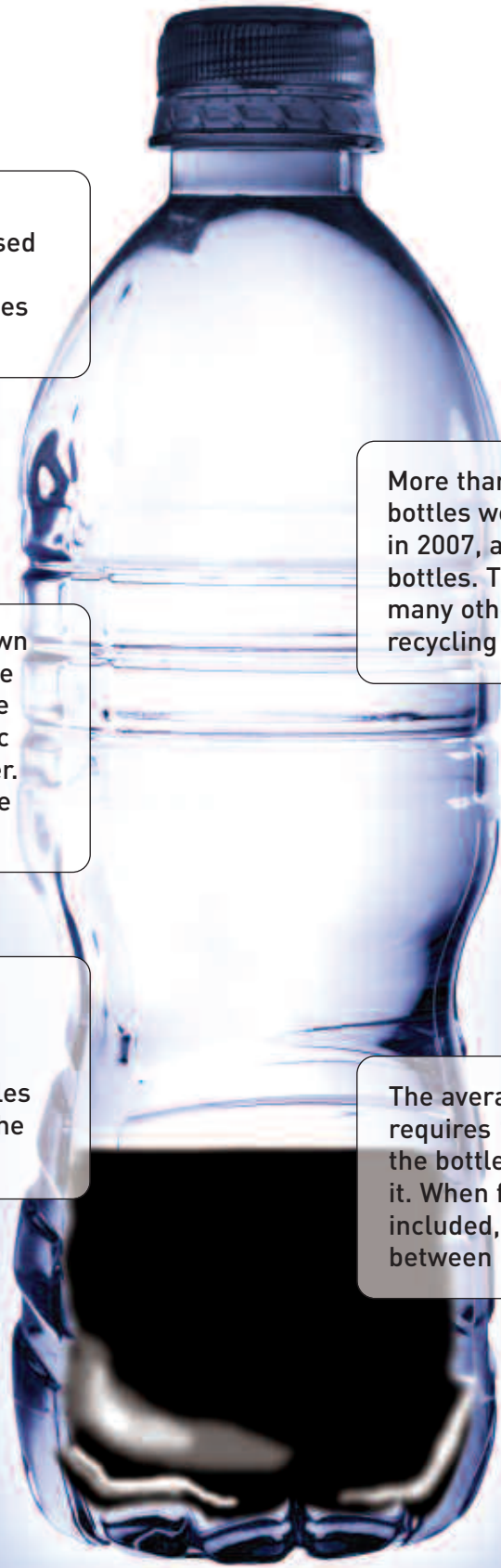


Getting off the bottle

A large, clear plastic bottle lies on its side on a sandy beach. The bottle is partially filled with water and has a white cap. A person's shadow is cast over the bottle, suggesting they are standing nearby. The background shows a sandy beach with some other debris, like a crumpled piece of paper or plastic, and the legs of a person walking away.

The
toxic
footprint
of bottled
water



Manufacturing the polyethylene terephthalate (PET) resin that is used to make water bottles releases at least two cancer-causing substances into the environment.

The metal antimony has been shown to leach into bottled water from the PET plastic. Four studies in Europe have also detected potentially toxic phthalates in bottled mineral water. Although they are at low levels, the health effects are unknown.

Manufacturing a PET plastic water bottle generates more than four times the bottle's weight in greenhouse gases. Filling the bottles and transporting them increases the total GHG emissions.

More than 130 million PET plastic bottles were dumped in landfills in B.C. in 2007, about a third of them water bottles. The number is much larger in many other Canadian provinces where recycling rates are not as high as in B.C.

The average 500-ml PET water bottle requires 11 per cent of the volume of the bottle in crude oil to manufacture it. When filling and transporting are included, the percentage can rise to between 16 and 28 per cent oil.

WHAT'S IN THE BOTTLE?

