



**Drexel Sustainability Council**

**Report on Bottled Water Reduction on Drexel's Campuses**

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**Water Wise Committee**

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**Adopted by the Council on March 10, 2009**

## Background

In December 2008, the Water Wise Subcommittee was formed at the request of the Drexel Sustainability Council to explore ways that Drexel staff can reduce or eliminate plastic water bottles on our three campuses.

Bottled water makes its way onto campus through many venues: Deer Park deliveries, Coke vending machines, Sodexo catering, lunch trucks, and personal purchases. The University community consumed over 151,000 bottles of water alone *from January to December 2008*<sup>1</sup> just from the first three sources in this list. Fiscal Year 2008 saw Drexel's Main Campus recycle 134 tons of plastic, glass and aluminum combined. If we make the recycling industry standard assumption that one ton is equivalent to 19,684 plastic bottles and that 1/3 of Drexel's 134 tons are plastic bottles, that means that we are sending 870,426 various types of beverage plastic bottles on their way to be recycled every year. But, for those that don't make it to a recycling plant, the bottles that end up in a landfill can take 450 years to decompose<sup>2</sup> and even worse, if you are pouring that water into a Styrofoam cup, those never decompose.<sup>3</sup>

It should be noted that Dasani bottled water (which is sold on Drexel's campus in accordance with our Coca Cola contract) "comes from the local water supply, which is then filtered for purity using a state of the art process called reverse osmosis".<sup>4</sup> That means that they are bottling the same water that is obtained from the tap, which they are then filtering and bottling. Drexel has sold over 129,000 bottles of Dasani water via vending machines and catering services in 2008.

While we cannot completely eliminate plastic water bottles, we can come up with viable alternatives to get the Drexel community to find ways to reduce plastic water bottles, utilize re-usable drinking containers and ensure what is consumed gets recycled and not put in the trash.

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<sup>1</sup> Annualized based upon July to December 2008 data provided by Deer Park and the Drexel Business Services Office

<sup>2</sup> <http://www.keepathenslimestonebeautiful.com/DisintegrationTimeTable.html>

<sup>3</sup> <http://www.uoregon.edu/~recycle/Book/HTML/Chapter%2002.htm>

<sup>4</sup> <http://www.dasani.com/popups/faq01.htm>

In the report below you will find detailed information based upon our findings on the sources of plastic water bottles on campus and ways we found to raise awareness about the environmental impact of plastic water bottles and alternatives to offer to the Drexel community, including modifications to the existing water fountains on campus.

### **Scope and Objective**

We focused on obtaining information regarding the volume of plastic water bottles being sold via Deer Park delivery, campus catering and the Coke vending machines. In addition we focused on determining if the quality of the water dispensed from the many campus water fountains was comparable to bottled water and a viable solution to bottled water. And finally, we looked to determine the volume of plastic water bottles that were currently being recycled on a regular basis and the ecological impact of those bottles not recycled.

