months: | Install corrosion control treatment after primacy agencies has determined appropriate treatment. |
| within 36 months: | Monitor WQP at entry points for 2 consecutive 6-month periods. |

## COMPLIANCE REQUIREMENTS IF ACTION LEVEL EXCEEDANCE CONTINUES

KEY POINTS

If the system continues to exceed the AL after installation of corrosion control treatment or source water treatment there are two additional compliance areas:

- Lead service line monitoring
- Lead service line replacement

Contact your primacy agency for further assistance if installation of corrosion control treatment or source water treatment does not end AL exceedances.

## DEFINITIONS

| | |
|---|---|
| 90th Percentile | The highest concentration of lead or copper in tap water that is exceeded by 10 percent of the sites sampled during a monitoring period. This value is compared to the lead action level (AL) to determine whether an AL has been exceeded. (See "Calculating the 90th Percentile" above for instructions.) |
| Action Level (AL) | The concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect water quality parameter samples, collect source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 0.015 mg/L or 15 ppb. The action level for copper is 1.3 mg/L or 1300 ppb. |
| Corrosion Control Treatment (CCT) | Water treatment generally in the form of chemical addition meant to reduce the corrosivity of the water. |
| Entry Point to the Distribution System | An entry point to the distribution system is a point after any treatment is applied, but before water reaches the first consumer. Because this location is often used for sampling, it is ideal to have a dedicated sampling tap which is inaccessible for drinking purposes. |
| First Draw Sample | A tap water sample taken after water has been standing motionless in plumbing pipes for a period of time and is collected without flushing the tap. Approximately 8 hours is an ideal amount of time to let the water sit before collecting a first draw sample, a minimum of 6 hours is required. |
| Method Detection Limit (MDL) | The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. |
| Optimal Water Quality Parameters | Ranges or minimums set by the primacy agency that indicate a system's CCT is operating at a level to most effectively minimize lead and copper concentrations at user's taps. |
| Practical Quantitation Limit (PQL) | The concentration that can be reliably measured within specified limits during routine laboratory operating conditions using approved methods. The PQL for lead is 0.005 mg/L. The PQL for copper is 0.050 mg/L. |
| Water Quality Parameters (WQPs) | A set of water qualities or characteristics used to help systems and states determine what levels of CCT would work best for the system and whether this treatment is being properly operated and maintained over time. WQPs include: pH, alkalinity, calcium, conductivity, and temperature. If treatment is currently installed, other parameters such as orthophosphate and silica may also be included depending on the treatment type. |

# LEAD in Drinking Water

## HEALTH EFFECTS OF LEAD

Lead is found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body.

Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination - like dirt and dust - that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

## LEAD IN DRINKING WATER

Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) and *(a)* are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by *(b)* .

This program includes:

1) Corrosion control treatment (treating the water to make it less likely that lead will dissolve into the water);
2) Source water treatment (removing any lead that is in the water at the time it leaves our treatment facility); and
3) A public education program.

If you have any questions about how we are carrying out the requirements of the lead regulation please call us at *(c)* .

This poster also explains the simple steps you can take to protect yourself by reducing your exposure to lead in drinking water.

## HOW LEAD ENTERS OUR WATER

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome-plated brass faucets, and in some cases,pipes made of lead that connect houses and buildings to water mains (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

## FOR MORE INFORMATION

YOU CAN CONSULT a variety of sources for additional information:
Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

- *(d)* at *(e)* can provide you with information about your facility's water supply; and
- *(f)* at *(g)* or the
- *(h)* at *(i)* can provide you with information about the health effects of lead.

## STEPS YOU CAN TAKE to Reduce Exposure to Lead in Drinking Water

1. FLUSH YOUR SYSTEM. Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet for about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than one to two gallons of water.

2. USE ONLY COLD WATER FOR COOKING AND DRINKING. Do not cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and then heat it.

3. USE BOTTLED WATER. The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.