

## Technical Information:

**Date:** 06/17/05  
**Subject:** THM's  
**Product:** Water

THM's (**Trihalomethanes**) are produced when chlorine reacts with residual organic compounds. The four common THM's are trichloromethane (chloroform), dibromochloromethane, dichlorobromomethane, and bromoform. There have been studies that suggest a connection between chlorination by-products and particularly bladder and possibly colon and rectal cancer. An MCL of 0.10 mg/l for total THM's exists.

### Treatment

Trihalomethanes and other halogenated organics can be reduced by adsorption with an activated carbon filter.

THM levels tend to increase with pH, temperature, time, and the level of "precursors" present. Precursors are organic material which reacts with chlorine to form THM's. One way to decrease THM's is to eliminate or reduce chlorination before the filters and to reduce precursors.. There are more precursors present before filtration, so we want to reduce or eliminate the time chlorine is in contact with this water. If some oxidation before filtration is required, an alternative disinfectant like potassium permanganate or peroxide could be considered. Note that this may not be an option if prechlorination is necessary to achieve required CT values.

The EPA has indicated that the best available technology for THM control at treatment plants is removal of precursors through "enhanced coagulation". Enhanced coagulation refers to the process of optimizing the filtration process to maximize removal of precursors. Removal is improved by decreasing pH (to levels as low as 4 or 5), increasing the feed rate of coagulants, and possibly using ferric coagulants instead of alum.

For point of use systems at homes, activated carbon filters are the most effective treatment. Reverse osmosis units will also eliminate trihalomethanes.