The flood of bottled water

Whether in a supermarket, a restaurant or a school vending machine, they're available almost everywhere – those single-use bottles of water, packaged in clear PET plastic with labels showing pure mountain springs and glaciers. In fact, Canadians drank an average of 66 litres of bottled water each in 2006, more than double the amount only eight years earlier.

But that increase has come at a huge cost.



Water bottles have become more lightweight over those eight years but the billions of them used worldwide are leaving a heavier footprint on the planet.



The PET plastic used in the bottles is made from petroleum, increasing the depletion of non-renewable resources.



PET plastic creates more than four times its weight in greenhouse gas emissions, adding to global warming.



More than 130 million plastic beverage bottles went to B.C. landfills in 2007 alone. One-third of them were discarded PET plastic water bottles.



Bottled water can contain potentially toxic metals and chemicals that leach from the plastic.

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Information in this brochure is based on the Toxic Free Canada report,

The Toxic Footprint of PET-bottled Water in British Columbia, available at www.toxicfreecanada.ca

Toxic Free Canada

1203-207 West Hastings Street, Vancouver, BC V6B 1H7

www.toxicfreecanada.ca • info@toxicfreecanada.ca • TEL 604.669.1921 • FAX 604.696.9627

COVER ILLUSTRATION, BOTTLE GRAPH Danna White • GRAPHIC DESIGN Working Design

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toxic free!
C a n a d a

In some parts of Canada, water bottling operations have had a severe environmental impact, causing reversals in groundwater flows.

Do we need bottled water?

Bottled water is produced by some of the biggest companies in the world, including Coca-Cola, Nestlé and Pepsi. Their marketing has created the idea that bottled water is pure, safe and convenient— and an essential part of a healthy, fit lifestyle.

But tap water in Metro Vancouver, for example, comes from three protected watersheds, and is among the best in the country. It's actually regulated much more strictly according to federal safety standards than bottled water. And tap water costs a tiny fraction of the price of bottled water.

How much bottled water is there?

Sales of bottled water in B.C. have risen enormously over the last five years. In 2007, between 126 and 164 million bottles of water were sold across the province, the majority of them in Metro Vancouver. That was a 70 per cent increase over 2003. And those figures don't include the thousands of litres of water delivered to homes and offices in the large polycarbonate jugs used in water coolers.

A big toxic footprint

Single-use bottled water is sold in bottles made of polyethylene terephthalate (PET), a kind of plastic made by reacting ethylene glycol with terephthalic acid, both of which are derived from petroleum. The manufacturing process releases several toxic substances, including acetaldehyde and 1,4-dioxane, both of which have been shown to cause cancer in rodents. Numerous other toxic chemicals are in waterborne wastes from PET production.

Bottling up the spring

Bottled water isn't as environmentally friendly as the marketing images suggest. In some parts of Canada, water bottling operations have had a severe environmental impact, causing reversals in groundwater flows. In B.C., more and more bottlers are seeking access to pristine streams in areas such as Bute Inlet to set up bottling operations.



Inside the bottle

Unlike polycarbonate, PET plastic does not leach bisphenol-A (BPA). But metals and other substances can leach into the water from PET plastic. A study done at the University of Heidelberg found that the metal antimony migrated into the water from the plastic. Researchers found that levels of antimony rose the longer the water sat in the bottle and the higher the temperature. Four studies from Europe have also detected different phthalates in spring water bottled in PET plastic. Phthalates have been linked to reproductive harm, especially in unborn male babies. Antimony and phthalate levels are below those considered by health agencies to be safe, but they still contribute to overall exposure.

The PET water bottles sold in B.C. required as many as 64,005 barrels of crude oil to manufacture, fill and transport to market.

Oil and water

The average 500-ml PET water bottle requires about 11 per cent of its volume in crude oil to manufacture, according to a recent study completed for the plastics industry. The PET water bottles sold in B.C. required as many as 64,005 barrels of crude oil to manufacture, fill and transport. That's the amount of oil a fleet of 12,268 Ford Explorer SUVs would burn driving from Vancouver to St. John's, Newfoundland.

