

Flint Safe Drinking Water Task Force Comments on Michigan Department of Health and Human Services' Draft Protocol for Collecting Residential Drinking Water Samples for Lead Analysis

This response is intended to identify how the comments received from the Flint Safe Drinking Water Task Force have been addressed.

On November 8, 2015, Jim Sygo from the Michigan Department of Environmental Quality submitted for review the protocol to be utilized by the Michigan Department of Health and Human Services to complete elevated blood lead (EBL) sampling in Flint homes where children already had a blood lead level of 5 micrograms/deciliter. The purpose of the investigation was to determine the exposure source contributing to the level of contamination of the children. This protocol centered on the sampling and analysis of the drinking water provided in the home. The work is to be completed by a contractor experienced in sampling techniques for lead.

Some of the issues raised by the U.S. Environmental Protection Agency will be addressed by the Genesee County Health Department nurse case managers (e.g., filter maintenance). Other issues are difficult to address in the context of the protocol. For example, the timing of exposure relative to an EBL test and subsequent EBL investigation will vary between children and will be difficult to identify in most cases. In addition, it is unlikely that most Flint homes would have been using a water filter prior to October 1, 2015. Given the limitations and the need to identify and abate relevant exposures as quickly as possible, the best we can do is measure current lead levels in unfiltered tap water as a proxy for past exposures.

All plumbing components were to be looked at from the home to the road main and any construction nearby noted. The first draw sample would be collected from the kitchen first. Sequential sampling would be taken from the kitchen as requested by the Task Force. Aerators, if present, would be inspected, cleaned, and photographed. Essentially all the recommendations of the Task Force have been incorporated into the protocol.

Michigan Department of Health and Human Services
Protocol for Collecting Residential Drinking Water Samples for Lead Analysis
November 19, 2015
Revised December 7, 2015

The following protocol will be used by the Michigan Department of Health and Human Services (MDHHS) to ensure that residential drinking water samples are collected in a systematic, consistent manner as part of an elevated blood lead (EBL) investigation. The results will be used to evaluate human exposure to lead in household drinking water and to identify [all](#) plumbing components [from the home to the water main](#) that are contributing lead to household drinking water.

MDHHS will:

- Collect water samples from the kitchen faucet used for drinking and cooking; a secondary faucet, most likely a bathroom sink; and any additional faucets based on frequency of use for consumptive purposes.
- Collect two small volume [125 milliliter (mL)] first-draw samples from selected cold faucet to evaluate exposure to lead in drinking water.
- Collect ten large volume [1 liter (L)] sequential samples from the kitchen cold faucet to identify plumbing components that are contributing lead to the household water supply.
- Incorporate the results of water testing into the EBL investigation report.

Before the EBL Inspection

Obtain information about the age of the house and any building additions. Identify if there are any records of previous water testing in the past two years. If possible, obtain information about the materials used in the water service line (lead, galvanized, copper or plastic) [and if any street work was done in the front of the house \(this includes road work, water main work, or other utility work\). Document with photos, if possible, otherwise make a notation.-](#)

Instruct residents not use any water in the house for any purpose (including toilet flushing) for at least 6 hours prior to sample collection.

Step 1 – Prior to Sample Collection

Sampling staff should confirm upon arrival at the home that no water has been used in the home for at least 6 hours prior to sample collection.

Step 2 – Identify and Label the Sample Faucets

- Identify the primary cold kitchen faucet.
- Identify a secondary cold faucet based on use: most likely a bathroom sink.
- Identify any additional cold faucets that are frequently used.

Identify each sampling location on the interior floor plan. Document each sampling location with digital photos, including the connections beneath the sink. Note the presence of any potential brass components or treatment devices, and whether the faucet has an aerator. Document other noteworthy items for each location such as leaky faucet, rust stained sink, etc. Document any exposed plumbing in the basement, if possible.

If a temporary in-line filter is installed on the faucet, use the by-pass lever to collect unfiltered water samples. A whole house filter does not preclude sampling, as this is a permanent filter and representative of actual exposure.

