Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?

Ann Borowski

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“Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?”

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December 2011

Graduate Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Environment, Health & Safety Management

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ACKNOWLEDGEMENTS:

When I began my Masters in the EHS Management program, I thought that it would be a unique personal challenge and an enjoyable experience to write a thesis. One of my goals in life (right behind One Hit Wonder and Cult Leader) was to be published. I do not know if this work is publishable, but God knows, I tried my best. It was so difficult not to insert my own commentary into the research as this is a topic for which I am quite passionate.

I am eternally grateful to my husband, Marek, and my son, Sage, for their patience and understanding through the two years of studies. I love them both so much and can finally spend quality time with them again.

I would like to take this opportunity to thank my graduate committee for their guidance. I would especially like to recognize my committee member, fellow colleague, and friend, Dr. Ellen Faria. I really could not have accomplished this thesis without her assistance and support.

A special thanks to the folks who granted me interviews. The insight and data that was shared really helped to shape this thesis in a way that I would not have imagined. I immensely enjoyed speaking to each of these folks and seeing this subject through a multitude of perspectives. Miriam Axel Lute, who also wrote a thesis on a similar topic, kindly shared her source material list with me which proved to be quite helpful.

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ABSTRACT

This research investigates environmental and health concerns related to disposable tampons and sanitary napkins. Much like diapers, tampons and sanitary napkins are comprised of synthetic materials that do not readily decompose. A woman will menstruate for approximately 40 years of her life. During that time, a significant amount of disposable feminine hygiene products accumulate in landfills and at times wash up on the shores of local beaches. Additionally, during the manufacturing and bleaching process, there is potential for dioxin to be created which has both health and environmental impacts. From a health perspective, many women experience discomfort, infection, and in some cases, are stricken with cancer.

Given that disposables are a potential concern from a health and environmental perspective, this study examined the following question: “Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns”?

For this work, 160 people were surveyed to answer this question and determine if women were aware of these environmental and health issues and if they knew of greener and healthier alternatives other than conventional disposable pads and tampons. Additionally, interviews were conducted with a product developer of conventional pads and tampons, a manufacturer of reusable pads and feminine cups, a therapist who has worked with consumer development, as well as a woman who uses alternative menstruation products.

The results of the study suggest that women are most concerned about the price of products and environmental impact. Many women would consider switching to a “greener” product such as a 100% organic cotton tampon or pad, but as learned during interviews and additional research, the definition of “green” is open for debate. While reusable menstruation products such as reusable pads or insertable cups are in fact the “greenest” option, many women would not consider these as they must be cleaned or laundered. Although this research suggests that
women are willing to consider reusable and greener menstrual products, there needs to be a better understanding of what is indeed “green” from both a health and environmental perspective. As learned in this research, what is better for the environment is not always better from a women’s health perspective.

**Key Words:** green; greener, greenest; menstruation; period; disposable; pads; sanitary napkins; tampons; insertable cups; feminine products; feminine cups; feminine hygiene; alternative menstruation products; reusable; safety; decompose; decomposition; biodegrade; gynecological; environment; environmental; organic; cotton; rayon; synthetic fibers; health, women’s health; pollution; waste; purchasing; cost.
I. Introduction

This research examined the choices that women in the US make when buying feminine hygiene products such as tampons and sanitary napkins and determined whether they consider the environmental and health consequences of the related purchases that they make. The environmental and health consequences from the use of feminine napkins and tampons are identified, and green alternatives such as reusable items and biodegradable products are explored. It answers the question: “If women were fully informed of the risks from using conventional menstrual products, would they purchase greener products?”

The research question asked:

“Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?”

According to the literature that was reviewed for this research, there are some key environmental concerns around disposable menstrual products. Firstly, sanitary pads and tampons create a significant amount of waste and are made of synthetic materials that do not rapidly biodegrade. In turn, the manufacturing process may produce dioxins which remain persistent in the environment. Secondly, from a women’s health perspective, disposable feminine hygiene products can lead to the generation of compounds that may potentially cause cancer, toxic shock syndrome, bacterial infections, discomfort, and irritation. Based on market research data, over the next five years, this sector will continue to grow 5% or more and thus increase pollution and potential health risks.