### **Findings**

#### **1. Recycling Statistics Can Be Improved**

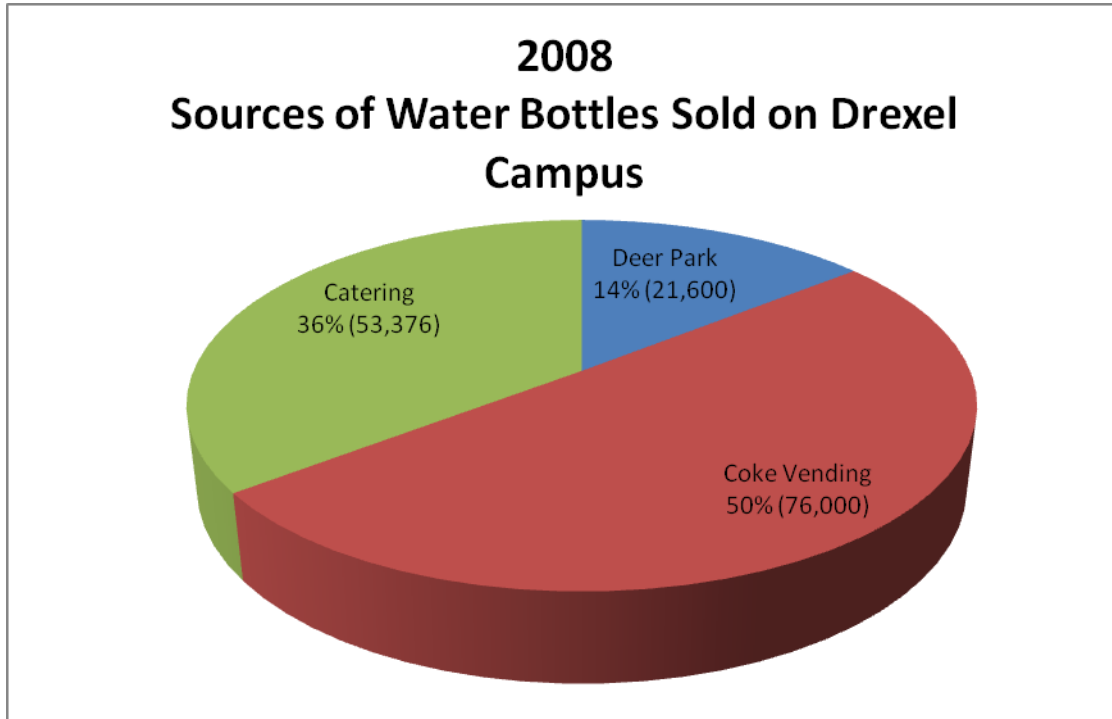
In Fiscal Year 2008, we recycled 134 tons of plastic, glass and aluminum cans. Since we do not track each type of container individually, we cannot clearly determine exactly how much of that was plastic water bottles. However, let's make some assumptions. It is estimated approximately 15% of the plastic recycled was water bottles<sup>5</sup>, *and* let's further assume that 1/3 of the 134 tons recycled in 2008<sup>6</sup> are plastic bottles and that

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<sup>5</sup> Data obtained from Kyle Kephart, Drexel University Director of Quality Services

<sup>6</sup> Data obtained from 2008 Drexel Recycling Report provided by Kyle Kephart

one ton<sup>7</sup> equates to 22,046 plastic bottles<sup>8</sup>. That means over 146,000 plastic water bottles were recycled last year.



In comparison, it was estimated, based upon data provided by Business Services, 76,000 water bottles were sold in the Coke vending machines and 53,376 sold by the Catering Department in addition to the Deer Park sales of 21,000 total approximately 151,000 plastic water bottles that we can account for. There are also bottles sold by the lunch trucks and those brought onto campus by staff.

That leaves a conservative shortfall of over 20,000 bottles going into the trash and into a landfill each year. *The cost is not just the space in landfills: it is the use of plastic for such a short-term value, and the energy and other costs associated with delivery of the*

<sup>7</sup> <http://www.shrewsbury.gov.uk/public/news/100tonnemilestone.htm>

<sup>8</sup> [http://www.unitconversion.org/unit\\_converter/weight.html](http://www.unitconversion.org/unit_converter/weight.html)

*product to Drexel and delivery of the bottles to a landfill. Those environmental costs should be considered as well.*

Imagine a plastic bottle filled 1/4<sup>th</sup> of the way with petroleum. That is how much petroleum it takes to manufacture one plastic water bottle, according to the Back 2 Tap Organization<sup>9</sup>. They also state that it takes 3 bottles of water to make and distribute one plastic bottle of water.<sup>10</sup> The environmental impact of all of these bottles should be communicated to the Drexel community so staff can be aware of the cost to the environment for the sake of convenience.