Bottled water sold in B.C. comes from both local bottling plants and international sources, including France and Fiji.

Heating the planet

Along with their use of fossil fuels, PET plastic bottles generate more than four times their weight in greenhouse gases, known as CO₂ equivalents (CO₂e). In 2007, the bottles sold in B.C. produced up to 16,766,604 kg of CO₂e during manufacturing, filling and transport. The total is equivalent to the amount of greenhouse gases that would be generated in heating the average Canadian home for the next 2,177 years.

Recycling can't keep up

Manufacturers of bottled water do promote recycling initiatives. They want consumers to think that the bottle they buy is being recycled, maybe even into a new bottle. But the reality is different.



Discarded bottles are filling landfills and contributing to a new continent of waste in the Pacific Ocean.

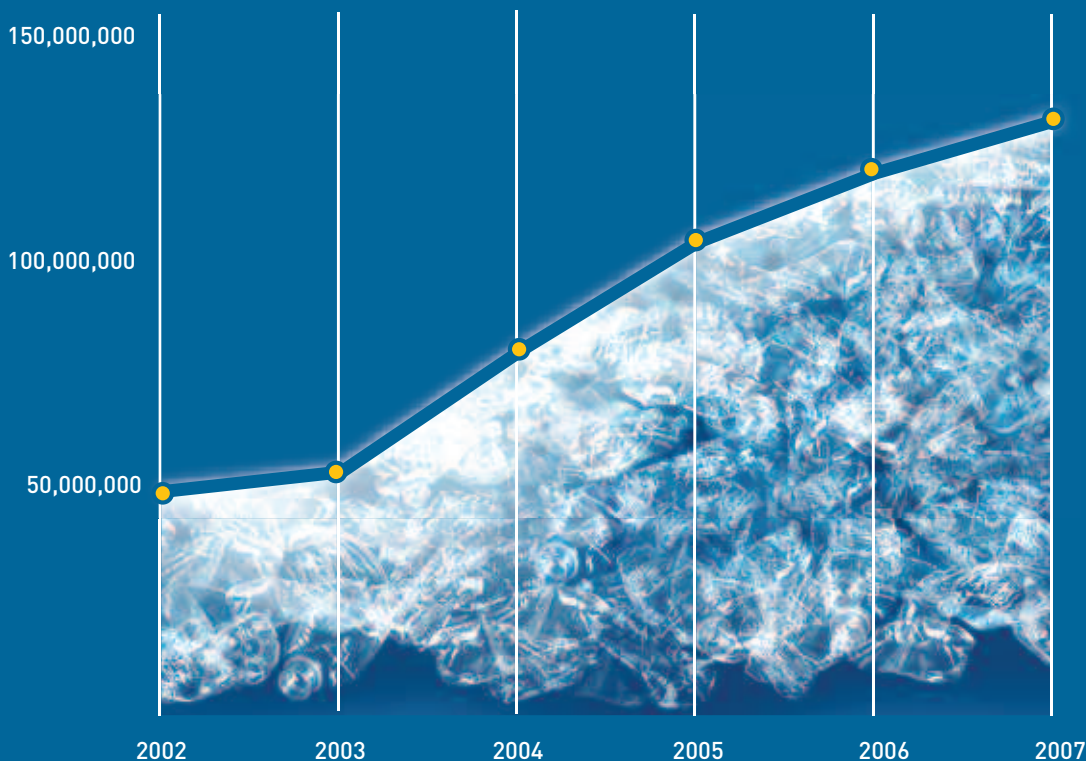
Growing sales of PET-bottled beverages are outstripping even the best of recycling programs. Discarded bottles are filling landfills and contributing to a new continent of waste in the Pacific Ocean.

