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Is the bottle in hot water?

Looking at a map of Canada you have to ask why. Canada is home to the five Great Lakes, a myriad of smaller lakes, Hudson's Bay, mountain streams and glaciers, wells and aquifers. Natural Resources Canada agrees "Probably no country in the world has as much of its surface area covered by freshwater as does Canada." With so much water, why then do we insist on buying it in bottles?

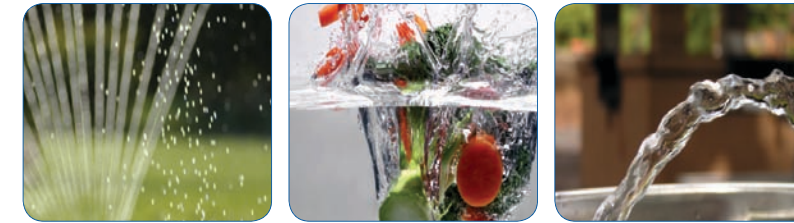
According to the Beverage Marketing Corporation in 2005, we purchase \$653 million dollars worth of bottled water annually. And, it is not as though the water in those bottles comes from some exotic stream fed from pristine mountains unsullied by pollution. No, forty percent of it comes from public water treatment facilities and most of the rest is drawn from wells and aquifers.

In the early days, it was chic to drink one of the many carbonated waters that were hitting the market and virtuous to forego an alcoholic or soft drink in favour of such a healthier alternative. Then still bottled water entered the market with subtle commercials featuring beautiful, healthy people sipping from plastic bottles. Celebrities were photographed clutching their bottles. Bottled water became a symbol for the health or status conscious, despite the cynics who questioned paying such a high price for a product that we can get right from our tap.

When sales of bottled water began to affect their bottom line, the giant soft-drink corporations took notice and adopted the "can't beat them so join them" philosophy and redirected some of the water used for soft drinks into bottled water distribution. Giant food corporations jumped on the bandwagon, buying up water bottling companies and water sources around the world.

One popular brand of bottled water comes from Fiji and is shipped half way around the world to outlets in Europe and the US. Sadly, one-third of the population in Fiji do not have safe, reliable drinking water and there are fears that the water supply will run dry. "There may be enough water now but the rate of expansion by some of these bottled water companies is a cause for real concern," said an official with the Fijian Mineral Resources Department.

As bottled water became mainstream, small niche elite brands of bottled water emerged, water bars became trendy and water sommeliers were born. Famous restaurants included numerous brands of bottled water on their menus. Perhaps the ultimate excess is blingH2O that costs \$40 a bottle. It is made from glass featuring Swarovski crystals and filled with water from Tennessee.



The popularity of bottled water was unaffected by some embarrassing public relations gaffes, including an ex-Perrier CEO's comments about the ease of taking water out of the ground and selling it for more than milk, wine or oil. And the case of a "water expert", who described a glass of water as having a "fresh, sweet lemony aroma" when, in fact, it came from a public restroom.

Of course it is not just status that is driving the sales of bottled water. For many people it is the fear of drinking water contaminated with bacteria, heavy metals, carcinogens, and pharmaceuticals, to name just a few. People assume that water in a bottle must be safe to drink and must be very carefully regulated. But that is not necessarily so. A Toronto Star article in November 2007 suggests that the bottled water industry is one of the least regulated industries in the country.

It makes business sense for water bottlers to ensure that their product is safe, although not necessarily as pure as the hype suggests. Bottled water is taken from the tap or extracted from an underground source then disinfected before bottling. But the water treatment does not necessarily remove all contaminants or dissolved solids. "We tested over a thousand bottles of water, over a hundred brands that are sold in the United States," says Erik Olson of the Natural Resources Defense Council. "We found that some of them had arsenic in them, at high levels. Some had organic chemicals in them, a variety of bacteria, so there were problems with about a third of the brands that we sampled."

If that isn't enough, the environmental factors alone may make you think twice about having that bottle of water. Bottled water leaves a wake of waste in its path. Approximately 80% of water bottles are not recycled. According to the Container Recycling Institute, only two out of ten plastic water bottles are recycled in the US. In the UK, 13 billion plastic bottles were sold last year, but only 3 billion were recycled.

What happens to the rest of these bottles? They are dumped in landfills, where they will remain for thousands of years, or are incinerated. Some are left on beaches, in the countryside or on mountainsides. The late Sir Edmund Hillary was horrified by the number of plastic bottles he found on a return visit to Mount Everest.



