

# General Sample Collection Instructions

Note: These are general sample handling and sample collection instructions provided as a quick reference for some of our most common tests. They are not meant to replace specific guidance that may be required throughout various jurisdictions. Please contact us anytime if you have any further question or concerns.

## Sample Collection – General (lead, etc.)

- **Tap Water:** Allow the water to run for approximately 5 minutes (in that time all the standing water should be flushed out of the pipes and a representative sample of the source water can now be collected). If analyses are to be performed on standing water in pipes (i.e. to test possible pipe corrosion and leaching), the sample should be collected almost immediately.
- Sample containers supplied by CARO may contain preservatives (if applicable). *Use caution as the acid/caustic preservatives are corrosive.* Do NOT dump these preservatives (liquid or powder form) as they are necessary in ensuring accurate results.
- Fill all sampling containers completely, then store under refrigeration (4°C, do not freeze) until packing into cooler containing ice. Samples should be kept below 10°C during transport.

## Microbiological Analysis (Coliforms, E. Coli, HPC)

- It is recommended that the collection faucet be sterilized with bleach prior to sample collection (the screen or aerator should be removed from the tap before bleaching and not reinstalled until sampling is complete).
- When filling the bottle, take care not to cross contaminate cap and/or bottle threads.
- Fill bottle to the shoulder (not the rim) to allow proper mixing by the lab.
- Samples collected for microbiological analysis must be collected in sterile bottles (containing sodium thiosulfate) and received by CARO within **24 hours of collection**
- Samples should arrive at a temperature of **less than 8°C (NOT Frozen)**

## Volatile Analysis (BTEX, THM, VOC, VH, F1)

- **Water** samples should be collected in replicate (i.e. fill 2 vials per sample) in 40 mL septum-top amber glass vials. The procedure for filling and sealing sample vials is as follows:
  - Fill each vial to overflowing (positive meniscus)
  - Set vial on a level surface and screw on the cap
  - Check for air bubbles (invert the vial and tap lid). If air bubbles are present, open the bottle, add additional sample, and reseal in the same manner as stated above.

- **Soil** samples must be collected in 40 mL glass vials pre-charged with 10 mL methanol (in replicate). Use the supplied coring device which is designed to dispense approximately 5 g sample. Additionally, fill a 125 mL glass jar with Teflon-lined lid to allow for moisture analysis, as the results are reported on a dry weight basis.

## Semi-volatile Analysis (L/HEPH, EPH, PAH, PCP, PCB)

- **Water** samples should be collected in 250 mL – 1 L amber glass bottles with Teflon-lined lids. One bottle is adequate unless speciated phenols (PCP) are required, in which case a second container is required.
- **Soil** samples should be tightly packed into 125-250 mL glass jars with Teflon-lined lids

## Metals Analysis

- **Dissolved metals** (typically for groundwater): Filter (using a new 0.45 µm membrane filter) as soon as possible, and then fill one 125 mL acid-washed HDPE container preserved with HNO<sub>3</sub>.  
\*If Hexavalent Chromium is required, filter and fill one 125 mL HDPE container containing NaOH.
- **Total metals** (typically for surface water): Fill one 125 mL acid-washed HDPE container preserved with HNO<sub>3</sub>. (*Note: hexavalent chromium is not normally conducted on an unfiltered and preserved sample*)
- **Soil** samples should be collected in glass containers or plastic bags.

