Taking a VOC (Volatile Organic Chemical) Sample Properly

Sometimes water samples show contaminants because of a sampling error. To ensure that this does not happen, follow these steps when taking the VOC samples from your water system.

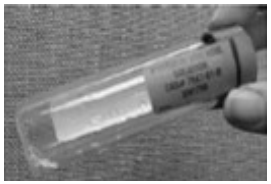
Step One

Get a Sample Kit From Your Lab – One vial will be labeled "Trip Blank." You do not need to do anything to it except send it back to the lab with your test kit water. If the system chlorinates, a brown bottle may also be in the kit.

Step Two

Where Do You Take The Sample? – The sampling point should be a tap faucet, after the treatment system if one exists. Make sure you select an area free from gasoline or diesel fuel fumes.

Step Three



Do Not Rinse Out The Vials – There is a small amount of acid in the sample vials and brown bottle. Do not rinse it out, it is meant to be there. The brown bottle is used to neutralize the chlorine before you fill the vials.

Step Four

Do Not Touch the Inside of the Vial or Cap – Make sure you are wearing clean clothes free of grease, fuel or oil stains. Remember to wash your hands before and after you take the sample.

Make sure you keep all the vials together the whole time you are taking your samples. The samples must be sent to the lab immediately.

Step Five

Prepare the Faucet. Remove the screen, hoses or aerators from the faucet. These devices can put air in the water that will regroup into bubbles during shipping and make the sample unusable.

Step Six

If there is a brown bottle in the kit, fill it with cold water, cap and shake the bottle, use the water from the brown bottle to fill the vial; otherwise fill the vials with cold water from the faucet until it is slightly overfilled. The water should end up in a mound shape above the rim of the vial. Screw the cap on tightly.

Step Seven

Check for Air Bubbles Turn the vial over and tap the cap on a hard surface. There should NOT be an air bubble in the sample. ***IF*** there is an air bubble, unscrew the cap and add more water.

Step Eight

Fill Out the Paperwork – KEEP a copy for your files. Pack the sample in a styrofoam container or bubble wrap so the vials do not break. Ship it in to the lab immediately.

The sample will NOT be usable if there is an air bubble in the sample. You will have to resample.

Keep the sample cool by placing samples in a cooler with an ice pack. Do not freeze.

Volatile Organic Chemicals (VOCs)

Volatile Organic Chemicals (VOCs) refers to a group of organic compounds that are usually derived from fuel products or solvents. Currently, there are 21-regulated VOCs for which Community Water Systems(CWS) and Non Transient Non Community Water Systems (NTNCWS) must monitor. The regulated VOCs include: benzene, toluene, xylene, carbon tetrachloride, and other compounds. VOCs may cause both short and long term health problems at levels above the health standards set by the US EPA. Many of these compounds are known or suspected carcinogens which may contribute to an increased risk of some types of cancer if a person is exposed to them over long periods of time. All CWS and NTNCWS's are required to monitor for VOC's. Systems that use surface water are required to monitor annually. Most systems that use groundwater are required to monitor every three years. If any of the regulated VOC levels is higher than 0.5 ppb, the system begins quarterly monitoring to track levels and movement of the compounds over time. If any regulated VOC exceeds the Maximum Contaminant Level (MCL), the system must treat the water to remove or reduce the contamination. Granular activated carbon (GAC) adsorption and aeration are the most commonly used treatment methods for removing VOCs from water. It is very important for communities and water system owners to plan ahead and implement a program to protect their drinking water source from VOC contamination.

Contamination can come from leaking fuel storage tanks (above and below ground), and improper storage and disposal of solvents, paints and paint thinners. Aerosol containers may also leak and contaminate a drinking water source. Proper containment and monitoring measures should be implemented for fuel storage areas and landfills. If a spill or leak does occur, it should be reported to DEC right away so that measures can be taken to protect the drinking water source.

Maximum Contaminant Levels (MCL) of Volatile Organic Contaminants for Drinking Water

1,1-Dichloroethylene	7 ppb
1,1,1,-Trichloroethane	200 ppb
1,1,2-Trichloroethane	5 ppb
1,2-Dichloroethane	5 ppb
1,2-Dichloropropane	5 ppb
1,2,4-Trichlorobenzene	70 ppb
Benzene	5 ppb
Carbon tetrachloride	5 ppb
cis-1,2-Dichloroethylene	70 ppb
Dichloromethane	5 ppb
Ethylbenzene	700 ppb
Monochlorobenzene	100 ppb
o-Dichlorobenzene	600 ppb
p-Dichlorobenzene	75 ppb
Styrene	100 ppb
Tetrachloroethylene	5 ppb
Toluene	1,000 ppb
trans-1,2-Dicholoroethylene	100 ppb
Trichloroethylene	5 ppb
Vinyl Chloride	2 ppb
Xylenes	10,000 ppb

NOTE: (ug/L is 1 ppb)

Contact DEC Spill Prevention and Response staff in the event of a contaminant (fuel or solvent) spill. Anchorage: 269-3063; Juneau: 465-5340; Fairbanks: 451-2121 or if the spill occurs after business hours call 1-800-478-9300. Increased sampling may be required to monitor possible contamination from improper containment measures or a fuel spill.