



General Sample Collection Instructions

SAMPLE COLLECTION	1
MICROBIOLOGICAL ANALYSIS	1
VOLATILE ANALYSIS	2
SEMI-VOLATILE ANALYSIS	2
METALS ANALYSIS	2
DISSOLVED SULFIDE	3
ADDITIONAL INFORMATION ON SAMPLING	3

SAMPLE COLLECTION – GENERAL LEAD

- 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 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 HNO₃.
**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 HNO₃. (*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)**
 - o 1 x 250 mL clear glass jar
 - o 1 plastic vial containing 0.5 mL of aluminum chloride (AlCl_3)
 - o 1 plastic vial containing 1 mL of 6N sodium hydroxide (NaOH)
 - o 1 x 125 mL HDPE bottle containing 1.0 mL of 2N zinc acetate and 1.0 mL of 5N NaOH (green cap bottle)
- **Procedure:**
 - o Add the one vial (1 mL) of sodium hydroxide to empty 250 mL clear glass jar
 - o 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).
 - o 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.
 - o 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).
 - o Carefully decant the supernatant into the 125 mL HDPE green cap bottle containing the zinc acetate and sodium hydroxide.
 - o The sample remaining in the 250 mL glass bottle is caustic. Please return the partially filled bottle to CARO for disposal.

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](#)