

## **Bottled Water Quality Investigation: 10 Major Brands, 38 Pollutants: Walmart and Giant Water Exceeds Safety Limits**

The Environmental Working Group's bottled water testing turned up a surprise finding: bottled waters from Walmart (the Sam's Choice brand) and Giant Foods (Acadia brand) showed high levels of disinfection byproducts (DBPs) known as trihalomethanes, chemicals linked to cancer and birth defects. These chemicals are common pollutants in municipal tap water.

- Walmart's Sam's Choice bottled water purchased in the San Francisco bay area was polluted with disinfection byproducts called trihalomethanes at levels that violate the state's legal limit for bottled water. These byproducts are linked to cancer and reproductive problems and form when disinfectants react with residual pollution in the water. The legal limit is 10 parts per billion (ppb) in bottled water in California (CDPR 2008); Walmart's bottled water purchased in Oakland and Mountain View contained more than double the limit (21 to 37 ppb). Las Vegas tap water was the source for these bottles, according to Walmart representatives (EWG 2008).
- Also in Walmart's Sam's Choice brand, lab tests found a cancer-causing chemical called bromodichloromethane at levels that exceed safety standards under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, OEHHA 2008). EWG is filing suit under this act to ensure that Walmart posts a warning on bottles as required by law: "WARNING: This product contains a chemical known to the State of California to cause cancer." The limit for this chemical under Proposition 65 is 2.5 ppb, using the state's standard assumptions for water consumption; levels in Walmart's water from Mountain View and Oakland ranged from 7.7 to 13 ppb.
- These same chemicals also polluted Giant's Acadia brand at levels in excess of California's safety standards, but this brand is sold only in Mid-Atlantic states where California's health-based limits do not hold sway. Nevertheless, disinfection byproducts in both Acadia and Sam's Choice bottled water exceeded the industry trade association's voluntary safety standard (IBWA 2008) of 10 ppb for trihalomethanes, for samples purchased in 5 states and Washington DC. Acadia water with levels exceeding the industry's safety limit was purchased in 3 states (Maryland, Delaware and Virginia) and Washington, DC and was bottled from municipal tap water supplies in Maryland's DC suburbs, according to the bottle label. The Walmart water was purchased in California and North Carolina and was bottled from municipal tap water supplies in Las Vegas and Georgia, according to Walmart representatives (EWG 2008).

**As uncovered by EWG, while some bottled waters appear to be purified or treated more than tap water, others contain excessive levels of chemical pollutants.**

Most developed nations have guidelines to control disinfection byproducts in drinking water so as to minimize consumers' exposure to potentially hazardous chemicals while maintaining adequate disinfection and control of water-borne bacteria (Richardson 2007). EPA tap water regulations allow some quantities of these byproducts, which form when residual organic pollutants combine with chlorine and other water disinfection chemicals. Yet,

largely unknown to consumers is the fact that FDA, the agency charged with overseeing bottled water quality, permits the same level of DBPs in bottled waters as allowed by the EPA for tap water

(FDA 2008b). FDA-sanctioned presence of known carcinogens in bottled water highlights the woeful insufficiency of federal regulations over bottled water production. As a result of the FDA's hands-off approach to bottled water standards, quality among brands and even among different bottles within a single brand varies tremendously. As uncovered by EWG, while some bottled waters appear to be purified or treated more than tap water, others contain excessive levels of chemical pollutants.

**EWG analysis of bottled waters sold by the Walmart and Giant Foods stores, discovered that every one of five Acadia brand waters and four out of eleven Sam's Choice brand waters contained disinfection byproducts**, especially trihalomethanes (THMs), such as chloroform and bromodichloromethane, chemicals considered carcinogenic to humans (Richardson 2007) and included as such in the California's Proposition 65 list (OEHHA 2008). The trihalomethane levels detected in the nine samples are below the weak and nearly meaningless FDA limit of 80 parts per billion (ppb) for these chemicals in bottled water. However, all samples exceeded the bottled water industry self-proclaimed maximum level of 10 ppb for total THM contamination, with average trihalomethane levels of 25 ppb in Acadia's brand waters and 24 ppb in THM-containing Sam's Choice brand waters (Tables 1 and 2). These findings clearly demonstrate that in the absence of strong, enforceable federal standards, voluntary industry guidelines do not provide uniform bottled water quality promised to the consumers.

