

Disposable Product Usage and Sustainability at Smith College

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5/7/04
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Abstract

Waste production is steadily growing in the United States with each passing year. The bulk of the waste produced in the United States is composed primarily of paper and plastics. The manufacturing of these two products directly affects the environment by depleting natural resources and contributing to the earth's pollution. In America, Universities have a history of serving as institutions that promote revolutionary thought and catalyze many societal changes. While Smith College has a long history of fostering such a community, a leadership role has yet to be taken in the area of environmental awareness and sustainability. One potential area of improvement that this study examines is the student body's use of paper and plastic disposable products in the dining halls. While disposable products are provided to students for their convenience, unlimited student access contributes significantly to the waste produced over the course of the school year. Analysis of the amount of disposable products used by students as well as the cost to support this usage has revealed that other alternatives must be considered in order for Smith to be a model for sustainability. Examining other institution's practices surrounding dining services reveal that there are many alternative programs that succeed in decreasing disposable product waste and increasing environmental awareness of the student body. It is important that Smith consider implementing one or a combination of the purchasing, elimination or recycling ideas presented in this study in order to both contribute to the sustainability of its community, and become a leader in the promotion of environmental consciousness.

Introduction

Solid waste is a growing problem that has one of the most significant impacts on the environment out of many environmental issues. In the United States there is a developing trend that the amount of waste produced by Americans increases each year. In fact, the United States produces an average of 200 million tons of waste per year, making it the largest producer of waste in the world.¹

Generally the solid waste stream produced by the United States has two major components, paper and plastic. As of today, paper products make up approximately 36% of the solid waste stream. In 2001, Americans generated over 82 million tons of paper product waste. This is a threefold increase from 1960.² Another significant component of the waste stream is plastics. Plastics account for over 25.4 million tons of waste per year, accounting for an estimated 21% of the solid waste stream.³ Paper and plastic waste combined make up almost 50% of the solid waste stream in America.

The production of both products has a significant impact on the earth's natural resources and creates a significant amount of pollution. Both materials require the consumption of either petroleum or forests, two of the world's most limited resources. Each year the raw materials face further depletion and little is done to replace what was used. In addition to resource depletion, many forms of pollution is generated in the manufacturing of these products. Despite these detrimental affects to the earth, little is done to control paper and plastic yearly output or effectively reduce the amount that ends up in the land fill.

¹ CIWMB 2004

² CIWMB 2004

³ Environmental Protection Agency Report, 2004

Needless to say, a change needs to be made in US consumption of natural materials and waste production.

Throughout history, educational institutions in America, particularly colleges, have often been responsible for catalyzing changes in American thought and practices. Universities have a responsibility to bring awareness to students regarding sustainability and the detrimental effects of the current consumption practices. Universities across the country should act as leaders in the issue of sustainability, working not only to raise awareness among students, but to also create a community that actively works to create a sustainable lifestyle that positively affects the surrounding community.

Smith College, not unlike the rest of the nation, creates a significant amount of waste per year. A study done of the college in 2003 revealed that Smith produces an estimated 4 tons of trash per week during the school year, most of which ends up in the community landfill.⁴ Disposable products used at Smith, makes up a significant portion of the waste produced. Convenience is a concept that is an integral part of college life. Many innovations arise from the goal of convenience including disposable products. While the goal of convenience is understandable and often important, it should not come as an expense to the environment. Disposable products supplied by the dining halls are one of the ultimate conveniences that all students have unlimited access to. This study examines Smith's disposable products usage and provides alternative solutions that are healthier for the environment as well as raise student awareness regarding the importance of sustainability practices.

Methodology

The first step in our analysis was to determine who the distributor was of the products that Smith was using. Communication with Kevin Martin in dining services provided this information. Determining the distributor and where the products were being made will aid our analysis how Smith's purchasing practices affect the outside world. Internet research gave information about where these manufacturing companies made their products and what their environmental practices are. Further interviews with Kevin Martin gave estimates on the amount of the different disposable products purchased each year per house and how much was spent. Anne Finley provided us with the yearly averages of Tyler house and Cutter/Ziskand disposable product usage.