Each water sample must be given a unique identification (ID) code that identifies the location of the faucet, the sample volume, and the order of sample collection.

Faucet location is indicated as follows:

- KF = kitchen faucet, cold
- BF = bathroom faucet, cold
- OF = other faucet, cold (specify type)

The two 125-mL first draw samples are labeled in order of collection P1 and P2. For example, the ID codes for the bathroom faucet samples would be BF-P1 and BF-P2.

The 10 large volume 1-L sequential samples collected from the kitchen faucet are labeled A1 through A10. For example, the first sequential sample at the kitchen faucet is labeled KF-A1, the second is labeled KF-A2 ... through KF-A10.

Step 3 – Collect the Small Volume Samples [from the Kitchen Faucet](#)

Before sample collection:

1. Write the assigned ID code on each sample bottle's green label using a black Ultra Fine Point Sharpie permanent marker. To ensure clarity for the DEQ lab, draw a slash mark through each zero, the number one is a straight vertical line (no hat or foot), and cross each number seven.
2. Next, remove the cap from each bottle and label using a red Fine Point Sharpie permanent marker. Write '1' on the white cap of the bottle marked as P1; write '2' on the cap of the bottle marked as P2. Caps must be placed open side up to avoid contamination when not on the bottle.
3. Complete the *Request for Analysis* forms for each sample using a pen, pencil or black Sharpie. If the Lead and Copper analyses is not already selected, mark as 32CC for the 125-mL samples.

~~Collect 125-mL samples from all secondary faucets before collecting any samples from the primary kitchen faucet.~~ Collect the P1 sample as the very first-draw from each the kitchen cold water faucet, followed by the P2 sample.

DO NOT REMOVE THE AERATOR IF THERE IS ONE, but make a notation that there is an aerator present.

Sample collection:

1. Place the P1 bottle under the faucet, open the faucet to produce a moderate, steady stream and fill the first bottle to the appropriate level. Immediately fill the P2 bottle without a break in the stream (do not turn off the faucet between the first and second bottle and do not allow water to run down the drain in between the first and second bottle if at all possible).
2. Turn off faucet. Cap each sample bottle making sure to match the P1 sample to the '1' white cap, and the P2 sample to the '2' white cap.
3. Secure the appropriate request for water analysis form to each bottle (refer to the example bottle provided for "instructions") with a rubber band.
4. Bundle the P1 and P2 samples collected at each the kitchen cold water faucet (after the proper paperwork has been banded to each bottle) and secure them together with a single rubber band.

Step 4 – Collect the Large Volume Samples

After ~~all the~~ 125-mL samples have been collected from the kitchen cold water faucet; collect ten sequential 1-L samples in wide-mouth bottles from the kitchen cold water faucet. In some cases, more than ten sequential 1-L samples will need to be collected. Estimate the distance from the front of the house to the water main. Divide that distance by 15 and round up to the nearest whole number. Add four to the result to account for internal plumbing. For example, if the front of the house is about 150 feet from the water main, divide 150 by 15 (150/15 = 10). Add four to the resulting number (10+4 = 14) and collect 14 samples.

Before sample collection:

1. Write the assigned ID code on each sample bottle's green label using a black Ultra Fine Point Sharpie permanent marker. To ensure clarity for the DEQ lab, draw a slash mark through each zero, the number one is a straight vertical line (no hat or foot), and cross each number seven.
2. Next, remove the cap from each bottle and label using a red Fine Point Sharpie permanent marker. Write 1 through 10 on the white caps of the 1-L bottles for the A1 through A10 sequential samples. Caps must be placed open side up to avoid contamination when not on the bottle.

3. Complete the Request for Analysis forms for each sample using a pen, pencil or black Sharpie. If the Lead and Copper analyses is not already selected, mark as 36CC for the 1-L samples.