**Table 1. Acadia Filtered Drinking Water**

Purchase Location	Contaminants	Concentration Detected in Bottled Water
Middletown, DE	Chloroform	25 ppb
	Bromodichloromethane	3.7 ppb
	Total Trihalomethanes	29 ppb
	Fluoride	0.91 ppm
Silver Spring, MD	Chloroform	12 ppb
	Bromodichloromethane	1.9 ppb
	Total Trihalomethanes	14 ppb
	Fluoride	0.76 ppm
Stafford, VA (1)	Chloroform	19 ppb
	Bromodichloromethane	2.7 ppb
	Total Trihalomethanes	22 ppb
	Dichloroacetic Acid	2 ppb
	Fluoride	0.94 ppm
Stafford, VA (2)	Chloroform	20 ppb
	Bromodichloromethane	3 ppb

	Total Trihalomethanes	23 ppb
	Fluoride	0.87 ppm
Washington, DC	Chloroform	31 ppb
	Bromodichloromethane	4.9 ppb
	Total Trihalomethanes	36 ppb
	Fluoride	1.07 ppm

**Table 2. Sam's Choice Purified Drinking Water**

Purchase Location	Contaminants	Concentration Detected in Bottled Water
Mountain View, CA	Chloroform	15 ppb
	Bromodichloromethane	13 ppb
	Chlorodibromomethane	8.2 ppb
	Bromoform	0.8 ppb
	Total Trihalomethanes	37 ppb
Oakland, CA (1)	Chloroform	10 ppb
	Bromodichloromethane	8.5 ppb
	Chlorodibromomethane	4.2 ppb
	Total Trihalomethanes	23 ppb
Oakland, CA (2)	Chloroform	9.6 ppb
	Bromodichloromethane	7.7 ppb
	Chlorodibromomethane	3.7 ppb
	Total Trihalomethanes	21 ppb
Fayetteville, NC	Chloroform	12 ppb
	Bromodichloromethane	2.3 ppb
	Total Trihalomethanes	14 ppb
Camden, DE	Chloroform	ND*
	Total Trihalomethanes	ND
Cromwell, CT	Chloroform	ND
	Total Trihalomethanes	ND
Columbia, MD	Chloroform	ND
	Total Trihalomethanes	ND
Stafford, VA	Chloroform	ND
	Total Trihalomethanes	ND
Portland, OR	Chloroform	ND
	Total Trihalomethanes	ND
Vancouver,	Chloroform	ND

WA	Total Trihalomethanes	ND
Los Angeles, CA	Chloroform	ND
	Total Trihalomethanes	ND

\*ND (not detected): samples did not contain these chemicals above detection limits.

In addition to being more than twice higher than the voluntary standard to which the bottled water industry clearly fails to adhere, the detected THM levels exceeded the health-protective limit of 10 ppb set for THMs in bottled water by the state of California (CDPH 2008). EWG testing raised especial concerns about Sam's Choice brand water retailed in California. Among the four tested Sam's Choice bottled waters from California stores, three contained trihalomethanes, and all three were over the 10 ppb CA state limit, with average concentration of 27 ppb.

The mixture of trihalomethanes in California-retailed Sam's Choice waters included chloroform, a known human carcinogen (NTP 2005) regulated in California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). According to the California EPA Office of Environmental Health Hazard Assessment (OEHHA), a safety standard for oral exposure to chloroform is at 10 ppb concentration (OEHHA 2008). The standard is based on the Proposition 65 No Significant Risk Level for ingested chloroform at 20 micrograms per day. For a water consumption rate of 2 L/day (Title 27, California Code of Regulations, Article 7, Section § 25721), this corresponds to a 10 ppb concentration of contaminant in drinking water. The levels of chloroform detected in three out of four Sam's Choice bottled waters from CA are between 9.6 and 15 ppb, very close to or over this limit. And while this level of exposure may be tolerated by a healthy person with average daily water consumption, it could pose greater risks for persons who consume significantly larger quantities of water every day or for vulnerable subpopulations.

