

## Virus Sampling Instruction

Enteric viruses are viruses ones from the digestive and intestinal tract and are shed in feces. Common enteric pathogens include norovirus, hepatitis A virus. They can be transmitted between hosts by the water route and may cause serious diseases when ingested by susceptible individuals. Sporadic cases and outbreaks of enteric viruses have been reported. Acceptable level of these viruses in drinking water is zero. Enteric viruses are also of concern in reclaimed water, wastewater, and biosolids because they are more resistant to typical treatment and disinfection.

Due to the low numbers of viruses expected in water and wastewater, virus concentration is an essential step for detection and quantification. Depending on the source sample volumes range from 100-1500 L. Samples are passed through electropositive filters that adsorb viruses to the filter medium. The adsorbed viruses are then recovered from the filter using a small elution volume that is processed by either virus culture assays or by PCR for nucleic acid quantification. Typical sample volumes are for: drinking water ~1500 L; surface water 100-300 L; and reclaimed water 50-300 L depending of turbidity of the water.

**Cel Analytical Service:** The lab provides sampling kits including: tubing, the filter housing and flow meter prior to to be used in sampling. Procedure to be used is as follows:

- 1) Make sure the filter housing is tightly closed. (A white plastic wrench is provided for tightening the filter housing)
- 2) Prior to sampling, alcohol-wipe the sampling tap. Open the tap and allow to run for 5 min. Let water drain before connecting the hose.
- 3) Connect the intake valve attached to a brass Y fitting to the water source - and the tubing down-stream of the flow meter into a drain source - if water pressure is high twin shut-off valves allow you to control water flow to either side or both at the same time-
- 4) Open valve slowly and watch the filter housing fill up. If water leaks from the filter housing, stop and retighten the filter housing before resuming.

**DO NOT** disconnect tubing from the filter housing. The apparatus has been carefully cleaned and sterilized.

- 5) Resume sampling by opening the valve to filter the sample.
- 6) Watch the flow meter and record the volume of water filtered.
- 7) When you reach the desired volume of water filtered, close the water source valve.
- 8) Disconnect the quick snap connects from filter housing and drain the water - take care not to contaminate with bare hand - replace the quick connects back in the filter housing
- 9) Do not disconnect the tubing- place the filter housing (with the filter inside) connected to the tubing in to the cooler with blue ice provided and chain of custody form for transport to the lab.
- 10) Example of tubing connection to pressure source is shown in figure 1b below

Please make sure the start and stop time and final volume filtered is recorded on the chain of custody form. This is important for calculation of virus concentrations.

For any questions during sampling contact Cel Analytical at: (415) 882-1690



Figure 1a. Filters and Filter housing

Figure 1b. Connection of filter housing to a pressurized source with a flow meter downstream of the filter.

