



Method EPA 1623.1

***Cryptosporidium* oocysts and *Giardia* Cysts Analysis**

Water samples are typically field filtered through capture capsules (Envirochek HV, Pall corp., USA). The filter's 1 µM size rating captures potential parasites that may be in the water. It is imperative that pressure & flow rates are not exceeded as that may affect capture efficacy. Following the concentration of the water sample onto the filter, the filter is packaged into a cold insulated shipper & sent to the laboratory for processing. BCS Laboratories recommends passing 100 liters of sample water through the capsule filter (Envirochek HV). Alternatively under restricting circumstances, sample may be collected in 20 liter sterile sampling bladder (cubitainers or equivalent container) & shipped to the laboratory on ice for processing by filtration.

Sampling supplies include: Sterile sampling capsule, insulated shipper, Female Garden Hose (FGH) connector attached to a pre-cleaned & disinfected 0.5" ID inlet tubing, 0.5" ID outlet tubing connected to a flow totalizer, pump if needed (submersible, peristaltic, or transfer capable of 0.5 gallon/ min), freezer packs (contained ice is acceptable), sterile container (if shipping water), & sampling form.

SAMPLING

1. **Field Data Sheet:** Name of sampler, date/ time, source, location, turbidity/pH/water temp (if applicable), total volume, & signature.

2. **Sample Volume:** Typically 27 gallons (100 Liters) is collected through the filter. If clogging occurs, cease sampling when 50% reduction in flow rate occurs. If field filtration is not possible, 20L or more water samples may be sent to the lab (Grab Sampling). The Envirochek® HV capsule has been validated for testing source water up to 50 L and for 1,000 liters or more for treated water.

3. **Matrix Spike (optional):** A raw or finished water matrix spike sample should be analyzed when a new field sample is received from a client for which the laboratory has never analyzed samples and every 20 samples thereafter (e.g. 21, 41, etc.). 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. BCS Labs will spike the 10 liters and pass the volume through the filter. **Note:** BCS Laboratories recommends that a sampling program begin with development of a mean recovery percentage from that matrix.

4. **Sample Collection:** Dawn protective attire, connect inlet tubing using the FGH connector (or alternative), turn on water supply, and flush the system by allowing the source water to flow for >10 gallons or until any accumulated debris has cleared. Well samples shall be flushed until water parameters have stabilized and a representative sample of the ground water is obtained.

Grab Water Raw Sample: Fill the 10 or 20 L container (if two containers have been provided because a matrix spike sample is required, fill one container immediately after the other). BCS labs does not accept bulk water samples unless prior arrangements have been placed.

For Field Filtration: Turn off water supply. Remove filter end caps. **Save end caps in a secure place as they are needed for sealing the filter post-collection.** Connect the filter to a pressurized water source via the tubing. Alternatively, if a pressurized port is not available, a submersible pump with a variable flow valve can be used to pass the water through the filter. Connect the "outlet" end of filter to the flow meter and record initial meter (in gallons) reading. When connecting the filter system, please ensure that the water flow is in the correct direction of the arrows on the filter capsule. **Initiate water flow through the filter. Adjust to 0.5 gallons per minute maximum flow rate.** Vent the filter through the valve to remove any trapped air. *Please Note: A head pressure of 0.5 bar (7.5 psi) is required for flow. The maximum pressure should not exceed 30psi.* <http://www.pall.com/main/laboratory/literature-library-details.page?id=7353#1b>

For finished water, collect approximately 26.5 gallons or 100 L sample. Higher sampling volumes are acceptable. The Envirochek® HV capsule has been validated for testing source water up to 50 L and for high volumes of drinking water analysis up to 1,000 liters. Should the filter start to clog and flow rate drop below 50%, sample collection may be stopped, volume recorded, & noted on the Field Data Sheet. At the end of the sampling, turn off water supply, drain tubing, & record final meter reading. When detaching filter from the hoses, ensure to **attach the end caps securely to the filter.** Do not drain excess liquid from the filter. Disconnect the filter system & drain any excess water from hoses, & meter. Label filter with all parameters on the label & on the field data sheet. **Should Dechlorination be required, add sodium thiosulfate directly to filter inlet following tube disconnection and cap ends.**

If collecting additional sample, flush the system (after removing the filter) for a >10 minutes at high flow (>20 gallons). Attach a new filter. Repeat the above process.

5. **Sample preservation, hold time, & shipping:** following sample collection, **replace filter capsule caps**, and place in a storage cooler with ice/ice packs or in a refrigerator to chill prior to shipping. Store the 10 or 20 L water container or filter at 0° C to 10° C between collection & shipment to the laboratory. Do not freeze. Ship sample to arrive within 72 hours of completion of sampling. Maximum holding time between initiation of sampling/filtration & elution is 96 hours. **Sample must arrive below 20°C.**

Please note the EPA has made the following statement regarding the 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 non-infectious 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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