

## **The Case against Plastic Bottles at Gulf Park**

(A *Coastlines* Editorial by Tamara Bangs,  
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On a normal school or workday, millions of people have a similar routine: wake up in the morning, get dressed and grab a quick breakfast that likely includes a bottle of orange juice or water. To us, this morning routine is harmless—once we throw away the plastic bottle, it is out of sight and out of mind; however, the bottle's impact on our environment is everlasting.

A plastic bottle, however, does not simply disappear once we recycle it or throw it away. In fact, a quote from a 2015 *Planting Peace* article states, "In the next hour, Americans will use and throw away approximately 2.5 million plastic bottles. Of those 2.5 million bottles, every single one could still exist a thousand years from now." This staggering information solicits the question, "Where does it all go?" and the answer is visible right outside of our doors. These plastic bottles readily become land and ocean litter, which is devastating to the entire ecosystem.

On land, plastic is harmful because most of it is not biodegradable. Petroleum-based plastic is not recognizable by the organisms that break down organic material; instead, sunlight must break it down into small pieces via a slow process called photo degradation ("Every Piece of Plastic Ever Made Still Exists Today"). Plastic that ends up in landfills has a harder time with photo degradation, because sunlight can only reach the proverbial "tip of the iceberg" that is the trash mountain. The rest of the landfill plastic will remain on Earth into the distant future, no doubt making its way into the ocean, creating a whole new set of problems.

Plastics make up the majority of marine debris; 14 billion pounds of garbage accumulate annually in our oceans (Leous). When plastic gets into the ocean, it has much better access to surface sunlight, allowing it to photo degrade in as little as a year. The plastic that does

not receive direct sunlight can take up to 450 years to bio-degrade due to the cold-water temperatures (Leous). This means the plastic bottle a student drinks from today could possibly be floating in the ocean for the next eight or so generations leaving a legacy of trash. This legacy can be seen, as our obsession with plastic bottles have created an area known as the Pacific Garbage Patch (PGP). This swirling, toxic ocean landfill is located in the North Pacific and is estimated to be about the size of Texas (Pyrek).

The large amount of plastic being deposited in our oceans is catastrophic to all life. The small plastic particles that result from photo degradation contain toxic chemicals like BPA (bisphenol A). Because plastic is the largest source of ocean litter, sea animals and birds constantly fatally ingest BPA. This toxic chemical kills around one million sea birds and 100,000 marine mammals every year. In humans, BPA causes increased risk of heart disease and diabetes (“Every Piece of Plastic Ever Made Still Exists Today”). Another chemical in petroleum-based plastic, antimony, can cause depression in small doses and nausea, vomiting, and death in large doses (“Bottled Water Facts”).

BPA is especially harmful as “It is an endocrine disrupter and tends to accumulate in the body. It accumulates in all bodies, all the way up the food chain, from fish, to birds, to us” (Pyrek). The University of Missouri released a study on how BPA affects the reproductive system: BPA is found in some plastic containers, water bottles, baby bottles, and cans. The chemical can leech into foods or liquids, particularly when heated. Fetuses, infants, and children are thought to be at highest risk from the effects of BPA on development of the brain and reproductive tissue. Researchers from the University of Missouri demonstrated earlier in 2014 that pregnant monkeys exposed to very low levels of BPA delivered offspring with birth defects (Orcutt). The study also concluded that 93% of humans have detectable levels of BPA in their systems and that as of 2015 the USDA has NOT banned BPA from food packaging although some manufactures have done so voluntarily (Orcutt).

In light of the risks associated with BPA, many companies switched to PET in the production of plastic bottles. PET has been touted as a healthy alternative but recent studies have shown this may not be true. The result of a study on PET bottles published in the International Journal of Hygiene Health came to the following conclusion:

The increasing diffusion of plastic containers for water and soft drink packaging is due both to the greatest practicality for the consumer and to cost cutting for the companies, but it may involve a potential exposure of individuals consuming large amounts of bottled mineral water to low doses of chemicals migrating from packaging materials or be a consequence of storage conditions. Daily consumption and, consequently, the prolonged exposure to potentially deregulating compounds of the endocrine system, is a factor that must not be underestimated (Pinto).

