TRU Drinking Water Campaign: Unbottle It TRU!

Goal:

Eliminate the sale of bottled water at Thompson Rivers University and encourage the consumption of tap water by joining others in nationwide campaigns to 'Unbottle It!'.

Overview:

The negative environmental, social and economic impacts related to the use of bottled water are well documented and clearly point to the need for removing this ubiquitous, unnecessary luxury from Canadian markets where safe alternatives are available. The issues presented here reflect a much larger global crisis of over consumption, and banning bottled water sales is the first of many steps that must be taken to slow global environmental and social degradation. TRU has made a commitment to being the "University of Choice for Environmental Sustainability" and, as such, this proposal fits well within the Strategic Goals.

The Council of Canadians outlines five reasons to ban bottled water (Council of Canadians, 2008a), each of which will be briefly expanded on here with reference to current literature on each topic. The five major reasons, as quoted from the Council's website, are as follows:

1. Bottled water leads to water shortages.
2. Bottled water contributes to climate change.
3. Our landfills cannot support bottled water.
4. Bottled water is not safer.
5. Water is a human right.

Leading from these tenets, a listing of municipalities and school boards that have banned bottled water will be presented, followed by an action plan to eliminate consumption of bottled water at TRU.

Five reasons to ban bottled water:

1. Bottled water leads to water shortages.

   As an example, Nestle currently pumps 3.6 million litres of groundwater per day in Guelph, Ontario for bottled water sales, which has resulted in a reversal of the normal groundwater flow path (Wellington Water Watchers, 2008). In India, Coca-Cola, TRU's current bottled water supplier, has a number of water bottling

plants operating that have had negative impacts on local communities whose access to water is already limited (Barlow, 2007).

2. Bottled water contributes to climate change.

Consuming bottled water has a significant impact on climate change compared to municipal drinking water. In Norway, Hanseen (2007) found that tap water production consumes 0.0012 MJ of energy/litre, while bottled water consumes at least 1500 times more energy at 1.8 MJ/litre. For bottled water, this translates to 80 CO_2 equivalents per litre considering raw material production, packaging and distribution, the user phase, and waste management. In addition, over 25% of bottled water is consumed outside the country of origin (Council of Canadians, 2008a). Pip et al. (2000) found that 13 of 40 brands of water in Manitoba were from Europe, with the majority of others coming from British Columbia and Ontario, many from tap water sources. One litre of water shipped from Fiji (available in Canada) consumes 26.88 kg of water and 0.85 kg of fossil fuels, and produces 562 grams of greenhouse gases (Council of Canadians, 2008a). Of course, an argument can be made that all beverages supplied in bottles are detrimental. This is true, but eliminating bottled water sales is a good starting point as water is readily available at TRU from one of the best municipal water treatment plants in the world at a fraction of the cost (water-technology.net, 2008).

3. Our landfills cannot support bottled water.

Bottled water contributes significantly to a larger problem associated with the use of plastics. It has been estimated that 50 to 80% of water bottles are diverted to landfills (Council of Canadians, 2008a), but other studies have shown that many of these bottles do not make it to their ultimate destination. Overall, plastic production has increased 25 fold between 1960 and 2000, with less than 5% of that material being recovered. Indeed, plastics are the fastest growing waste stream in landfills (Moore, 2008). In a review by Moore (2008), it is noted that PET water bottle sales rose from 1.0 to 2.5 million tons per year from 1996 to 2005. In 2005, 17% of 50 billion PET bottles in the United States were recycled (Moore, 2008), with over half of those being shipped to China for processing (Barlow, 2007). It has been estimated that the photodegradation products from a single 1 litre bottle results in a single fragment for every square mile of beach in the world. Within the North Pacific gyre there is a 1000 km diameter “Eastern Garbage Patch” containing over 3 million tons of surface-associated plastic that is negatively affecting ocean species. In a recent study of this rapidly growing zone, 6 kg of plastic fragments were collected for every 1 kg of zooplankton (Moore, 2008 and references therein). To illustrate the scope of the problem, during a three day study of the Los Angeles and San Gabriel Rivers, 60 tons of ocean-bound plastic was recovered (Moore et al. 2005).

4. Bottled water is not safer.

Microbiologically or chemically, bottled water is not safer. The Government of Canada does not require a company selling bottled water to be licensed, but the Canadian Food Inspection Agency does demand inspections of bottling facilities every three years for microbiological, but not chemical, safety (CFIA, 2008; Health Canada, 2008). Compare this to municipal water sources that are monitored continuously for microbiological safety. In addition, unless labelled as 'spring' or 'mineral' water, water can be bottled from the tap and resold. The CFIA and Health Canada note that no disease outbreaks have been associated with bottled water in Canada, that bottled water must be free of disease-causing (pathogenic) microorganisms, and that microorganisms associated with bottled water would most likely be introduced by the user. In 2008, an outbreak of hospital-acquired *Pseudomonas aureuginosa* infections in Germany was traced to bottled water, with isolates being detected in unopened bottles (Eckmanns et al., 2008). Dixon (2008) notes that studies reporting the first potentially pathogenic microorganisms detected in bottled water appeared over 20 years ago, and that a host of examples from around the world are available. A recent study showed higher bacterial loads, including potential pathogens, and higher bacterial viability in bottled water compared to both tap and drinking fountain water (Berney et al., 2008).

