Method EPA 1623 Cryptosporidium and Giardia analysis

The method for sampling a raw water source is either to collect a 20-L grab, refrigerate and ship to the laboratory for examination or raw and finished water samples can be filtered in-the-field. BCS Laboratories recommends 100 liters of water sample be passed through a high volume sampling capsule filter (Envirochek HV). Disposable supplies should be used wherever possible. Additional equipment needed to complete the sampling includes: A cooler with frozen ice brix or refrigerator, Turbidimeter (for LT-2 Sampling), and safety equipment including powder free latex gloves

SAMPLING

1.Documentation of Sampling (Complete Sample Data Sheet): Name of Sampler; Source; Location; Turbidity; Date; Collection Time; pH; Water Temp (C); Total Volume; Assay Requested; and Signature.

2.Sample Volume: Raw :10 Liters Finished : 100 Liters (filter concentrated) recommended, cease sampling when 50% reduction in flow rate is achieved.

3.Matrix Spike (optional): A raw water or finished water matrix spike sample should be analyzed when a new field sample is first received from a company or utility for which The Laboratory has never before analyzed samples and every 20 samples thereafter (e.g. 21, 41, ect.). When the first raw water sample from a field site is taken, a second 10 L aliquot should be sampled and sent to the laboratory for analysis. Until EPA addresses this issue, finished water matrix spike samples can be taken by filtering 90 liters in-the-field and simultaneously taking a 10 liter grab sample to forward to the laboratory. BCS Labs will spike the 10 liters and pass the final volume through the filter. Note: BCS Laboratories recommends that a sampling program begin with development of a mean recovery percentage from that matrix. This necessitates performing a matrix spike analyses from each site prior to the onset of a regular sampling program.

4.Sample Collection: Put on a pair of powder free latex gloves, turn on the tap and flush the system by allowing the source water to flow for 2 to 3 minutes or until any debris that has accumulated has cleared. Supplies, container, and tubing have already been decontaminated.

Grab Water Raw Sample: Fill the 10 L container, if two containers have been provided because a matrix spike sample is required, fill one container immediately after the other.

For Finished Water Field Filtration: remove end caps and filter capsule from sterile sealed bag. **Save blue end caps in a secure place as they are needed for sealing the filter post collection.** Connect the filtration set up to a pressurized water source via the provided tubing and the garden hose female connector. Alternatively, if a pressurized port with the appropriate connections is not available a submersible pump with a variable flow valve can be used to pass the water through the filter. Connect other end of filter to the water flow meter and record initial meter (in Gallons) reading. When connecting the filter system please ensure that the water flow is in the right direction of the arrows on the filter capsule. **Turn on water slowly and filter water sample at 0.5 gallons per minute maximum flow rate.** Please Note: *A head pressure of 0.5 bar (7.5 psi) is required to create flow through the filter, and the recommended pressure of 5 bar (75 psi) should produce the flow rate of 3 to 4 L (0.5 gallon per minute) per minute.* ***The maximum operating pressure of 8 bar (120 psi) should not be exceeded.***

Collect a approximately 26.5 gallons or 100 L sample. Turn off water supply and record final meter reading. If detaching filter from the hoses make certain to attach the provided end caps to the filter prior to shipping. Disconnect the filter system and drain any excess water from the system. Label filter with all appropriate parameters indicated on label.

If collecting additional samples using the sample apparatus flush the system (after removing the filter for a minimum of ten minutes at high flow. Then attach a new filter (ensure the direction of the arrow on the filter is the same as the flow direction in the set-up) and repeat the above process.

5.After Sampling: Immediately following sample collection, tighten the container's cap, or if filtering, disconnect filter capsule, **replace filter capsule caps**, and place in a storage cooler with ice brix or in a refrigerator to chill prior to shipping. Store the 10 Liter container or filter at 0° C to 8° C between collection and shipment to the laboratory. Do not allow to freeze.

6.Holding Time: ship sample to arrive within 72 hours of completion of sampling. Maximum holding time between initiation of sampling and filtration, elution and concentration of the filter by the laboratory is 96 hours. **Sample must arrive at below 20°C.**

Please note the EPA has made the following statement regarding shipping of the samples to a laboratory:

U.S. Department of Transportation (DOT) regulations (49 CFR172) prohibit interstate shipment of more than 4 L of solution known to contain infectious materials. State regulations may contain similar regulations for intrastate commerce. This method requires a minimum sample volume of 10 L. Unless the sample is known or suspected to contain Cryptosporidium or other infectious agents (e.g., during an outbreak), samples should be shipped as noninfectious and should not be marked as infectious. If a sample is known or suspected to be infectious, and the sample must be shipped to a laboratory by a transportation means affected by DOT or state regulations, it is recommended that the sample be filtered in the field, and that the filter be shipped to the laboratory to avoid violating transport regulations.

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