In order to understand the trends of disposable products used in the dining halls, Gillett and Chase/Duckett Houses were monitored for one week. Gillett and Chase/Duckett were chosen for monitoring based on their relative sizes. Gillett dining hall serves less than 50 people per day, while Chase/Duckett serves approximately 3 houses during the week and 5 houses during the weekend. Paper plates, paper cups and utensils as a whole were chosen to be measured. The count was taken after dinner each day. These amounts were tallied and the grand total provided a reasonable estimation of disposable use in a dining hall that serves a large amount of people, versus that of a small.

⁴ Wraight, 2003

Another important aspect of our study included understanding what sustainability programs specific to dining services were being implemented by other colleges. Other colleges' programs would serve as a reference point for which to gauge how Smith's practices. To accomplish this, extensive internet research was done on school dining policies.

Results

Correspondence with Kevin Martin revealed information regarding which companies produce the disposable products we buy, as well as the amount of products used during the school year. Smith purchases from two different manufacturing companies. International Paper Co. produces the paper plates, cups and Styrofoam bowls. Our Dixie™ utensils and Coronet™ napkins were manufactured by the Fort James Corporation an intermediate company of Georgia-Pacific, Co. The International Paper Company has headquarters in Stamford CT, and Georgia-Pacific, Co. has a factory in Leominster, MA. Our distributor, Vistar, is responsible for bringing all of the disposable products to campus. International Paper Co. is the world's largest forestry products company that manufactures a wide range of paper, packaging, and wood products. International Paper Co. controls of more than 6.3 million acres of forest in America, 1 million acres in Chile, and 800,000 acres in New Zealand.⁵ Georgia Pacific Co. is the largest lumber company in the United States, managing 10 million acres of land. The company has branched out into other parts of the world as well, developing subsidiaries that operate in Panama, Brazil, Netherlands Antilles, Germany, Switzerland, Mexico, Canada and the Virgin Islands.⁶ Both companies have a significant impact on the forests in both the U.S. as well as around the world.

Smith spends a significant amount of money on disposable products. In fact, the average house spends approximately \$16,625 on disposable products per year. Table 1 breaks down how much an average house spends on each disposable product during a school year. From the table, we can see that the most commonly used items include paper napkins, paper cups and paper plates. Almost \$7,000, is spent on napkins, making it the largest fraction of the total cost. The least amount of money is spent on plastic lids, whose yearly cost is \$156.00.

Item	Case Count	Amt/ Case \$	Cases Purchased	Cost
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⁵ George Draffan <http://www.endgame.org/gtt-corps-ranked.html>, 2000

⁶Jim Donahue http://multinationalmonitor.org/hyper/issues/1990/10/mm1090_10.html, 1997

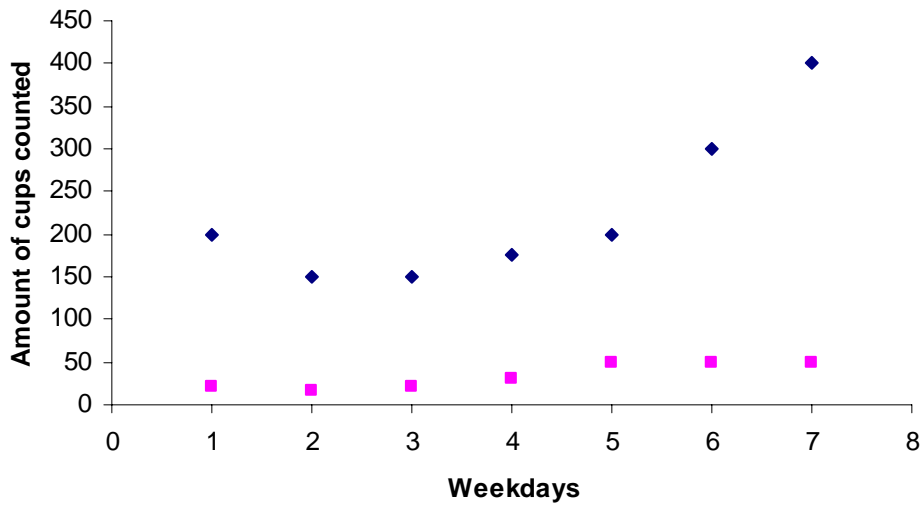
Plates	500	26	114	2964	
Bowls	1000	23	36	828	
Lids	1000	13	12	156	
Napkins	5000	28	247	6916	
Cups	1000	35	55	1925	
Spoons	1000	21	32	672	
Knives	1000	21	31	651	Total \$
Forks	1000	21	38	798	16,625

The weekly use study of Gillett and Chase/Duckett dining halls, presented in table 2, reveals the estimates of the amounts of plates, cups and utensils used during the week. This table shows that fewer products were used by Gillett than Chase Duckett. This is to be expected as Gillett is a significantly smaller house. The data presented in figure 1 shows that most of the disposable products are used on the weekends.