Even though there have been many design innovations over the last 40 years within the feminine hygiene industry, environmental and health concerns are not widely discussed and still remain an afterthought both with women who use disposable products and the manufacturers of pads and tampons. In recent years, disposables such as plastic water bottles, HDPE grocery bags, and paper lunch bags have been replaced with reusable items. Along the same line, there are green menstruation products such as reusable pads, menstruation cups, and sea sponges (in lieu of tampons). Additionally, some companies now make disposable
pads and tampons out of 100% organic cotton and other biodegradable materials. This research examines whether, with the right information and education, if women are willing to choose a greener and healthier feminine hygiene product.

II. Literature Review/Background

Environment

Summary: Sanitary pads and tampons create tons of waste taking up space in landfills, clogging piping and sewerage systems, and overflowing onto beaches in coastal regions. Sanitary pads are made from synthetic materials including plastic liners and packaging that do not easily degrade. Tampons generally include plastic applicators which can be persistent in the environment for hundreds of years.

There are 85 million women of menstruating age in North America.¹ Over 12 billion pads and tampons are used once and disposed of annually, adding to environmental pollution.² According to waste consultant Franklin Associates, the numbers are staggering. 6.5 billion tampons and 13.5 billion sanitary pads, plus their packaging, ended up in landfills or sewer systems in 1998. Additionally the Center for Marine Conservation claims that over 170,000 tampon applicators were collected along U.S. coastal areas between 1998 and 1999.³ In a lifetime, a woman is likely to use between 12,000 and 15,000 pads, tampons, and panty liners which is a considerable burden on landfills and the environment.⁴ This amount of feminine products is equal to 250 to 300 pounds of waste per woman.⁵ Feminine hygiene products are made from synthetic materials.⁶ Plastic tampon applicators may not biodegrade for several

² The Keeper
⁴ The Keeper
⁵ The Keeper
hundred years. The great majority of these end up in landfills, and also burdens the sewer system.

For building owners, pads and tampons that are flushed down the toilet are the most common cause of plumbing problems. Tampons and pads are disposable, have a significant amount of packaging. Even “flushable” products contribute to clogged pipes and do not biodegrade before they hit sewage-treatment plants. Additionally, the pulp bleaching process for both products releases dioxins into the environment.

Plastic tampon applicators from sewage outfalls are one of the most common forms of trash on beaches. Canadian officials say plastic tampon applicators clutter Halifax, Nova Scotia’s shores after the closure of a sewage treatment plant and removal of filters. January 2009 Canadian Broadcasting Corp. report claims that Halifax’s newest $54 million plant experienced a major hydraulic failure because of a power outage in the city of 360,000 people. Since then, raw human sewage has been flowing into the Atlantic Ocean, including items people routinely flush down toilets. In late May of 2009, four solid waste outflow filters were being removed as they were backing up with what the mayor called “floatables.” Resident Cindy Schultz told the CBC she has set up a blog and a Facebook Internet page urging women to stop flushing tampon applicators. The city is also running a radio ad campaign requesting residents refrain from flushing the applicators, as well as condoms and diapers.

In New Jersey, Clean Ocean Action, an environmental group dedicated to improving the degraded water quality of the marine waters off the New Jersey/New York coast has collected

7 The Keeper
8 The Keeper
9 The Keeper
12 thinkgrrrl, Tampon Applicators Flood Canadian Shore, Tampaction
13 thinkgrrrl, Tampon Applicators Flood Canadian Shore, Tampaction
14 thinkgrrrl, Tampon Applicators Flood Canadian Shore, Tampaction
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numerous tampon applicators during their annual beach sweeps. In 2009 alone, volunteers removed 3,533 tampon applicators from the beaches.\textsuperscript{16}

**Figure 1: Tampon Applicators on New Jersey Beach**

This is a picture of tampon applicators on a beach. Sewer lines overflow and dump into the ocean. Thousands of tampon applicators wash up onto the shore. Women can reduce the environmental impact by using an applicator-free tampon. (Courtesy of Clean Ocean Action)

**HEALTH**

*Summary:* Disposable feminine hygiene products have been blamed for many women’s health issues including: causing cancer due to the creation of dioxin in the bleaching process, Toxic Shock Syndrome, and other bacterial infections. Feminine hygiene manufacturers often bleach products to make them appear whiter and sterile. This process has been found to leave behind residues of dioxins, chemicals that are both very toxic and carcinogenic. Additionally, dioxin is something that bioaccumulates in the environment. Environmentalists have been fighting to keep dioxins out of waterways for years.