As for chemical safety, plastic production is associated with a host of persistent organic pollutants and heavy metals that cause a range of detrimental environmental and health effects (Moore, 2008; Richardson, 2008). For example, polyethylene terephthalate (PET) requires the use of antimony trioxide (Sb_2O_3) during production. Pristine water typically has 2 ng/L of antimony, while crustal rocks contain 0.5 mg/kg. Plastic water bottles contain hundreds of mg/kg of antimony has been shown to leach into water stored at room temperature. After being stored for 6 months, the levels in Canadian bottled water was found to range from 10 to 600 ng/L (Shotyk and Krachler, 2007). In a second study examining bottled water from Canada and around the world, bottled water in glass containers was found to have 26 times more lead than the source water from which it came. Plastic-stored water contained 2.1 to 268 ng/L of lead compared to the source water at 5.1 ng/L. While all levels of antimony and lead were below Canadian Water Quality Guidelines, Pip et al. (2000) found bottled water samples from Canadian stores that exceeded the guidelines for total dissolved solids, chlorine and lead. Evidence is available to show increased leaching of metals and carcinogenic organic compounds from water bottled, especially with increased time and temperature. Interestingly, in the study by Pip et al. (2000), many of the bottles purchased were beyond their one or two year expiration date, or showed no expiration date whatsoever. Health Canada has

concluded that there is insufficient evidence to show that dangerous chemicals leach from water bottles, but do state that:

"It is unlikely that there would be chemical hazards or biological risks resulting from storage of bottled water in hot vehicles, however Health Canada generally does not recommend this practice." – Heath Canada Website

5. Water is a human right.

Countries around the world are declaring water as a human right and, as such, it is considered a basic element to sustain life that cannot be denied to a person unable to pay for it. A notable holdout to a well-supported proposal brought to the United Nations to make water a human right is Canada. Uruguay is leading the world with constitutional amendments guaranteeing public water delivery based on this principle. Around the world, grassroots organizations in poor and developing countries are fighting Coca-Cola and other multinational water bottlers over access to, and removal of, water in the Philippines, Indonesia, Mexico and India to name a few. In Chiapas, Coca-Cola has the right to "extract enough water to supply five villages while local residents go without…" (Barlow, 2007). Recent hunger strikes in 2006, and peaceful protests against bottled water companies in India during International Water Day 2007 has lead to arrests (Barlow, 2007). The Great Lakes Compact, linked to eight U.S. states as well as Ontario and Quebec, passed the U.S. Congress in September 2008 allowing for water from the great lakes to be removed by private industry in containers not exceeding 20 litres, with no limits set on the number of containers that can be sold (Council of Canadians, 2008b). These issues must be addressed as part of TRU's commitment to Accountability: "TRU values the responsible and effective stewardship of human, physical and financial resources as a means of maximizing benefits to its students and staff, and to the provincial, national and international communities it serves." (TRU, 2008)

What is being done?

Municipalities and school boards across Canada and abroad are taking leadership roles in banning bottled water sales in their facilities. Given TRU's Strategic Goals, it is imperative that action be taken. Given that no Canadian university has yet banned bottled water sales completely, although some bottle-free zones have been established, there is a great opportunity to be the first in the country. The Council of Canadians (2008a) currently lists the following bans on their website:

Municipalities and Cities

Passed	Proposed
• Edmonton, AB • Burnaby, BC • Nelson, BC • Vancouver, BC • St. John's, NL • Brockton, ON • Callander, ON • Blue Mountain, ON • London, ON • Owen Sound, ON • St. Catharines, ON • Waterloo Region, ON (including Kitchener, Cambridge and Waterloo) • Charlottetown, PEI	• Belleville, ON • Midland, ON • Niagara Falls, ON • Ottawa, ON • Sault Ste-Marie, ON • Toronto, ON

School Boards

Passed	Proposed
• Ottawa District School Board • Waterloo Region District School Board	• Toronto District School Board

Action plan:

In an effort to move towards eliminating bottled water sales on the TRU campus, the following rough plan is proposed for implementation.

1. Determine conditions of TRU's contract with Coca-Cola with respect to bottled water sales from vending machines and food outlets. Ideally sales would be banned outright.
2. Do not renew contract with Coca-Cola for sale of bottled water.
3. Obtain information on the original source of bottled water sold on campus from Coca-Cola, post this information widely.
4. Ban use of bottled water at all TRU-hosted functions and meetings, provide water jugs and glasses as an alternative.
5. Introduce an environmental levy on bottled water sold on campus and divert funds into environmental initiatives.

6. Provide reusable TRU water bottles for all first year students starting on Orientation Day 2009.
7. Post permanent signs above water fountains, and next to bottled water vendors, outlining the merits of tap water and detriments of bottled water. Provide a map to the nearest drinking fountain on each sign.
8. Begin a University-wide challenge to decrease bottled water purchasing on campus. Goals will be set for reductions and TRU could provide some incentives, for example donating some funds to a good water-related cause in a developing country on behalf of all at TRU as goals are met. The challenge could include:
   a) An Omega article outlining the negative aspects of bottled water.
   b) Weekly postings of bottled water sales in the Omega, on-line and on TVs across campus. Reduction goals and progress would be updated.
9. Organize a film night with documentaries on water issues and the global problems with plastics. Algalita Marine Research Foundation has some good resources available.
10. Invite Charles James Moore, of the Algalita Marine Research Foundation to give a lecture as part of the Presidential lecture series, or an EAC-hosted lecture series. The mission statement of this Foundation is "The Algalita Marine Research Foundation is dedicated to the protection of the marine environment and its watersheds through research, education, and restoration."
11. Nominate Dr. Moore for an honorary doctorate.
12. Survey students, staff and faculty on the following question: "Would you support TRU banning the sale of bottled water on campus?"
13. Host public education events. For example, a bottled vs. tap water taste test challenge.
14. Forward this document and survey results to local school boards and to the City of Kamloops with a challenge for them to 'Unbottle It!'.

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