## **Recommendations**

Developing a campaign to re-commit each Drexel staff member to recycling all bottles and other beverage containers will help ensure that each staff member is responsible for ensuring any bottles they use during the day are being recycled. This can be emails alerting staff to recycle and obtain a recycling container for their area if needed, posting of recycling sites, and sharing the recycling statistics with the University community to

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<sup>9</sup> <http://www.back2tap.com/facts1.html>

<sup>10</sup> <http://www.back2tap.com/facts1.html>

demonstrate how much is going to the trash. Having a “Green Guru” in each area to help all staff in that department with recycling questions and ensuring that no bottles are in the trash would further recycle compliance.

## **2. Joining the “Think Outside the Bottle” Campaign will promote Water Bottle Awareness**

An ideal situation is the absence of bottled water and one way of moving toward that goal is increasing the awareness and promoting the use of tap water from water fountains instead. One way of moving toward that initiative is to have Drexel University join the Think Outside the Bottle Campaign, [www.thinkoutsidethebottle.org](http://www.thinkoutsidethebottle.org). The University of Pennsylvania and University of Delaware are already members.

The Campaign is led by Corporate Accountability International and encourages college campuses to host Tap Water Challenges, a blind taste test to determine if people can differentiate between tap and bottled water. It also encourages the promotion of reusable water containers to be refilled from a tap source as an alternative to purchasing a plastic water bottle.

According to the Back 2 Tap Organization, 4 out of 5 people preferred tap water over bottled water in a blind taste test, and that 25% of all bottled water is actually just filtered tap water. They also note that tap water costs around \$.02 per gallon versus anywhere from \$1-\$20 per gallon of bottled water.<sup>11</sup> Coca Cola, Drexel’s contracted beverage supplier provides us with Dasani water. Per Coca Cola, they obtain that water from the local water utility, which means they filter and bottle the same water provided to people via their faucet by the local water company.

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<sup>11</sup> <http://www.back2tap.com/facts2.html>



### **Recommendation**

Drexel University should join the Universities of Pennsylvania, Delaware and Maryland in the “Think Outside the Bottle” Campaign to promote awareness of the ecological impact of the thousands of plastic water bottles being recycled or put in landfills each year. They have kits to perform on-campus taste tests and instructions on how to get volunteers to promote awareness around eschewing bottled water, making the University community aware of the environmental impact that can be had if we move away from bottled water and toward the use of tap water.

### **3. Increase the use of Mugs and Other Sustainable Containers**

Drexel should inspire workers to drink from reusable containers. By having all staff bring in a sustainable/reusable container for their beverages will help with recycling efforts by reducing the amount of cups, bottles and other containers being placed in recycling bins and the trash. We contacted Deer Park, our preferred water vendor, and the only recyclable plastic cup alternative was ¼ more expensive than the non-recyclable product they currently provide to us; \$1.00 for non-recyclable 50 cups versus \$4.00 for recyclable 50 cups. While they do provide paper cone cups at a nominal cost, the cone cups are not user friendly.

University Procurement should consider having beverage vendors provide all of their green alternatives and the cost when making a consideration for preferred vendor status. Sodexho, our catering vendor has a \$1.00 per person surcharge for the biodegradable “Greenware” place setting for events and a higher premium for china place settings at catered events. In lieu of paying the premium on green beverage containers, Drexel should consider requiring Sodexho only provide water pitchers and glasses at no extra charge when catering events.

### **Recommendation**

Encourage the University community to bring a reusable cup or mug will help cut down on the cost of purchasing cups from Deer Park and possibly catering.

The University may want to consider prohibiting the purchase of individual water bottles for purchase with Drexel funds (unless absolutely necessary) and allow only the multi gallon jugs to be purchased from Deer Park.

The University may want to consider re-negotiating the rates on Green serving containers as part of our Catering Contract or provide additional funding to departments who do a large amount of catering and select green options or have only water pitchers and glasses in lieu of individual water bottles at events.

## **4. Water Analysis Shows Philadelphia Water Supply in University Fountains Meets EPA Standards**

We conducted testing using the Watersafe® Drinking Water Test on 4 University owned water fountains<sup>12</sup> and determined that the 7 EPA issued criteria for safe drinking water were met.