British Columbia, for example, has one of the best recycling programs in the country that tracks every beverage bottle (except milk containers) sold and recycled. In 2007, 72.7 per cent of plastic bottles were recycled — but that still left over 130 million plastic beverage bottles going to the landfill. As many as 44 million of those were PET water bottles.

Waiting for recycling to catch up isn't the answer either. In fact, the overall recycling rate on beverage containers of 72.7 per cent is down from the 80.5 per cent reached in 2003. In many other provinces in Canada, recycling rates are much lower. That means hundreds of millions more water bottles are going to landfills.

The bottles that are recycled mainly end up as carpets, fabrics or other similar products that don't get recycled again.

Plastic Beverage Containers Going to B.C. Landfills, 2002-2007



In 2007, over 130 million plastic beverage bottles went to B.C. landfills, a 247 per cent increase since 2002.

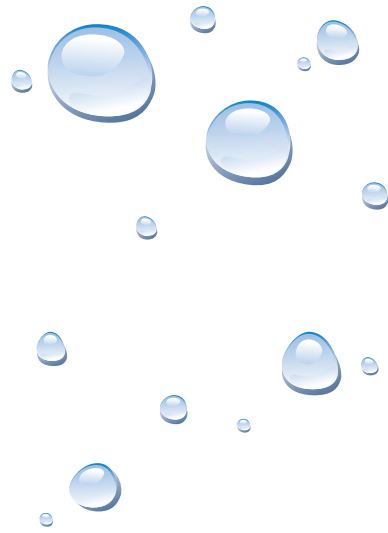
Reduce your bottled water

Reducing our use of bottled water is one of the easiest changes we can make to protect our own health, to protect the environment from plastic waste and to protect the planet from global warming.

Many universities and institutions and even municipal governments across Canada have decided to phase out the use of bottled water in their facilities and offices. But even short of that, consumers can make a positive change by reducing their PET bottle use by 20, 30, 50 per cent or more. Reducing consumption of PET-bottled soft drinks at the same time would create even more impact!

Water is the one beverage that's available through the tap — and our water in B.C. is among the best in the world. In fact, Clearbrook, in B.C.'s Fraser Valley, won the award for the world's best tasting tap water in the annual Berkeley Springs International Water Festival held in February, 2009 in West Virginia, USA.

The Metro Vancouver region in particular already has excellent municipal water and new filtration plant scheduled to come on line in 2009 will make it even better.



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For complete list of references and web links, see the full report, [The Toxic Footprint of PET-bottled Water in B.C.](#) at www.toxicfreecanada.ca

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Support for this project does not necessarily imply Vancity's endorsement of the findings or contents of this report.

GETTING OFF THE BOTTLE

Taking action

- **GET A REUSABLE WATER BOTTLE** and carry tap water with you. Bottles made from stainless steel, #2, #4 or #5 plastic or SIGG or Laken aluminum bottles are good environmental choices.
- **GET A GLASS PITCHER** or filter-style pitcher, fill it with water and put it in your home fridge. Most of the chlorine will dissipate in a few hours.
- **PLEDGE TO REDUCE USE.** Take our reduction pledge at www.toxicfreecanada.ca. Ask your club, sports team or workplace to take the pledge.
- **DOWNLOAD OUR FULL REPORT** from www.toxicfreecanada.ca and distribute it widely.
- **WORK WITH YOUR SCHOOL** environmental group or Parent Advisory Committee to encourage school boards to make drinking fountains, including bottle refilling, available in schools.
- **PROMOTE RECYCLING** of plastic and other containers. Ask your provincial government to expand the direct deposit system to increase recovery rates.
- **VISIT YOUR LOCAL** community source of drinking water — and encourage your local government to protect water resources for future generations.
- **ENCOURAGE YOUR LOCAL MUNICIPAL** council to adopt the Federation of Canadian Municipalities policy to phase out the use of bottled water on municipal property.
- **WRITE YOUR MP AND MLA** and ask them to support maintenance and upgrades of our drinking water systems.