The production of plastic drinking bottles appears to be harmful to human health no matter what process is used. The same chemicals that are found in the bottles of water or soda consumed by humans, will eventually find their way to the ocean and release those same chemicals into the water. The ecological disaster that looms with the existence of the Pacific Garbage Patch is a consequence of human activity, lack of eco-literacy and our obsession with bottled beverages. The chemicals released by these bottles pose a threat to not only the ecology of the ocean but to human life, as everything in the food chain is connected. If the analogy “You are what you eat” is true, then it is equally true we are eating our own trash.

Finally, it must be pointed out that plastic uses Earth’s non-renewable resources poorly. According to the Ban the Bottle campaign website, the amount of oil used annually to manufacture plastic bottles (17 million barrels) is enough to “fuel 1.3 million cars for a year”. The amount of energy required to meet America’s demand for plastic bottles is enough to power 190,000 homes. Despite all of the resources needed

to make plastic bottles, the recycle rate of plastic in America is only 23%, less than 1 out of 4 bottles. So, 38 billion water bottles—or \$1 billion worth of plastic—are wasted every year (“Bottled Water Facts”). As previously mentioned, these non-recycled bottles end up as litter in our oceans, streets, and landfills, wreaking havoc on the environment.

Along with the health hazards and environmental damage from bottles, the bottled water industry has duped the public into believing that the tap water is unsafe and water in a bottle is a better alternative. What they do not tell you is that about 40% - 60% of the water in plastic bottles comes from municipal taps (Saylor). Companies that mostly use municipal water (the same water you get from the tap) like Nestlé, Coca-Cola, and Pepsi, have used fancy packaging and advertising campaigns to promote their product as being superior to tap water when evidence suggests that this is not the case (Saylor). Pepsi’s Aquafina and Coke’s Dasani bottled water are both manufactured using municipal water and these two alone have 24% of the market share (banthebottle).

The use of public municipal water in the production of bottled water also raises ethical questions as municipalities are funded by tax dollars. This means they are selling a product for private profit that has essentially already been paid for by the public (Saylor). In the case of companies that do not use municipal water, like spring water, there are no laws that require studies to be done on how the extraction of water from the springs will affect aquifers and the surrounding ground water table.

For all these reasons, the question “What must we do to fix the plastic problem?” is worthy of discussion. One institution that uses a particularly high volume of plastic daily is a university campus. From vending machines, to plastic utensils in the cafeteria, to disposable cups from campus coffee shops, the volume of plastic waste per capita is alarming. An article from Boston College’s sustainability page states, “The average college student produces 640 pounds of solid waste a year, including 500 disposable cups” (“Know Your Facts”). Colleges across

the country have begun decreasing their plastic footprint is by banning single-use plastic bottles in favor of “hydration stations” which require reusable bottles. Banning bottled water on college campuses is an achievable first step in reducing the harmful effects that plastic bottles have on the environment. The campaign to ban the bottle will also help students to become more ecoliterate.

Among the first public universities to institute a bottled water ban was the University of Vermont. In January of 2013 the campus removed all bottled water sold on campus. A peer reviewed study soon after the bottled water ban, however, determined that students increased their consumption of sugary beverages that were sold in plastic bottles, which in turn has the paradoxical impact of more plastic bottles in the University’s waste stream than before (Berman). Fortunately, the Vermont administration honored their commitment to the ban, and our living planet, by determining ways to correct the problem. The University of Vermont doubled down on their efforts by mandating that vendors make sure that “50% of beverage options in retail and vending locations . . . meet AHA guidelines as ‘healthy choice’ options, instituting a new campaign starting in January 2016” (uvm.edu). The university also revisited its contracts with beverage distributors, placing Free-Style beverage machines in their dining outlets to promote the use of refillable containers (uvm.edu). Furthermore, as of 2015, the University of Vermont requires that all undergraduates complete a Sustainability Requirement as part of their general education curriculum, ensuring that The U of Vermont graduates students who are ecoliterate. In 2016, Vermont was named a Top 10 Green College by the Princeton Review (umv.edu).

