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A long drink of (bottled) water

By Leslie Beck

Remember the days when a drink of water was just a drink of water? You simply turned on the tap and filled your glass -- and for only a fraction of a cent. In the past decade, however, our notion of drinking water has changed radically. Whether it's to stay hydrated, to avoid chemicals and pollutants, or simply for the sake of improved taste, more Canadians are passing up the faucet in favour of bottled water.

Last year, Canadians drank 28.5 billion litres of bottled water. And it's not just plain spring water we're drinking. Today, we're awash in bottled water -- you can choose between spring, mineral, artesian, purified, oxygenated, vitamin-enriched and even flavoured waters. With some brands costing as much as $1.80 a glass (250 ml), bottled water is big business. But is it any better than tap water?

Bottled water differs from tap water in two ways -- the water source and how it's distributed. The water that flows from your kitchen tap comes from the surface water of lakes, reservoirs and rivers. To destroy disease-causing bacteria and viruses, most drinking water supplies are disinfected with chlorine, although some cities use ozone and small amounts of chlorine to disinfect their water.

Most bottled water comes from protected underground formations, from which the water flows naturally to the earth's surface. This water is collected at the spring or via a hole that taps the underground formation. Bottled water does not contain chlorine; instead, it's purified using ozone or ultraviolet light.

On the whole, Canadians have access to clean tap water, thanks to chlorination. But water-treatment systems can fail from time to time. In May, 2000, the deadly contamination of the Walkerton, Ont., town water supply with E. coli bacteria raised serious concerns about the safety of drinking water in Canada -- and caused many people to turn off the tap.

But adding chlorine to municipal water supplies is a double-edged sword. Chlorine does destroy disease-causing bugs, some of them deadly, but the disinfectant also reacts with decaying leaves and other organic materials to form compounds called trihalomethanes (THMs). In the lab, animals exposed to high levels of these chlorine byproducts have a greater risk of cancer. Research in humans has also linked long-term exposure to high levels of THMs with colon and bladder cancer.

High levels of THMs may also have an effect on pregnancy. A California study of 5,144 pregnant women found that women who drank five or more glasses of cold tap water containing at least 0.75 micrograms of THMs per litre were more likely to miscarry than

those who drank less. According to data collected from eight Canadian provinces between 1994 and 2000, the average THM level in drinking water samples was 66 micrograms per litre. Health Canada's guideline for THMs in drinking water is 100 micrograms per litre; the cancer risk at this level over a lifetime is considered extremely low.

If you don't like the idea of chlorine byproducts in your tap water, you can filter out the majority of them. Pitcher-type filters and many faucet devices use an activated carbon filter to remove chlorine contaminants and chemicals such as copper, mercury and lead. Small amounts of lead can be harmful, especially to infants, young children and pregnant women. Symptoms of long-term exposure to low lead levels include anemia, impaired mental function, loss of appetite, fatigue, irritability and headache.

Lead can make its way into tap water from lead solder in plumbing, service connections or pipes in your home. Lead is more likely to be found in homes built before 1950 or in very new homes. (In newer homes, it takes several years for a protective coating of minerals to build up inside the pipes, which helps keep lead from leaching from solder into the water.)

Lead levels rise in tap water as it sits in the pipes. To reduce your exposure, run the cold water first thing in the morning and any other time the system hasn't been used for a few hours. Be sure to use cold water for drinking, cooking and making baby formula, since hot water is likely to contain more lead.

If you don't want to filter your water, you can drink bottled water instead. Technically speaking, bottled water is just water that's sold in sealed containers -- but there are differences. Spring water comes from a protected underground source. Mineral water is spring water, as well, but it must contain more than 500 milligrams per litre of dissolved solids, including calcium, magnesium and, in some cases, sodium.

The mineral content is often stated on labels in ppm (parts per million), which means milligrams per litre. For example, the sodium content of Appolinaris mineral water is 470 ppm, or 470 milligrams of sodium per litre. Spring or mineral water can also contain natural or added carbonation.

Not all bottled water comes from a natural spring, even if the label depicts pristine meadows, icy glaciers or blue Caribbean water. About 25 per cent of bottled water, including Dasani (Coca-Cola Company) and Aquafina (PepsiCo Inc.), is just purified tap water. Purified water is produced by distillation, de-ionization or reverse osmosis; it can come from a spring, a well or the municipal water supply.

Some bottled waters are just plain gimmicky. Manufacturers claim oxygen-enhanced waters pack more oxygen than regular water and taste better. Some companies even boast that oxygenated water is ideal to boost energy and physical performance. But one study published in the Journal of the American Medical Association found that oxygenated water had no impact on athletic performance. And when researchers analyzed the water,

they found a single breath of air contained more O{-2} than an entire bottle of super-oxygenated water.

There is a downside to getting all your water by twisting off a cap -- too little fluoride, a mineral needed to reduce the likelihood of developing cavities. Unlike tap water, most bottled waters don't contain optimal fluoride levels (0.8 to 1.0 ppm). Only a few brands have added fluoride. Check the label to see if a particular bottle of water contains the mineral -- you'll find the fluoride content listed in ppm.

If you drink bottled water, don't assume it's immune to bacterial contamination. Be sure to refrigerate an opened bottle, in case harmful bacteria have been introduced since the seal was broken. Don't re-use your water bottle, either; such bottles are intended for single use only. Refrigerate bottled water once you buy it, or store it in a cool place away from heat, sunlight and household chemicals. Check bottling and best-before dates to ensure freshness. Bottled water can be stored for up to two years.

The bottom line: Stay hydrated. The source of water you use is a personal decision, but make sure you drink enough. Men need 3 litres of water a day and women need 2.2 litres; you need more water during physical activity and hot, humid weather. Not all of our water requirements have to come from drinking water -- fruit and vegetable juices, milk, soy beverages, even coffee and tea count, too.

And in case you're wondering, I drink bottled spring water. I made the switch after I became tired of refilling my Brita pitcher numerous times each day -- in my house we go through a lot of water.