Table 2. Total average disposable products used in Chase/Duckett and Gillett Houses during a week

Items	Chase/Duckett Quantity	Gillett Quantity
Plates	500	70
Cups	1500	200
Utensils	1000	130

Figure 1. Usage of Paper Cups in Chase/Duckett and Gillett Houses over 1 week.



Diamonds-Chase/Duckett, Square-Gillette

Another aspect of the study found the prices of the biodegradable equivalents of the disposable products we currently use. Table 3 presents a cost analysis of biodegradable products. It contains cost estimates of plates, napkins, cups, spoons knives and forks. The total cost of supplying the biodegradable option is \$31,148. It is important to note that this is a considerably higher amount compared to the final price of our current purchasing practices.

Table 3. Cost analysis for greener disposable products from Green Home, Co. based on Smith College average usage (excludes bowls and lids)

Item	Case Count	Amt/ Case \$	Cases	Cost \$	
Plates	1000	90	114	10260	
Napkin	6000	54	247	13338	
Cups	1000	73	55	4015	
Spoons	1000	35	32	1120	
Knives	1000	35	31	1085	Grand Total
Forks	1000	35	38	1330	\$31148

Finally, research was done on green practices of other colleges across the country. The compilation of some of the most general practices is presented in table 4. This table is organized into three different plans with estimated cost of the plan and final environmental impact. In this compilation of data, nine different colleges were considered. The three main alternative methods found were the travel mug, limited access to disposable and the honor mug system. The traveling mug program was the most common program, existing in all nine of the schools considered. In most schools, a travel mug was given to each freshman during orientation and its use was encouraged by offering discounts at the college Cafe when the mug was used. The limited access plan often had two components to it. The first component was that students restricted from taking food out of the dinning room unless a need was proven, such as a class conflicting with lunch time. The second limited access plan involved purchasing practices. The college chose to purchase products that were made of recycled material or were biodegradable. The honor mug system is unique to two Smith houses. Mugs are used instead of disposable cups.

Table 4. Institutions that have implemented greener choices and relative costs

Institution(s)	Plan	Retail Price \$*	Est. Cost \$ **		Environmental Impact
McGill University, Hampshire, Oberlin, Bates, Rice, Clark GA, Bowdoin, Mount Holyoke, Amherst	Reusable Travel Mugs	~16.00-20.00	52,000 (all upfront)		<ul style="list-style-type: none"> • Zero Waste • No maintenance • No Landfill fees
Mount Holyoke, Amherst	Limited Access	Variable dependent on college purchasing practices	Current ~10,000	Eco-Friendly Choice ~16,000	With Eco-friendly choice: <ul style="list-style-type: none"> • 100% Biodegradable • composting • No Landfill fees • Transportation fees • Not harming local or global environment through use of unsustainable materials

Smith College (Hubbard and Capin)	Honor Mug System	Free of charge	N/A	<ul style="list-style-type: none"> • No upfront cost • No transportation fees • No Landfill fees • Enhances recycling from products already in the students grasp • Requires strong hygiene regulation
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** Based on extensive internet search on various commercial companies that provide these services*

*** Based on a set student population of 2,600 and extrapolation from that point forward.*

Discussion

Our study supports the idea that many Smith practices need to be altered in order to become a sustainable institution. Not only is Smith responsible for created a large amount of its own unnecessary waste, but also its purchasing practices support a corporation that is a known contributor to international deforestation. As previously revealed, Smith buys most of its products from International Paper Co. This company is a proven enemy to forests and in know way contributes to the sustainability of the world as a whole, despite its affect in all areas of the world. It is important to recognize here that, by being in business with this company, Smith is having an affect on the world as a whole and not simply this campus.