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Some of these bottles turn up in the Eastern Garbage Patch, an area stretching across hundreds of miles of the northern Pacific. When discovered in 1999, researchers counted a million pieces of plastic per square mile. This same plastic breaks down in the ocean and becomes a threat to our wildlife.

The Container Recycling Institute says "The vast majority of bottled water is sold in polyethylene terephthalate (PET) plastic bottles, that are "single serve" sizes and prone to being littered. These plastic bottles are a petroleum product, entailing greenhouse gas production in the manufacturing process."

It estimates that approximately 18 million barrels of crude oil equivalent were used in 2005 to replace the 2 million tons of plastic bottles that were wasted instead of recycled, in the US alone. This represents enough fuel to run a million cars for a year.

The Polaris Institute provides this description of the PET manufacturing process. "PET is created from terephthalic acid (TPA) and ethylene glycol (EG), both made from crude oil. During the production process, catalysts are used to promote the chemical reaction. Some of these catalysts, which include antimony, titanium, germanium, cobalt, manganese, magnesium and zinc, leach into the water over time causing a potential health risk."

A fact sheet provided by the Pacific Institute says that it takes 3.4 megajoules of energy to make a single one litre plastic bottle, cap and packaging, that every ton of PET produces 3 tons of carbon dioxide emissions, and that the manufacturing process consumes twice as much water as contained in the final bottle of water.

The transportation of the bottles, sometimes from as far away as Tasmania or Fiji, consumes more energy and creates more greenhouse gas emissions. Then add on the cost of refrigeration,

recycling or disposal. The Pacific Institute estimates that the total amount of energy required for every bottle of water is equivalent, on average, to filling a plastic bottle 1/4 full of oil. Or as a British study concluded, drinking a bottle of water had the same impact on the environment as driving a car one kilometer.

The irony is that bottled water, the previous "must have" for the health conscious, is having such a detrimental effect on the environment and ultimately on our health. Over \$100 billion dollars a year are spent worldwide for something that may not necessarily be purer than our tap water. For a fraction of the cost of bottled water, it is possible to provide the purest water available, and to be kinder to our planet, by installing a drinking water filtration system in our home that is NSF certified to remove all the chemicals, contaminants and bacteria that drove us all to the bottle in the first place.

WATER TONICS

Body Balance

For the average healthy person, pure water should be the liquid of choice to maintain proper hydration. There are times, however, when even pure water is not enough. During times of intense physical exertion, high fever, diarrhea or other illness, significant electrolytes can be lost making it difficult or impossible for your body to regulate hydration at the cellular level.

The body uses electrolytes to maintain an electric charge across cell membranes. Nerve, heart and muscle cells need to maintain balance in order to transmit impulses. The kidneys work to keep electrolyte concentrations constant in spite of changes within the body. When significant electrolytes have been lost, it is imperative to replenish them quickly.

Basic electrolytes are comprised of sodium, chloride, calcium, potassium and magnesium. When held in solution in water, these molecules possess either a positive or a negative charge. It is these electric charges that permit the complex electrical firings of nerve impulses or muscle contractions.

Loss of electrolytes inhibits the body's ability to perform. During exercise, it is important to aid the body in maintaining the stasis that it craves. It is not recommended, however, that you attempt to replace everything that your body is losing. A general rule is that you should consume approximately 35-45% of electrolytes and fluids during intensive exercise. This will aid the body without overwhelming its natural control processes.

Sports drinks tend to be high in sugar and sodium and most also contain artificial flavour and colour. To create a healthier homemade version, mix half a cup (125 ml) of orange juice with one cup (250 ml) pure water and add one very small pinch of salt. Orange juice is naturally rich in potassium and other electrolytes and provides carbohydrates necessary to aid in converting energy during exercise.

If possible, begin to prepare for your workout up to 2 hours beforehand by consuming pure water. Do not drink undiluted juice or intake excess salt while you are still exerting yourself. Proper nutrition and a constant supply of pure water will provide your body with the stores it needs while exercising.

YOUR BODY OF WATER

Pure Water. Regulating The Stream.

We are all aware of the recommendation to drink eight glasses of water a day to maintain healthy bodily functions and to help promote weight loss by cleansing the body of waste and toxins. During exercise and exertion we are advised to increase our liquid intake to avoid de-hydration. But what we sometimes forget is the importance of "pure water". The body performs its cleansing much more efficiently when it does not have to first cleanse the water that we are drinking.

