TOTAL TRIHALOMETHANE (TTHM) AND HALOACETIC ACID (HAA5) SITE SELECTION GUIDANCE

What makes a good TTHM site?

TTHM formation is strongly influenced by residence time. In addition, TTHM formation generally increases with increasing pH. TTHM sites should not be located at dead ends with no users. The sampling should be representative of water that is being consumed, not stagnant water.

- Areas with historically high TTHM levels.
- Storage tanks – down gradient of storage facilities, which have increased residence time.
- Low flow areas – sparsely populated areas with low flow.
- Geographic dead ends – areas that are physically located at the end of a water main or group of water mains without looping back to the main portion of the distribution system. However, do not sample stagnant water after the last customer. The purpose is to sample water that customers are consuming.
- Hydraulic dead ends and mixing zones – areas in which there is little movement of water.
- After booster chlorination – where formation will have increased due to more available disinfectant.
- Low or no residual (i.e., relative to initial disinfectant levels) – likely advanced residence time.
- Low water use in general – lightly developed areas where water is allowed to age.

What makes a good HAA5 site?

Different systems may find high HAA5 sites in locations with different characteristics. HAA5 formation and decomposition seems to follow a pattern that is different from that of TTHM in the distribution system. While TTHM concentrations are generally highest at the points in the system with the longest residence times, research suggests that HAA5 seem to form and then decompose. The consumption of HAA5 by microorganisms is known as biodegradation, which is more likely to occur when disinfectant residual levels are low or non-existent. Therefore, a high HAA5 site will not necessarily be the site with the longest residence time and may even be at a site with shorter residence time.

- Areas with historically high HAA5 levels.
- Low but detectable residual (i.e., relative to initial levels) – likely advanced residence time but not sites likely to have biofilm.
- After booster chlorination – where formation will have increased due to more available disinfectant and where any biodegradation will be halted.
- Storage tanks – increased residence time.
- Dead ends – low flows. However, do not sample stagnant water after the last customer. The purpose is to sample water that customers are consuming.
- Hydraulic dead ends and hydraulic mixing zones.