

**BENIFIT: *NO DBPs (Disinfection By-Products)***  
***Created in the Purification Process!***

**How am I Exposed to Disinfection By-Products (DBPs)?**

**BY INGESTION**

Drinking Water , or Beverages & Food Prepared with Chlorinated Water;  
and,

May be found in BOTTLED WATER that uses Ozonation for disinfection.

**Ozonation:** Ozonation is used for disinfection in some **Bottled Water** production.

**Here is the EPA's statement regarding Ozonation:** "...if bromide ion is present in the raw water halogenated DBPs may be formed. **These brominated DBPs appear to pose a greater health risk than non-brominated DBPs.**"



***Bottle-Less Water Coolers***

**DO NOT Produce DBPs (Disinfection By-Products) . . .**

***. . .They actually filter out the DBPs found in the City Water Supply***



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## **What are Disinfection By-Products?**

Water is chlorinated by the Honolulu Board of Water Supply to fight bacteria. Unfortunately, the chlorine is very reactive and easily combines with naturally occurring organic material to form **DISINFECTION BY-PRODUCTS (DPBs)**, such as **HAA5 (Total Haloacetic Acid)**, and **Trihalomethanes (TTHMs)**. TTHMs are a group of four chemicals: **chloroform, bromoform, bromodichloromethane and dibromochloromethane**.

It is these trihalomethanes that you are more likely to see at the tap than you would chlorine depending on where you are located within the water distribution system. The farther away from the treatment plant the more likely you will have trihalomethanes in your water as the time the water must travel within the distribution systems allows the chlorine to react.

In December 1998, the EPA enacted the stage 1 Disinfectants and Disinfection By-Products Rule. This rule lowered the maximum contaminant level (MCL) for TTHMs (Total Trihalomethanes) from 100 ppb to 80 ppb. Ground water systems were requested to comply with Stage 1 Disinfectants and Disinfection By-Products Rule by January 2004.

### ***What are the health risks associated with DBPs?***

**Here is the EPA's statement:** "EPA's main mission is the protection of human health and the environment. When carrying out this mission, EPA bases its decisions on the best available science. However, EPA must often make regulatory decisions with less than complete information and with uncertainties in the available information. EPA believes that consistent with public health protection goals of the SDWA, it is appropriate and prudent to err on the side of public health protection when there are indications that exposure to a contaminant may present risks to public health, rather than take no action until risks are unequivocally proven. Such is the case with the Stage 2 DBPR. **The best available science indicates that cancer, reproductive and developmental risks may be associated with exposure to DBPs and disinfected drinking water.**" ... "While recognizing these uncertainties, **EPA believes that the weight of evidence represented by the available epidemiology and toxicology studies on disinfected water and DBPs continues to support a concern for health risk** and a protective public health approach to regulation of DBPs."



"A number of epidemiology studies have been conducted to investigate the relationship between exposure to disinfected water and adverse effects like cancer or developmental and reproductive outcomes. While EPA cannot conclude there is a causal link between exposure to chlorinated surface water and cancer, **some epidemiology studies have suggested an association, albeit small, between bladder, rectal, and colon cancer and long term exposure to chlorinated surface water.** Although there are fewer published epidemiology studies that have been conducted to evaluate the possible relationship between drinking water and reproductive and developmental effects, **recent studies report increased risks for low birth weight, term low birth weight, birth defects, miscarriage, and still birth to women exposed to chlorinated surface water and elevated concentrations of TTHM.** **As with cancer,** although EPA cannot conclude at this time that there is a causal link between exposure to chlorinated water or DBPs and reproductive and developmental effects, **there is a troubling indication of an association.** Furthermore, **developmental effects may occur after short durations of exposure.**"

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Here is the EPA's statement (continued):

"...the Agency believes the weight of evidence presented by the available epidemiological studies on chlorinated drinking water and toxicological studies on individual DBPs **shows concern about a potential health hazard.**"

"After reviewing the science, all committee members expressed concern for **risks to pregnant women and their fetuses from DBPs...**"



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Honolulu Board of Water Supply Distribution System Monitoring for Disinfection By-Products, 5/31/06 & 5/23/07 Reports REGION 3 (Ewa-Waianae-Waipahu System) — Tested by the State Dept. of Health

Contaminant	Average	Maximum	MCL (Maximum Contaminant Level) Allowed	MCLG (GOAL)
<b>Bromoform</b>	<b>1.087 ppm</b>	<b>2.300 ppm</b>	Not Yet Available	<b>0</b>
<b>TTHMs (Trihalomethanes)</b>	<b>1.087 ppm</b>	<b>2.300 ppm</b>	80.000 ppm	Not Applicable
<b>HAA5 (Total Haloacetic Acid)</b>	<b>0.255 ppm</b>	<b>1.300 ppm</b>	60.000 ppm	Not Applicable

5/31/06

5/31/06

**NOTE:** A system in compliance with an MCL could have TTHM occurrences well above the MCL. What is reported to the public is the running annual average. DBPs can peak above regulated levels. There are Health Risks with short durations of exposure to DBPs.

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