The EPA has been unable to set any safe level of dioxin, which is most dangerous with numerous repeat exposures.\textsuperscript{17} The Worldwatch Institute calls elemental chlorine free bleaching a “‘low-tar cigarette’ approach to the problem of organochlorine pollution,” It

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\textsuperscript{17} Miriam Axel-Lute
reduces, but does not eliminate pollution.\textsuperscript{18} Hydrogen peroxide, oxygen or ozone work just as well, though any bleaching uses energy, water and unnecessary resources.\textsuperscript{19}

Brenda Mallory, founder of Glad Rags, which produces colored and organic cotton pads with washable liners, states, “People forget about the production end of disposable items. Constant production creates pollution, too.”\textsuperscript{20} Congresswoman Carolyn Maloney from New York points out that there has been far more testing on the possible health effects of chlorine-bleached coffee filters than on chlorine-bleached tampons and related products.\textsuperscript{21}

The Food and Drug Administration (FDA) acknowledges that chlorine dioxide, though elementally chlorine free, can still “theoretically generate dioxins at extremely low levels,” and, according to the Environmental Protection Agency (EPA), no safe level for dioxin exposure exists.\textsuperscript{22} The compound is 10 times more likely to cause cancer than was believed in 1994.\textsuperscript{23} Research indicates that average background levels may lead to non-cancer health effects, including developmental delays, birth defects, hormone disruption and immune cell suppression.\textsuperscript{24} With repeat exposure, such as the use of tampons, the toxin accumulates and is stored in humans, especially in women’s body fat and in breast milk.\textsuperscript{25}

Toxic Shock Syndrome (TSS) although rare, is a potentially fatal disease caused by a bacterial toxin. It has been associated with tampon use. Although the exact cause is still unknown using high-absorbency tampons made from synthetic fibers and wearing a tampon for more than 8 hours seems to increase the risk of TSS. The disease, which was first described among teenage girls in 1978, primarily strikes tampon users under the age of 30. The TSS epidemic reached a

\textsuperscript{18} E Magazine /April 2001. Vol. XII, no. 2 Inner Sanctum The Hidden Price of Feminine Hygiene Products February 28, 2001
\textsuperscript{19} E Magazine
\textsuperscript{20} E Magazine
\textsuperscript{21} The Keeper
\textsuperscript{22} E Magazine
\textsuperscript{23} E Magazine
\textsuperscript{24} E Magazine
\textsuperscript{25} E Magazine
peak in 1980 with a total of 813 cases, including 38 deaths, reported to the Centers for Disease Control and Prevention (CDC).\(^{26}\)

According to the FDA, the number of menstrual-related TSS cases has decreased significantly in recent years; there were six confirmed cases in 1997 and three in 1998. However, according to a 1999 USA Today article, the Center for Disease Control claims that only a fraction of TSS cases are reported. \(^{27}\) Rana Hajjeh, M.D., a medical epidemiologist with CDC’s division of bacterial and mycotic diseases, attributes the decreases in TSS cases to the intervention of the Food and Drug Administration (FDA). In 1982, the FDA required that all tampon labels advise women to use the lowest absorbency needed to control their flow and include TSS warning signs. The agency also standardized absorbency labeling in 1990 so that absorbency terms such as regular and super are consistent across all brands.\(^{28}\)

These statistics would imply that the problem is less prevalent than in years past; however, this is not true.\(^{29}\) According to Tom Riley, author of Price of a Life, an attorney who has represented women in TSS cases, "All experts agree that the numbers of TSS cases in the United States are under reported. That is because reporting by the states to the Centers for Disease Control and Prevention is voluntary and most states are unwilling to incur the expense of gathering the data and submitting it to the CDC. As certain as the sun's appearance in the East tomorrow, toxic shock syndrome will also appear in one or more tampon users, sometimes with deadly results but always with the infliction of a terrible ordeal and some residual effects." \(^{30}\)

Dr. Philip Tierno, director of microbiology and diagnostic immunology at New York University Medical Center conducted studies that revealed that synthetic fibers, added to tampons in the 1970s to increase absorbency, amplified toxins of the Staphylococcus aureus bacteria, which