## Dissolved Sulfide

- To measure dissolved sulfide, insoluble matter in the sample must first be removed. Because sulfide may be oxidized during filtration, removal is achieved by producing an aluminum hydroxide flocculent. The flocculent is allowed to settle, the supernatant decanted off and preserved with zinc acetate and sodium hydroxide.
- **Supplies needed (per sample)**
  - 1 x 250 mL clear glass bottle containing 0.5 mL of 6N sodium hydroxide (NaOH)
  - 1 plastic vial containing 0.5 mL of aluminum chloride (AlCl<sub>3</sub>)
  - 1 x 125 mL HDPE bottle containing 1.0 mL of 2N zinc acetate and 1.0 mL of 5N NaOH
- **Procedure:**
  1. Collect the sample (with minimum aeration) in the 250 mL clear glass bottle containing the sodium hydroxide. Completely fill the bottle (such that it is headspace free when capped).
  2. Immediately add one vial (0.5 mL) of the aluminum chloride solution, cap, and mix by holding the bottle in an upright position and rotating your wrist back and forth for 1 minute.
  3. Allow the sample to settle for 5 to 15 minutes (long enough to allow the flocculent to settle to the bottom of the bottle but not longer than necessary).
  4. Carefully decant the supernatant into the 125 mL HDPE bottle containing the zinc acetate and sodium hydroxide.
  5. The sample remaining in the 250 mL glass bottle is caustic. Please return the partially filled bottle to CARO for disposal.

## Asbestos – Sampling and Submitting Bulk Samples

- When taking samples of bulk materials for the purpose of asbestos analysis, there are certain precautions that should be taken by the sampler in order to avoid unnecessary exposure to fibres which may prove to be asbestos. The following is the EPA recommended procedure for the safe handling of potentially hazardous bulk samples:
- Material should be sampled when areas are not in use or not occupied, if possible.
- Lightly wet sample area down with water mister if product is suspect to become airborne when cutting or removing during sampling.
- If multiple samples are to be taken, wear a NIOSH approved respirator. If only a single sample is to be collected and a respirator is not available, avoid creating or breathing dust by using very careful sampling practices.
- Preferably use a small “zip-lock” bag to contain the sample. The container should be clean and dry.
- Using the “zip-lock” bag, the sample can be taken by using a clean knife to cut out a small piece of material about 2 square inches or 2 tablespoons. Be sure to penetrate any paint or protective coating and to sample all layers of the material
- Tightly close the sample bag and wipe the exterior with a damp cloth to remove any material which may have adhered to it during sampling.
- Label the sample bag identifying the structure, the date the sample was taken, the specific location of the sample in the room or structure, and who took the sample.
- If possible, please download and complete a fillable Chain of Custody (COC) form with related information from our website that will accompany the samples:
- Please contact our lab to find out what pricing and test reporting turn around options is available.

## Vermiculite Attic Insulation: Additional Special Instructions for Sampling

- Collect 2 cups full of the material from the bottom half of the insulation in the attic or from the bottom of the wall cavity.
- Avoid creating and breathing dust and do not remain in the area longer than absolutely necessary.
- Health Canada recommends that you use a respirator to reduce the dust you breathe during collection.  
\*A NIOSH approved half-face P100 respirator is recommended and can be purchased at most hardware stores. Be sure to follow all instructions for the respirator regarding fitting and maintenance. Please Note: This respirator is NOT adequate protection if a major disturbance of vermiculite is encountered as would be the case during a renovation or for the removal of the material.
- Double bag: Place sample in “zip lock” freezer bag with sample ID written on the bag. Place this bag(s) in a larger “zip lock” bag with completed chain of custody form and submit for analysis.

## Additional Information on Sampling, Preservation, Hold Times and Methodology

[CALA Guide to Current Sampling Practices](#)

[APHA Standard Methods, Collection and Preservation of Samples, Table 1060:I, Summary of Special Sampling and Handling Requirements](#)

[US EPA, 40 CFR Part 122, 136, et al. Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; National Primary Drinking Water Regulations; and National Secondary Drinking Water Regulations; Analysis and Sampling Procedures; Final Rule, March 12, 2007. Table II.—Required Containers, Preservation Techniques, and Holding Times](#)

[US EPA SW846 Chapter Three, Inorganic Analytes, revision 4, Feb 2007](#)

[US EPA SW846 Chapter Four, Organic Analytes, revision 4, Feb 2007](#)

[BC MOE Field Sampling Manual](#)

[BC MOE Environmental Laboratory Manual](#)

[Ontario Sampling Guidance document for laboratories analyzing drinking water](#)

[Canadian Waste Water Association LEGAL SAMPLING GUIDELINE](#)