

Health Risk Estimation for Unregulated DBPs in Chloraminated Drinking Water

Disinfection by-products (DBPs) are formed when natural organic matter (NOM) reacts with chemical oxidants in the water disinfection process. Halogenated DBPs are both cytotoxic and genotoxic, which have the potential to cause adverse health effects (1). Currently, 4 species of trihalomethanes (THM4) and 5 species of haloacetic acids (HAA5) are regulated by USEPA (2). Although the toxicity of unregulated DBPs can be many orders of magnitude higher than that of regulated DBPs (3), it is difficult to measure these unregulated DBPs because they are generally present at very low concentration levels in drinking water.

Since 1976, more than 600 DBPs have been reported, but only a few of them have been quantitatively assessed for their occurrence and health effects. Since there are so many DBP species present in drinking water, and they have various toxicological pathways, it is even harder for researchers to assess the health risks for DBP mixtures as a whole.

The US EPA has evaluated the chemistry and toxicology of a DBP mixture that represents the compound distribution in a typical chlorinated drinking water in the 2002 four-lab study(4). But, as of yet, there hasn't been an evaluation for chloraminated water samples.