The University of Vermont bottle ban is trending across college campuses. Campaigns such as the Food and Water Watch’s “Take Back the Tap” have rallied student activists across the nation to raise awareness of the harm that bottled water does to our environment. As of 2016, 73 campuses nationwide had banned sales of bottled water in certain locations or at certain events (“Students” 2016). Additionally, 182 campuses are participating in campaigns to raise awareness about

bottled water, or even ban it from campus. However, there are still many campuses in the US that do not have adequate water stations to refill water bottles, which results in students having to pay for over-priced, environmentally damaging plastic bottles (“Students” 2016). In addition to the inflated cost of bottled water, the production and distribution process that the bottled water industry uses consumes a lot of energy, which in turn contributes to global warming, climate change and dangerous air pollution.

Some of the efforts to decrease plastic bottle use include installing more water filling stations, including tap water education in student orientations, and distributing reusable water bottles (“Students” 2016). The Ian Somerhalder Foundation, an organization that works to empower and educate people to positively impact the environment, talked with Judy Purman, the College of Saint Benedict’s Director of Sustainability on what it would take to make a campus completely bottled water free. She says that to begin the initiative, a committee had to be formed that would be responsible for planning and gaining support for the plan. The committee had to find workable solutions and also educate others on the issue. One of the alternatives that St. Benedict implemented was adding hydration stations. Before these could be implemented, however, the committee had to calculate the potential savings for the campus, which was approximately \$22,000 per year in bottled water savings (“Banning”). This was enough to pay for 31 hydration stations and proved that the cost of these stations would be offset in one year of bottled water savings (“Banning”). Purman also noted that the student body made a large impact on the initiative by starting a petition independent of the Sustainability Committee (“Banning”).

Do students actually use these hydration stations instead of choosing to purchase bottled water? According to Purman, the results are positive. Each station has a counter that is read on a weekly basis and the number of 16 ounce servings dispensed per month is published in the university newsletter. According to these findings, there are approximately 10,000 16 ounce bottles filled per month (“Banning”).

The university also distributed BPA-free, reusable bottles that Purman says aided in the acceptance of the initiative while sparking communication about it and making the students feel included. The bottle water ban is now an official policy of the campus, ensuring that the initiative will be upheld for years to come.

Duke University analyzed their own implementation of hydration stations on the Duke campus and detailed every step they took to achieve their goals. They first had to determine the demands made by the new hydration station infrastructure on Duke's plumbing and existing infrastructure (Salzman 2012). They also conducted research with the student body and faculty by collecting online survey data about reusable water bottle usage and observational data about existing hydration station usage along with first person interviews (Salzman 2012). One of the largest concerns was that many students considered carrying a reusable bottle inconvenient. They also found that men are much less likely to use a reusable bottle than women (Salzman 2012). Therefore, they concluded that the best way to spark student participation was for the university to supply incoming freshmen with reusable bottles during orientation. They reasoned that freshmen are "generally the most energetic and receptive to innovative sustainability efforts" (Salzman 2012). Likewise, once incoming students adopt the use of reusable bottles, they are more likely to continue it for subsequent years. Additionally, they found that the most cost effective way to incorporate filling stations was to add an additional feature to the existing water fountains and especially in high traffic areas where they would be easily seen and accessible.

An example of a local university that is making strides to become less dependent on plastic bottles is the University of Mississippi in Oxford, MS. They are currently working on implementing what they call their "H2Otty Toddy Hydration Stations", which are being funded through a wellness grant provided by Blue Cross/Blue Shield ("Office"). The project will site these stations, in part, through an application process in which anyone can apply to have a station installed in his/her building of choice ("Office"). This way, the

project allows students and faculty to play a role in the initiative.

That universities are taking the challenge to reduce plastic bottle waste with the implementation of “bottle bans” is a positive sign that students are beginning to realize the effect they are having on their environment.

Gulf Park should be a part of this trend. We need to ban the single use plastic bottle from our campus.

Plastics are dangerous to all life, despite, or perhaps because of their ubiquity. Bans on bottled water are a good place to start, as tap water is proven to be of the same or higher quality, and with the implementation of watering stations students could use refillable containers instead of single serve plastic bottles. Additionally, the use of watering stations would raise awareness of the hazards of plastics in our environment. This awareness would have lasting effects, empowering students to make more sustainable choices both on and off campus. The risks associated with the overuse of plastics are too great to ignore.

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