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\(^{27}\) The Keeper

\(^{28}\) Susan Dudley, PhD

\(^{29}\) The Keeper

\(^{30}\) The Keeper
cause TSS. In 1980, the potentially life-threatening bacterial illness had reached its peak. As a result, carboxy-methyl-cellulose, poly-acrylate rayon and polyester were pulled from the market. The fourth fiber, viscous rayon, remains in use today. “Viscous rayon does amplify toxins less than the others,” says Tierno. “But manufacturers are still saying nothing’s wrong with it, and that’s not the case. Combining the presence of rayon with an irritated vaginal area and/or weakened immune system can increase the danger of toxic shock. Dr. Philip Tierno says that for every TSS case that gets officially counted, there are five more that do not quite make one of the official criteria. Tierno believes that the decrease in the total number of cases is only apparent when a “strict-case” definition of TSS is used; the actual number of “clinical cases” has not really changed. The removal of the synthetic fibers by manufacturers was due in part to independent research that showed tampons containing synthetic additives increase production of the TSS toxin, and that all-cotton tampons do not. According to Tierno, this suggests that all-cotton tampons decrease the risk of TSS, and are safer than rayon and rayon-blend tampons. Considering that a 1994 study found that up to 99 percent of menstruating women diagnosed with TSS were using tampons, and that not enough is known about potential health risks associated with tampon additives, it is clear that more accurate information is needed regarding the hazards of tampons.

The FDA regulates tampons as medical devices and believes that rayon tampons are as safe as cotton ones, and that the exact link between tampons and TSS remains unclear.

There are widely circulated internet rumors that claim tampons are contaminated with asbestos and dioxin, and that the rayon in some tampons causes toxic shock syndrome. The FDA issued a statement on its website that the available scientific evidence does not support the rumors and provided information about tampon safety. The statement is rather alarming since there has been little to no research conducted to disprove the rumors. Most of the FDA’s
reassurances are largely based on the data that was submitted by tampon manufacturers. This data is not available to the general public.\(^\text{35}\)

In a 1994 EPA statement, the agency explained that dioxins are known to cause cancer in animals and possibly in humans. The EPA also has determined that people exposed to high levels of dioxins may be at risk for a damaged immune system, increased risk of pelvic inflammatory disease (PID), and reduced fertility.\(^\text{36}\) Research on monkeys has linked dioxin exposure with increased risks for developing endometriosis, a painful disease in which uterine tissue is found outside the uterus, frequently leading to infertility. One study found that 80 percent of the monkeys exposed to dioxin developed endometriosis, and that higher levels of exposure caused the development of more severe forms of the disease. Two of the monkeys in the study died of endometriosis.\(^\text{37}\)

The dioxin hazard from the tampon bleaching process has been reduced in recent years as a result of new bleaching methods. However, dioxin is still detected in tampons including brands made from 100% cotton fibers. The EPA states that, due to decades of pollution, dioxin is ubiquitous and can be found in the air, water, and ground; thus, trace amounts of dioxin may be present in the cotton or wood pulp raw materials used to make tampons. Dioxin levels in the rayon raw materials can be found from undetectable to 1 part in 3 trillion. A 2005 FDA Office of Women’s Health study found detectable levels of dioxin in seven brands of tampons, including at least one 100% cotton brand. Although the FDA currently requires tampon manufacturers to monitor dioxin levels in their finished products, the results are not available to the public.\(^\text{38}\)

A study by Michel DeVito and Arnold Schecter, published in *Environmental Health Perspectives* in 2002\(^\text{39}\), concluded that even if all the dioxin in tampons (and diapers) were absorbed into the body, the exposure to dioxin would still be thousands of times less than the dioxin found in

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\(^{35}\) Susan Dudley, PhD

\(^{36}\) Susan Dudley, PhD

\(^{37}\) Susan Dudley, PhD

\(^{38}\) Susan Dudley, PhD

\(^{39}\) Susan Dudley, PhD
food. There was no meaningful difference in dioxin exposure from cotton tampons (or diapers) compared to cotton/pulp products. Surprisingly, tampons ordered from a specialty company had much more dioxin than the other tampons.

The FDA says that the exposure to dioxin from tampons today “is many times less than normally present in the body from other environmental sources, so small that any risk of adverse health effects is considered negligible.” However, according to Dr. Philip Tierno, even trace amounts of dioxin are concerning because tampons come in contact with some of the most permeable tissues in the body. The effects of dioxin are cumulative and can be measured 20 to 30 years after exposure. That is particularly troubling because tampons are used by up to 70 percent of menstruating women in the U.S.

In addition to TSS and dioxin risk, tampons are structured to be so absorbent they often over-absorb vaginal secretions as well as menstrual blood, leading to drying, mini-ulcers, and release of tiny rayon fibers. Those fibers have been speculated to be associated with cervical cancer. Plastic petal applicators can scratch vaginal walls, and the string provides a way of introducing bacteria into the vagina.

