

GENERAL INFORMATION ABOUT DISINFECTION BY-PRODUCTS

What are disinfection byproducts and how are they formed?

Chlorine is added to drinking water to kill or inactivate harmful organisms that cause various diseases. This process is called disinfection. However, chlorine is a very active substance and it reacts with naturally occurring substances to form compounds known as disinfection byproducts (DBPs). The most common DBPs that form when chlorine is used are trihalomethanes (THMs) and haloacetic acids (HAA5).

- Trihalomethanes include four chemicals: chloroform, bromoform, bromodichloromethane, and dibromochloromethane. The maximum annual average of THMs detected in local water supplies cannot exceed 80 parts per billion (ppb) per EPA regulations.
- Haloacetic acids are another form of disinfection byproducts associated with chlorination. This group consists of monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. Currently, the maximum annual average of HAA5 permitted by EPA regulations is 60 parts per billion (ppb).

What types of water systems are most likely to have DBPs?

Water systems using sources with higher amounts of organic substances will form more DBPs when disinfected than those that do not. Sources with higher organics levels include:

- Surface waters, such as lakes, rivers, and streams.
- Springs and wells that are shallow and/or located near surface waters.

Groundwater, especially those from deep wells, tend to contain little organic substances. Even if they chlorinate the water, lesser amounts of DBPs are typically found.

COLLECTION INSTRUCTIONS

General Instructions

1. Freeze the ice packs overnight before sampling. Make sure they freeze flat.
2. Amber glass bottle and glass vials contain preservatives. **Do not rinse them out.**
3. Take samples from a cold water tap indoors (do not take samples from a hose).
4. Remove the aerator, and allow the water to run for 5 to 10 minutes or longer before sampling. **Haloacetic**

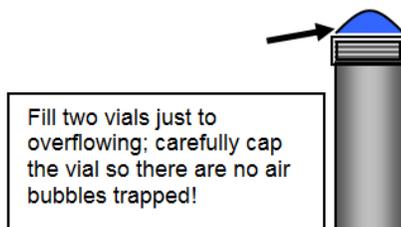
Acid (Amber Glass Bottle)

Fill the amber bottle full to the neck and cap tightly.

Total Trihalomethanes (3 VOA vials)

Fill the vials according to the following instructions:

1. One vial has water in it already; this is a "trip blank" and **must not be opened.**
2. Without flushing out the preservative, fill the other two vials just to overflowing.
3. Recap the vials tightly, making sure **no air bubbles** are trapped in the vials. Mix the vials vigorously for several seconds. If bubbles are evident, uncap the vials and add several more drops of water. Repeat this step until no bubbles remain in the mixed vials.



If shipping the samples back to the lab, pack the cooler securely with the ice packs to prevent the bottles from moving during shipment and send as soon as possible. **The temperature of the samples must be $\leq 10^{\circ}\text{C}$ when they are received by the lab.**

If you have any questions, please call 406-444-3444