**Less touted by the industry is the fact that bottled water manufacturers can and do use ordinary municipal tap water supplies to fill up the bottles (FDA 2008b).**

In addition to chloroform, two other trihalomethanes were detected in Sam's Choice waters purchased in California: bromodichloromethane (average concentration 9.7 ppb) and chlorodibromomethane (average concentration 5.3 ppb). Acadia's brand contained bromodichloromethane at 3.2 ppb average concentration. Both bromodichloromethane and chlorodibromomethane are genotoxic and carcinogenic in animal studies (Richardson 2007). Like chloroform, bromodichloromethane is listed in the California's Safe Drinking Water and Toxic Enforcement Act (OEHHA 2008), with the safety standard of 5 micrograms per day, corresponding to 2.5 ppb concentration in water. The concentration of bromodichloromethane in three California

samples of Sam's Choice water exceeded this guideline between three and five times, potentially posing an unacceptable risk to bottled water drinkers.

### **WHY ARE DISINFECTION BYPRODUCTS TAINTING BOTTLED WATER?**

The bottled water industry builds its sales marketing the image of purity and casting doubt on the quality of tap water, leading bottled water drinkers to believe that they are purchasing a pristine product with no health risks whatsoever (Doss 2008, Edberg 2008). Less touted by the industry is the fact that bottled water manufacturers can and do use ordinary municipal tap water supplies to fill up the bottles (FDA 2008b). After the water has been pumped from the source and treated at taxpayers' expense, bottled water companies sell it back to the consumers at a vastly increased cost. As uncovered by the EWG investigation, some bottled waters contain signature tap water pollutants, essentially defeating consumers' purpose of seeking better water quality.

Under FDA regulations, bottled waters are legally allowed to contain the same quantities and types of chemical contaminants as public water supplies (FDA2008b). These lax rules for contaminants in bottled water benefit the most those bottled water suppliers who unscrupulously use taxpayer-supported tap water supplies to make their products. While FDA requires source labeling for bottled water drawn from municipal water supplies, manufacturers can avoid mandated disclosure by claiming to use additional purification (21 CFR 165.110(a)(3); FDA 2008b). To illustrate, the label on the Sam's Choice Purified Drinking Water purchased in Oakland, CA does not mention the source of water, instead describing the product as "Purified by reverse osmosis filtration or distillation." Nevertheless, this sample contained 10 ppb chloroform, 8.5 ppb bromodichloromethane, and 23 ppb total trihalomethanes, all in excess of California state standards (CDPH 2008).

Customer service representatives from Walmart provided EWG researchers with the locations of each municipal water supply used to fill the bottles EWG tested, matching the printed code number on each bottle to their supplier list. This was accomplished through a series of phone calls between EWG researchers and representatives on the companies' 1-888 numbers.

EWG investigation of the sources of four THM-containing Sam's Choice waters indicated that in every case, levels of THMs in the bottled water were close to levels of THMs in the local municipal water (Table 3). The safety of consumers would have been much better served if the FDA mandated a complete and unambiguous label disclosure whenever a bottled water has been sourced from tap water. Such transparent labeling would give the consumers the information to decide whether or not a certain bottled water best suits their needs.

