

# Disinfection Byproducts - (Haloacetic Acid and Total Trihalomethane)

## SAMPLE COLLECTION PROCEDURE

### Reference Methods EPA 552.3 AND 524.3

**Read instructions carefully.**

**Follow all instructions to avoid sample rejection.**

- **Safety concerns:**

**Caution!** Sample bottles contain chemicals. Open containers slowly and carefully. Do not rinse out containers.

- View [Safety Data Sheets](https://www.health.state.mn.us/communities/environment/envlab/sdsinformation.html)  
(<https://www.health.state.mn.us/communities/environment/envlab/sdsinformation.html>)

- **Sample bottle/preservative:**

- **Haloacetic acid analysis:** 250 mL amber bottle with ammonium chloride ( $\text{ClH}_4\text{N}$ )
- **Trihalomethane analysis:** Three 40 mL amber vials with 25 mg ascorbic acid ( $\text{C}_6\text{H}_8\text{O}_6$ ) and 200 mg of maleic acid ( $\text{C}_4\text{H}_4\text{O}_4$ )

- **Shipping:**

- Ship immediately.

- **Sample locations:**

- State-approved or State-accepted location. If one of your locations is not in use, contact your compliance officer for direction.

- **Prior to collection:**

- At least 48 hours before sampling, remove ice packs from the sampling kit and freeze them.
- Measure chlorine residual. If total chlorine residual is greater than 5 mg/L, do not collect samples until the chlorine residual is reduced to 5 mg/L or below.

**Sample collection procedure:**

1. Attach the pre-printed label to the bottle. If you do not have a pre-printed label, write the following information, using a ballpoint or permanent pen, on the generic bottle label: PWSID, PWS Name, and Location ID.
2. Remove any attachments from the sample tap.

## DISINFECTION BYPRODUCTS - (HALOACETIC ACID AND TOTAL TRIHALOMETHANE)

3. Turn on the cold water tap and run for 4 to 5 minutes, or until the water temperature has stabilized, whichever is longer.
  - a. If there is only one faucet handle, make sure it is in the cold water position.
4. Reduce the flow of the water so the stream is steady and the width of a pencil.
5. For haloacetic acid analysis:
  - a. Remove bottle cap and hold in hand. Do not touch the underside of the cap or the inside of the bottle.
  - b. Fill bottle to the shoulder. **DO NOT** overfill the container.
  - c. Screw the cap back on the bottle. Make sure the cap is on securely. Turn the bottle upside down to make sure the water does not leak.
  - d. Gently mix the sample by turning the bottle back and forth for 15 seconds.
6. For total trihalomethane analysis:
  - a. Remove bottle cap and hold in hand. Do not touch the underside of the cap or the inside of the bottle.
  - b. Position the vial at a slight angle under the water flow.
  - c. Carefully fill the vial to form a convex meniscus above the top of the vial (the curved upper surface of a liquid formed by surface tension). To do this, use the cap of the vial to complete filling of the vial. Be careful not to overfill the vial.
  - d. Screw the cap back on the vial so that the milky white side of the septum is in contact with the water. It is okay if some water spills over the sides of the vial when capping.
  - e. Turn the vial over and tap it lightly against your hand and check for air bubbles. **Once capped, you may not reopen the vial and use it again.**
    - i. If there are air bubbles in the vial, dispose of the vial by pouring the water down the drain and recycling the vial.
    - ii. You must collect a new sample using a new vial. The laboratory will reject samples, per method requirements, if there are any air bubbles in the vial.  
**Note:** Samples will be rejected by the laboratory, per method requirements, if there are any air bubbles greater than 6 mm in diameter at the time of analysis.
  - f. Gently mix the sample by turning the vial back and forth for 15 seconds.
  - g. Repeat for the remaining two vials.
7. Replace any attachments that were removed from the faucet or sample tap.
8. Upon completion of sampling, immediately (within 15 minutes) place sample in cooler with frozen cooling material.

**Complete the Chain-of-Custody form using a ballpoint or permanent pen:**

## DISINFECTION BYPRODUCTS - (HALOACETIC ACID AND TOTAL TRIHALOMETHANE)

1. Name of the sample collector.
2. Date and Time collected (include a.m. or p.m.).
3. Field Number (if applicable).
4. Put your signature on the "Relinquished By" line, including date and time. The date and time are when the sample is put in the return mailer and sealed. If samples pass hands prior to packaging, both parties must sign, date, and time. The first party would put down the date and time of the transfer, and the second party would put down the date and time the sample is packaged.

### **Deliver samples to the laboratory:**

1. All sample containers must have cooling material present without evidence of sample freezing.
2. Sample temperature requirements depend on when the lab receives the sample:
  - a. Received 0 - 24 hours after collection: frozen or partially frozen (i.e. containing some solids) cooling material must be present. The temperature of the cooling material must be less than the temperature of the sample(s).
  - b. Received more than 24 hours after collection: frozen or partially frozen cooling material must be present. The temperature of the samples must be between 0.0 and 6.0° C.
3. Dropping off samples in person:
  - a. Frozen or partially frozen cooling material must be present. Laboratory staff must confirm the state of the cooling material. The temperature of the cooling material must be less than the temperature of the sample(s). Temperature requirements listed above must be followed.
  - b. Physically hand cooler/container containing samples and cooling material to laboratory sample receiving staff. Do not leave sample containers at the sample dock unattended.
4. Shipping samples:
  - a. Make sure the completed Chain-of-Custody is in the shipping container.
  - b. Add enough fresh, frozen cooling material to the mailing container to maintain appropriate sample temperature as indicated above, with no evidence of freezing.
  - c. Ship to the Public Health Laboratory using the applicable address. Because of the temperature requirement, it is recommended to ship using **guaranteed** overnight shipping.

DISINFECTION BYPRODUCTS - (HALOACETIC ACID AND TOTAL TRIHALOMETHANE)

**Courier Service (Spee-Dee, UPS, FedEx, etc.)**

Minnesota Department of Health  
Public Health Laboratory  
Environmental Sample Receiving  
601 Robert Street North  
Saint Paul, MN 55155-2531

**U.S. Postal Service – 1st Class**

Minnesota Department of Health  
Public Health Laboratory  
Environmental Sample Receiving  
P.O. Box 64899  
Saint Paul, MN 55164-0899

If you have questions, call 651-201-4700, or email [health.drinkingwater@state.mn.us](mailto:health.drinkingwater@state.mn.us).

Minnesota Department of Health

Drinking Water Protection  
651-201-4700  
[health.drinkingwater@state.mn.us](mailto:health.drinkingwater@state.mn.us)  
[www.health.state.mn.us](http://www.health.state.mn.us)

October 2023

*To obtain this information in a different format, call: 651-201-4700.*