



First Nations Health Authority  
Health through wellness

## HOW TO SAMPLE FOR DISINFECTION BY-PRODUCTS

### *What are disinfection by-products (DBPs)?*

Disinfection by-products (DBPs) are substances that can form when a disinfectant, such as chlorine, reacts with decaying organic matter, like leaves or other vegetation. We sample for these by-products because they have the potential to cause harmful health effects. They are also *indicators* of the potential for taste and odour complaints.

### *How often do we sample for DBPs?*

Since concentrations of DBPs vary with temperature and season, we usually sample on a quarterly basis (fall, winter, spring, and summer) and average the results. Two of the most common types of DBPs found in chlorinated drinking water are trihalomethanes (THMs) and haloacetic acids (HAAs).

***Please keep in mind, the health risks from disinfection by-products, such as THMs and HAAs, are VERY low compared to the risks from consuming water that has not been disinfected.***

### *Want more information on DBPs?*

More information can be found at this Government of Canada website: <https://www.sac-isc.gc.ca/eng/1563307885242/1563307933110>

### *What you will need for sampling*

The number of vials you need for sampling is lab dependent. The current lab used by the First Nations Health Authority (FNHA)—CARO Analytical Services—requires **four** vials (i.e. if you are sampling from one location, you need 4 vials; if you are sampling from two locations, you need 8 vials, etc.):

- 2 for trihalomethanes (THMs), and
- 2 for haloacetic acids (HAAs)

***NOTE:*** You will notice that each sample vial contains either a liquid or solid preservative. Do not empty out the preservative OR rinse the vial before sampling. Fill the sample bottle only once and be careful not to spill any of the preservative when sampling.



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You will also need:

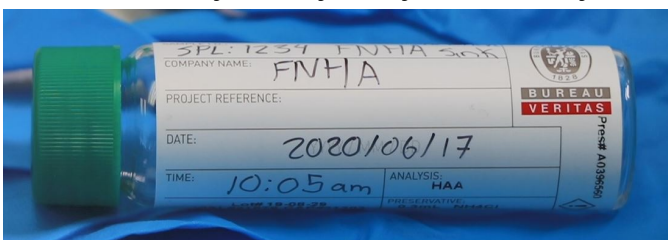
- a chlorine test kit
- gloves
- bubble wrap
- a cooler
- a frozen ice pack
- extra packing material
- a chain of custody form
- packing tape
- a courier waybill
- a fine tip waterproof marker

### **Determining where to sample**

Consult with your Environmental Health Officer (EHO) to determine the best site(s) for sampling. When sampling for disinfection by-products, we usually want to sample the oldest water in the system (this is where DBP concentrations are usually highest), but your EHO may also recommend other sample sites, such as the start of the water distribution system.

### **How to sample for disinfection by-products – step by step**

1. Remove any aerators or attachments from the faucet and allow the cold water tap to run for 5 minutes. Make sure the water is cold to the touch before taking samples!
2. While you wait with the tap running, you can label the vials using a waterproof pen (e.g. Sharpie). Fill in the label with the date, time, community name, address/name of location, and Compliance 365 location ID (location IDs are a unique number assigned to a sample site – as mentioned in the video, we used to use another ID known as sampling point locators [SPL], but these have been replaced with location IDs). It is easier to fill in the labels while they are dry, but you can always fill in the labels after sampling.



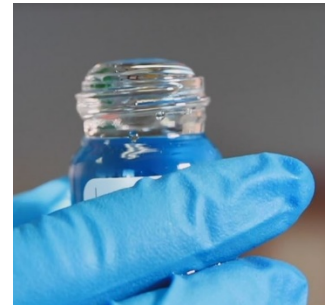
*Fill out the label with a waterproof marker while the vial is dry*

3. After flushing, turn the water pressure down until just a small stream of water is coming from the tap. This helps to prevent spilling when taking the sample.
4. Put on gloves.



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5. Remove the lid from the vial, being careful not to spill the preservative. Fill the vial slowly to slightly overflowing; the water in the vial should form a dome-like shape above the rim of the vial. Allow all bubbles to rise to the surface—you don't want any air bubbles in the sample.
6. Wet the inside of the cap with water and place it back on the vial, this will help prevent air bubbles. Tighten the cap finger-tight, but not too tightly because the caps can break if forced.
7. Once the vial is capped, turn the vial upside down. If you see there are no bubbles in the vial, it has been filled properly. If there are bubbles, carefully reopen the cap and add a little bit more water. Again, be careful not to spill.



*This is what we mean by a "water dome".*



*The vial on the left has no bubbles and is correct. The vial on the right has a bubble and will need to be topped up.*

8. **At the same sample site**, repeat steps 5 to 7, until all **four** vials are filled.
9. After taking your samples, sample for free and total chlorine residual. Record these values as "Field Total Chlorine" and "Field Free Chlorine" on your chain of custody form.
10. Put vials back in the bubble wrap they came in, and carefully place vials in the cooler with an ice pack. Fill all empty space in the cooler with packing material. Samples should stay at a recommended temperature of 4°C (you may need more than one ice pack during warmer months to maintain this temperature).
11. Fill out the required sections on the chain of custody form, put it in a Ziploc bag, and place it in the cooler with the samples.
12. Seal the cooler with packing tape, and fill out the waybill. Ship the cooler back to the lab through your local courier. Ship samples back to the lab as soon as possible for processing.

Always feel free to contact your EHO or Environmental Health Technician if you have any questions about sampling and/or filling out shipping/lab documentation.

Happy sampling!