The FDA does not require companies to print ingredients or bleaching processes on the boxes or inserts of tampons or pads. According to company spokespeople, both Johnson & Johnson and Kimberly Clark use cotton/rayon blends in their products. Playtex uses only rayon. Proctor and Gamble uses both cotton-rayon blends and rayon alone in some of its products. All of these manufacturers use elemental chlorine-free bleaching.

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40 Susan Dudley, PhD
41 Susan Dudley, PhD
42 Miriam Axel-Lute
43 E Magazine
“We need to find out what the healthiest feminine hygiene product is,” says Susan Alderson, vice president of Organic Essentials. “And whatever that turns out to be, women will then have a choice.” Organic Essentials grows organic cotton through 27 farm families and ensures that chemicals typically applied to conventional cotton are not used for their tampons. Organic Essentials uses a safer hydrogen peroxide process to whiten the feminine hygiene products which is a totally chlorine-free method.

Jay Gooch, a toxicologist with Proctor & Gamble, insists the difference between elemental chlorine-free and totally chlorine-free bleaching is “not discernible,” however, and the difference between rayon and cotton fibers, both cellulose, “not consequential.” “The research we’ve done and others have done for us is rigorous and we stand behind it 100 percent,” says Gooch. Unfortunately, Tampax Naturals, Procter & Gamble’s own all-cotton tampon, was pulled from the market due to low sales.

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44 E Magazine

A. Borowski – Fall 2011
Scope of the Issue

The feminine hygiene industry has made revolutionary innovations. The first maxi-pad was nearly three feet long. Discussion around the products’ health and environmental impact, however, is still very much under wraps.45 Recent trends indicate there is a growing backlash against products that have negative and long-lasting effects on the environment. This includes used and discarded feminine hygiene products that may take hundreds of years to biodegrade in a landfill.46 Green Menstruation – is "choosing to be personally responsible for your menstruation and menstrual fluids, as well as your choices in feminine hygiene products, all of which can have significant and long-term (negative) consequences on 'everyone's health' and 'everyone's environment.'"47

Amy Allina, program and policy director for the National Women’s Health Network explains, “People may legitimately raise questions about reliability. “For hundreds of decisions that women make every day, we are balancing health, safety, convenience and efficacy,” says Allina. “And we certainly don’t always choose the risk-free option.” 48

The companies themselves have promoted shame and secrecy for women about menstruation through their advertising, which is particularly directed at young girls. After years of claiming that tampons are odorless, “deodorant” tampons have been introduced. Manufacturers have just created another issue by adding more potential irritants in the form of chemical-laden fragrances to tampons. They have acted in bad faith when responding to the TSS and dioxin issues.49

Today, as sales of disposables surpass $1 billion, reusable menstrual companies face challenge
to have their products accessible and available with the added hurdle of educating women on why reusables are even important. Most of the companies that manufacture reusables are small businesses without the marketing power of larger corporations. The very concept of reusables bars repeat consumers, since the product has a five to ten year lifecycle. “We will never be a box of tampons,” admits Mallory. “We don’t have that built-in obsolescence. It has limited how we can grow as company,” she says, “but you know what? That’s not what it’s all about.”

The following information is taken from Mintel's estimates based on Information Resources, Inc. InfoScan® Reviews™ Sanitary Protection and Feminine Supplies - US - May 2010

**Figure 3: Sales (2004-2009) and Forecast (2010-2014) of Tampons**

Adapted from Figure 6 in http://academic.mintel.com.ezproxy.rit.edu/sinatra/oxygen_academic/search_results/show/&/display/id=482634/display/id=482634/displaytables/id=482634/display/id=525208#figure6

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50 E Magazine

_A. Borowski – Fall 2011_
Segment Performance—Tampons

Sales of sanitary items reached $886 million in 2009 which is only a five percent increase when comparing data from five years prior. Some reasons for such a small increase are due in part to:

- A large portion of the female population is aging and no longer needs sanitary protection for menses.
- Even though the overall Hispanic population had increased in recent years, Hispanic women tend to have many children and as a result, fewer periods which result in less need for feminine products.

Prices of sanitary napkins are expected to increase by 6% according to Mintel analysts.\(^{51}\) The price increase is due in part to the redesign of pads that is in line with market research which suggests that women want pads that are thinner and less bulky, but offer the same level of protection. Additionally, with some cultural shifts in US demographics. The increasing Hispanic female population and Asian women tend to prefer pads to tampons.