The next important aspect of Smiths overall practice is the local affect its practices have on it surrounding, subsequently, its sustainability in and of itself. Smith as a whole averages over 57,000 disposable items used per week which adds up to over per year. These disposable products consist of plastics and wax covered paper products. As earlier mentioned, the plastics are non-environmentally friendly in that they are very difficult to recycle. While paper products are usually biodegradable, the wax covering prevents this natural process from happening, so the paper products cannot be composted. As a result, the bulk of the disposables end up in the landfill. Smith College is effectively creating more waste and as a result, not supporting sustainability of its surroundings.

A second component to Smith's paper product usage beyond how much is used, is when they are most used. It is significant that disposable products are used disproportionately more on the weekends since this means that most of the usage occurs when the student body is eating at a dining hall other than their own. While our study did not cover which student were using the disposable products most, whether it was the students who are required to eat a dining hall other than their own or not, this is important data because of the fact that many more kitchens will be closed for the upcoming semester. This trend may only expand next year as more students are required to eat in dining halls other than the ones located in their own house. Therefore it is important to initiate some solutions to this problem that may only grow next year.

Finally the college research done on college's dining service environmental initiatives revealed that while there is a wide range of environmental awareness across the nation, most schools implement some kind of environmentally friendly practice. One of the most prominent examples of this was the travel mug program. Whether it was issued at orientation to all new freshmen and encouraged use by offering discounts, or students had to buy their own, this practice, though small is important for two reasons. First, though the effort only impacts one area of disposables, which is paper cup usage, the amount of waste it saves should not be ignored. If every student at Smith used a travel mug instead of a disposable cup, 28,500 disposable cups per week would be spared from the landfill. Second, while this effort is minimal compared to other efforts, it is effective in that it sends a message of awareness to the student body that their practices do impact the environment, and one small step to helping sustainability is to be conscious of the products you use. With the exception of two houses on campus, Smith does not have any environmental practices. This impacts not only on the amount of disposables used but also it impacts student awareness, in that there is no leadership taking a stand regarding the environment. Additionally it is ignoring the opportunity to bring about student awareness that would help the world bring about sustainability.

The data gathered clearly shows that a change is needed in Smith's practice of disposable product use, and the consequent message being sent to the student body regarding sustainability. The following are recommendations that will contribute to Smith College sustainability.

Recommendations

1. **Purchasing:** One of the aspects that has the most significant impact on Smith's use practices is the purchasing practices. Purchasing is responsible for both the company that these products are bought from, as well as what products are bought. Purchasing disposable products that are biodegradable would significantly cut down on the amount of waste created by disposable products. These products would not contribute to Smith's waste stream, as current disposables do. Another greener option is the purchasing disposable products that are made from recycled materials. In addition to this, unbleached napkins should be purchased, because they can be composted. Another important component to this is that the purchasing department would serve as a leader in raising environmental consciousness within the student body. The Purchasing department would be taking a stand on this environmental issue which would reflect on the college as a whole.
2. **Elimination:** The elimination of disposable products as an option to Smith students would greatly impact the amount of waste created. While it is important to recognize that disposable products serve a purpose for Smith students, other methods can achieve the same desired mobility without the damage to the environment. One practice adopted by many schools is the travel mug program, which would eliminate

the use of disposable cups. A travel mug could be given to each incoming student and its use encouraged by discounts at the Campus Center's Café. Disposable cups will no longer need to be offered at the dining halls. The money saved by not having to stock all dining halls with \$1,925 per year on disposables would help aid to the up front costs needed to supply each first year with a travel mug. Coupling this program with a limited access program that would prevent students from having free access to disposables would further cut back on disposable use. Students should have access to disposables but on a limited basis. Access to disposables should only be given to those who are unable to eat at the dining halls due to prior engagements. These practices could also be coupled with purchasing practices to effectively reduce the use of disposables as well as provide the biodegradable option.

3. **Recycling:** Incorporation of a recycling program around napkins would serve to cut down on the amount of waste that ended up in the waste stream. Bates College has successfully implemented a napkin composting program, where napkins are collected in a separate bin from all other trash. These unbleached napkins are then composted.

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