Sample collection:

1. Place the A1 bottle under the faucet, open the kitchen cold water faucet gently but fully (to simulate a resident filling a glass or pot with water) to produce a moderate, steady stream and fill the first bottle to the appropriate level. Immediately fill bottles A2 to A10 consecutively without a break in the stream (do not turn off the faucet between bottles and do not allow water to run down the drain between the bottles).
2. After all 1-L samples are collected, turn off faucet. Cap each sample bottle making sure to match the A1 sample to the '1' white cap, the A2 sample to the '2' white cap and so forth.
3. Secure the appropriate request for water analysis form to each bottle (refer to the example bottle provided for "instructions") with a rubber band.

If aerator is present, remove and check for particles after all samples have been collected from the kitchen faucet. Photograph the aerator, if possible, and make a notation about presence or absence of particles.

Step 5 – Collect the Small Volume Samples from All Secondary Faucets

Before sample collection:

1. Write the assigned ID code on each sample bottle's green label using a black Ultra Fine Point Sharpie permanent marker. To ensure clarity for the DEQ lab, draw a slash mark through each zero, the number one is a straight vertical line (no hat or foot), and cross each number seven.
2. Next, remove the cap from each bottle and label using a red Fine Point Sharpie permanent marker. Write '1' on the white cap of the bottle marked as P1; write '2' on the cap of the bottle marked as P2. Caps must be placed open side up to avoid contamination when not on the bottle.
3. Complete the *Request for Analysis* forms for each sample using a pen, pencil or black Sharpie. If the Lead and Copper analyses is not already selected, mark as 32CC for the 125-mL samples.

Collect the P1 sample as the very first-draw from each faucet, followed by the P2 sample.

DO NOT REMOVE THE AERATOR IF THERE IS ONE, but make a notation that there is an aerator present.

Sample collection:

1. Place the P1 bottle under the faucet, open the faucet to produce a moderate, steady stream and fill the first bottle to the appropriate level. Immediately fill the P2 bottle without a break in the stream (do not turn off the faucet between the first and second bottle and do not allow water to run down the drain in between the first and second bottle if at all possible).
2. Turn off faucet. Cap each sample bottle making sure to match the P1 sample to the '1' white cap, and the P2 sample to the '2' white cap.
3. Secure the appropriate request for water analysis form to each bottle (refer to the example bottle provided for "instructions") with a rubber band.
4. Bundle the P1 and P2 samples collected at each faucet (after the proper paperwork has been banded to each bottle) and secure them together with a single rubber band.

If aerator is present, remove and check for particles after all samples have been collected from the secondary faucet. Photograph the aerator, if possible, and make a notation about presence or absence of particles.

Step 5-6 - Deliver all sample bottles to the Michigan Department of Environmental Quality (MDEQ) Drinking Water Laboratory.

The attached map provides directions to the State Laboratory located at 3350 North M.L. King Blvd., Lansing, Michigan. Access is available Monday to Friday from 7am to 5pm, but after-hours deliveries may be pre-arranged by calling during business hours.

Contact Julia Pieper at 517-335-8076 or pieperj2@michigan.gov, or the Laboratory at 517-335-8184 to provide driver names and estimated time of arrival to the security team so that drivers can be cleared for entrance.

Drivers must present ID (driver's license) at the entrance security gate.

The DEQ Drinking Water Laboratory will analyze all water samples in accordance with the Laboratory Services Standard Operating Procedure (SOP) Document SOP #800 Revision #4 Effective Date 10/2015.

Applicable analytical methods will be in accordance with the *Method for Determination of Metals in Environmental Samples, Supplement I*, U.S. Environmental Protection Agency, Method 200.8, 1999 Revision 5.5.

All Method Detection Limits shall be performed according to Title 40 of the Code of Federal Regulations, Part 136, Guidelines Establishing Testing Procedures for the Analysis of Pollutants, Appendix B, Definition and Procedure for the Determination of the Method Detection Limit.

Analytical quality control will be in accordance with SOP #800 Revision #4.