Believing that they are using pure water, many people have adopted bottled as their main source of water, especially during exercise. In fact, close to 20 percent of Canadians and Americans now use only bottled water for their daily hydration.

But bottled water may not be as pure as believed. In both Canada and the US, bottled water is considered to be a food product and is not even held to the same quality standards as tap water. In Canada, bottled water is regulated through the Canadian Food and Drugs Act. The fact is that in most places in Canada, drinking water from the tap is tested for quality and contaminants much more frequently than bottled water.

The National Resources Defense Council in the US reported that regulation has not guaranteed pure water in bottles. "I think that consumers are under the misguided impression that bottled water is being carefully regulated and fully tested, and that it comes from whatever place is on the picture on the label. That's not the case," said Dr. Gina Solomon, a senior scientist at the Natural Resources Defense Council.

While insisting that bottled water is safe, Health Canada is looking into new and stricter regulations and guidelines

to prevent bacterial and chemical contamination. It advises that the current regulations do not explicitly set chemical or radiological standards for bottled water and packaged ice (except in the case of arsenic and lead). Bottled water normally contains low numbers of harmless bacteria. When stored for prolonged periods at room temperatures, these bacteria can multiply rapidly.

Health Canada also recommends purchasing newly manufactured water. Reusing these plastic water bottles is not recommended due to the danger that chemicals can be leached from the plastic over time and in high temperatures.

Studies have shown that chemicals called phthalates, which are known to disrupt testosterone and other hormones, can leach into bottled water over time. Although there are regulatory standards limiting phthalates in tap water, there are no legal limits for phthalates in bottled water.

One of the catalysts used in the production of the PET (polyethylene terephthalate) containers, used for bottled water, is antimony, which is a cancer causing heavy metal. A professor at the University of Heidelberg performed a study on bottled water and found that the levels of antimony increased when stored at room temperature for six months.

So, before your next workout, remember that the claims for the healthiness of bottled water are not so pure. Investing in a reusable container that can be safely washed and cleaned between uses might be the better answer. These containers can be refilled over and over again from a pure water source that is NSF certified to remove contaminants and other harmful heavy metals and chemicals.



SOLUTIONS FILE

Banning The Bottle

Bottled Water, once the favoured accessory of celebrities and their followers, is currently losing its cache due to the growing awareness of its environmental impact. For years, environmentalists like David Suzuki have spoken of the evils of bottled water but now many other organizations and individuals are voicing their concerns and taking action.

Politicians around the world are getting involved from both the economic and ethical standpoints. San Francisco banned spending of public funds on the product and New York City is encouraging people to refill containers.

The United Church of Canada is asking their members to boycott bottled water arguing that water is a basic human right and should not be sold for profit. "Concerns about bottled water are bubbling up in Catholic organizations" says The National Catholic Reporter in an article titled "Religious orders bring clout to war on bottled water".

The Canadian Polaris Institute has launched the "Inside the Bottle" project that is designed to stimulate awareness about the bottled water industry. They are taking part in the Think Outside the Bottle campaign that has many Canadian and American universities and colleges declaring their campuses to be "bottle water free zones".

Students at Ryerson University built a "Tower of Consumption" out of empty water bottles to draw attention to the waste. "The bottled water is expensive on campus," said Rebecca Rose, one of the organizers. "A student could buy a textbook with that money." In another attempt to raise public awareness, environmental campaigner David de Rothschild will set off across the Pacific Ocean in a boat made from waste water bottles.

Commercial entities are becoming involved even though their actions may affect their revenues. Restaurants, including Incanto, in San Francisco, Poggio in Sausalito and Watermark in London, have banned bottled water from their menus.

What is their solution? They serve only filtered tap water. "Serving our local water in reusable carafes makes more sense for the environment than manufacturing thousands of single-use bottles for someone to use once and throw away," Incanto explains on its website.

Del Posto, an elegant and expensive restaurant in New York, is joining the movement, serving their filtered still and carbonated water in elegant containers that have an explanation of why bottled water is no longer available etched on the glass.

While relying on bottled sources of water is convenient, especially when away from home, the environmental impact is far too great to ignore. We should all take our cue from these pioneering enterprises and rely upon pure filtered water in our homes. Remember though, it is important to ensure that the filtration system that you purchase is **NSF Certified to remove heavy metals, bacteria and other contaminants from your tap water.**