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<sup>12</sup> Tests conducted week of February 3, 2009 on fountains at the following locations: 3201 Arch St., Main Building, Korman Center, New College Building and Bellet Building. Elevated Hardness levels, but no other exceptions to the test.

We were unable to get a full inventory of water fountains on the Main Campus, and determined there are 67 fountains on the Center City Campus and 22 on the Queen Lane Campus.

It should be noted that tap water is closely regulated by the Environmental Protection Agency (EPA) and additionally here by the Philadelphia Water Company; however, bottled water is only regulated by the Food and Drug Administration, who do not subject the water to all of the EPA’s testing requirements.

The chart below outlines the results of the Watersafe® Drinking Water Tests conducted by the members of the Water Wise Subcommittee at 5 Drexel University locations:

## Watersafe® Test Results

<u>Fountain Location</u>	<u>Campus</u>	<u>Bacteria</u>	<u>Lead</u>	<u>Pesticides</u>	<u>Total Nitrate /Nitrite</u>	<u>Nitrite</u>	<u>Total Chlorine</u>	<u>pH</u>	<u>Total Hardness</u>
3201 Arch St, 1st Floor	Univ City	None	None	None	0	1	2	6.5	250
Main Building, 2nd Floor	Univ City	None	None	None	5	0.15	0.2	8.5	120
Water Cooler Korman Ctr	Univ City	None	None	None	0.5	0.15	0	6.5	120
Kitchen Sink Faucet 7th flr Bellet	CC	None	None	None	10	0	0	7.5	250
245 N. 15th St. (NCB), 5th Floor	CC	None	None	None	2.0	0	0	10	250

**Acceptable Level Guide**

**Bacteria** None

**Lead** Below 14 ppb

**Pesticides** Below 3 ppb

**Total Nitrate /Nitrite** Below 10.0 ppm

**Nitrite** Below 1.0

**Total Chlorine** Below 4

**pH** 6.5 to 8.5

**Total Hardness** 50 ppm or less

### Recommendation

The Watersafe® Test Kit, while effective for home use, is limited in an institutional application. We are able to determine that the water, from a do it yourself kit, seems to be safe to drink. However it should be tested by a qualified professional if we are going to encourage the use of water fountains as an alternative to bottled water.

Once it has been determined that the water is safe to drink, the University should ensure that Facilities Maintenance is responsible for the upkeep of all water fountains and filters. The university community needs to feel safe, knowing that the water coming from the fountains is potable.

When water fountains are not properly maintained, this is what is seen by the University community:



(Photo taken in Korman Center, January 2009)

We also recommend that the University consider replacing the outdated water fountains with ones that have a raised spigot so that staff can refill their water bottle or mug without fear of contamination from the lower spigot. Planning, Design and Construction has estimated a \$6,500 cost for installation and purchase for each new water fountain. This will show the University community that we are willing to commit resources to provide sustainable water alternatives.

We also recommend consideration of Deer Park Carbon Filtration Systems, which are available under our contract. These would eliminate the need to purchase water jugs and are “hard wired” into an existing water line. The water is purified using multi layered carbon filtration and provides hot/cold filtered water. Facilities Management would have to conduct feasibility study to determine if this is a viable option for some or all departments.

### **Conclusion**

This report has highlighted a few areas that will allow the University community to begin a dialogue on how Drexel can commit to reducing the amount of plastic water bottles here on campus and identifying alternative ways to provide water to faculty and staff. While promoting recycling awareness or having a bring your mug to work day are low cost solutions, there are others, such as the upkeep and maintenance of public area water fountains or even exploring the option of the bottle-less water cooler from Deer Park that we would need to commit funding in order to implement. In the end, we all must be aware as individual citizens and secondly, members of the Drexel community that every choice we make should be one that can benefit the environment in the long run and move toward living a sustainable lifestyle.