**Table 3. Comparison of Sam's Choice Purified Drinking Water with Local Source Tap Water**

Purchase Location	Contaminants	Concentration Detected in Bottled Water	Level (Range) Detected in Municipal Water (the Bottled Water Source) in 2007
Mountain View, CA	Total Trihalomethanes	37 ppb	51.1 (7.8- 88) ppb <sup>1</sup>
	Fluoride	ND	0.78 (0.38- 0.86) ppm
Oakland, CA (1)	Total Trihalomethanes	23 ppb	51.1 (7.8- 88) <sup>1</sup>
	Fluoride	ND	0.78 (0.38- 0.86)
Oakland, CA (2)	Total Trihalomethanes	21 ppb	51.1 (7.8- 88) <sup>1</sup>
	Fluoride	ND	0.78 (0.38- 0.86)
Fayetteville, NC	Total Trihalomethanes	14 ppb	8 ppb (range not available) <sup>2</sup>
	Fluoride	ND	1.6 (0.2-1.60 ppm)

<sup>1</sup> Las Vegas Valley Water District 2008

<sup>2</sup> Blairsville, GA - Notla Water Authority 2008

As demonstrated by the EWG test results, when FDA-approved drinking water purification technologies are conscientiously applied, complete elimination of trihalomethanes can be achieved. Of the eleven tested samples of Sam's Choice Purified Drinking Water, seven of them did not contain any trihalomethanes. These included Sam's Choice waters purchased in Connecticut, Washington, Oregon, Delaware, Maryland, and Virginia and in the city of Los Angeles. In contrast, four of the waters from the same brand - those purchased in Fayetteville, North Carolina, and the cities of Mountain View and Oakland in California - contained trihalomethanes at levels that exceeded the industry's voluntary limit, the State of California standard for bottled water and "no significant risk levels" for carcinogens under Proposition 65. Such a disparity between different bottles from the same brand likely stems from non-uniform application of purification technologies by the bottlers at different sites, indicating that brand loyalty may not guarantee the bottled water quality that consumers seek.

EWG also examined the labeling of the Giant Food's Acadia brand of Filtered Drinking Water. This brand discloses on its label the public water source from which the bottled water was prepared and

the treatment method applied (filtration through activated charcoal). While the Acadia labeling is in compliance with the letter of the law, it fails to alert the consumers that the bottled water contains levels of chloroform and other trihalomethanes that are above the industry's voluntary standard of 10 ppb. Overall, the levels of trihalomethanes and fluoride in the five tested samples of Acadia water were very close to the levels in the local source water (Table 4).

**Table 4. Comparison of Acadia Filtered Drinking Water with Local Source Tap Water**

Purchase Location	Contaminants	Concentration Detected in Bottled Water	Level (Range) Detected in Source Water in 2007 <sup>1</sup>
Middletown, DE	Total Trihalomethanes	29 ppb	43.8 (8.44-113) ppb
	Fluoride	0.91 ppm	1.04 (0.52-1.40) ppm, 0.91 (0.10-1.10) ppm
Silver Spring, MD	Total Trihalomethanes	14 ppb	43.8 (8.44-113) ppb
	Fluoride	0.76 ppm	1.04 (0.52-1.40) ppm, 0.91 (0.10-1.10) ppm
Stafford, VA (1)	Total Trihalomethanes	22 ppb	43.8 (8.44-113) ppb
	Fluoride	0.94 ppm	1.04 (0.52-1.40) ppm, 0.91 (0.10-1.10) ppm
Stafford, VA (2)	Total Trihalomethanes	23 ppb	43.8 (8.44-113) ppb
	Fluoride	0.87 ppm	1.04 (0.52-1.40) ppm, 0.91 (0.10-1.10) ppm
Washington, DC	Total Trihalomethanes	36 ppb	43.8 (8.44-113) ppb
	Fluoride	1.07 ppm	1.04 (0.52-1.40) ppm, 0.91 (0.10-1.10) ppm

<sup>1</sup> Washington Suburban Sanitary Commission 2008

In summary, the presence of disinfection byproducts in bottled waters highlights insufficient government oversight and inappropriate labeling of the bottled water products. As a result of the hands-off attitude of the FDA and cost-saving shortcuts taken by the industry itself, shoppers remain in a "Buyer Beware" situation, paying premium prices for bottled water but not getting the anticipated quality. Consumers could have obtained much better drinking water simply by installing a home tap water filter at a fraction of the bottled water cost. Consumers' right to know, market fairness, and individual shoppers' health are all affected by the sales of bottled waters that are no better than tap water - and vastly more expensive.