Demographics largely drive sales

Sales within the sanitary protection and feminine supplies market are largely driven by the needs of menstruating women, whose numbers are dictated by growth or changes in population. Thus, sales of sanitary supplies showed small increases, as the impact of aging Baby Boomers on this market has yet to be felt. However, this is expected to be an issue of increasing significance for this market in the future, though a loss in sales is expected to be mitigated somewhat by the usage of sanitary supplies for other needs, such as incontinence\(^{52}\)

Both Hispanic and Asian women prefer sanitary pads to wearing tampons. This could be due to cultural beliefs. Further investigation is needed.


Figure 4 – US Female Population Projections for 2015

Adapted from Figure 10 in http://academic.mintel.com.ezproxy.rit.edu/sinatra/oxygen_academic/search_results/show&/display/id=482634/display/id=482634/displaytables/id=482634/display/id=525220#figure10

Figure 5: Feminine supplies usage, by race/Hispanic origin, April 2008-June 2009

Adapted from Figure 47: Feminine supplies usage, by race/Hispanic origin, April 2008-June 2009
Base: 14,165 women aged 18+
Source: Mintel/Experian Simmons NCS/NHCS: Spring 2009 Adult Full Year—POP

Economy also having an impact

With many economists officially acknowledging that the U.S. is in a recession, consumers facing heightened energy and food prices are tightening their purse strings whenever possible. This trend can be seen in the growth of private-label brands in this market, a trend that is likely to continue. While current economic downturn is reaching the lowest depths, this pattern of less disposable income has been felt by consumers for some time, particularly at the lower or middle income levels. While consumers may not be able to entirely forego sanitary supplies, they will seek out less expensive alternatives, such as private-label goods, or to buy them at discounters, thus causing a potential spike in unit sales with a decrease in actual dollars spent.54

Even though economy may be a contributing factor in the decrease dollars spent, US consumers showed a 36% increase in spend in LOHAS (Lifestyles of Health and Sustainability), related goods and services. LOHAS is a market segment focused on health and fitness, the environment, personal development, sustainable living, and social justice. Every year, the natural and organic market realizes a growth rate of approximately 16%. Personal health which includes feminine hygiene goods and other health and wellness-related products constitutes 39% of this $300 billion market.55

According to the Results of the Sustainability Practices for Feminine Products survey from the Hartman Group, women want more natural products and would like manufacturers to consider the environmental impacts of products and packaging. Additionally, women want products that are healthy and safe for them and their families.

A woman using tampons spends over $2,000 on them in a lifetime.\textsuperscript{56} Tampon companies have recently reduced the number of tampons per box and at the same time increased the price. Over time, some of the reusable alternatives can save women lots of money, as well as directing the money they do spend to smaller independent businesses and individual entrepreneurs. Reusable menstrual cups cost $32-$35 plus shipping from their makers, but are often much cheaper through a reseller. Purchasing a set of reusable maxi pads can range from $10 to $100. From a sustainability standpoint, since feminine hygiene products are worn inside the vagina, or next to the vulva, natural materials that were grown without the use of pesticides, herbicides and other poisons are definitively more desirable.\textsuperscript{57}

Many people are becoming aware of the damage and harm their personal consumer choices have on the environment, and their personal health. This concept has now reached the feminine hygiene markets leading to new choices for women who can now "go green" with

\textsuperscript{56} Miriam Axel-Lute, Choosing Alternative Menstrual Products, \url{http://www.mjoy.org/menstrual.html#beyond} (Accessed February 20, 2011).

\textsuperscript{57} Miriam Axel-Lute
their monthly menstruation flows. The net result is that with these greater choices and ability to be green with their menstruation, more and more women are, in fact, choosing "Green Menstruation" options and feminine hygiene products.

**Figure 7: Sustainability Trends**

There is a large opportunity for companies to fulfill the latent demand for green products.

The sample size is 6,498 shoppers interviewed. Percent figures indicate portion of respondents who indicated that they a) would purchase a green product; b) answered ‘Yes’ to knowing what a green product is; c) were looking for a green product; d) saw a green product; e) purchased a green product.

Adapted from Figure 1: Bearse, Scott and et al. GMA Deloitte Green Shopper Study, Finding the green in today’s shoppers. Sustainability trends and new shopper insights, 2009.

**Solving the Problem**

**Summary:** There has been some effort to establish legislation to make feminine products safer and to list ingredients on the package. However, women do have options for going green. Several alternatives to tampon use are available to women, including both reusable items and disposable all-cotton tampons and pads that are unbleached or are whitened with hydrogen peroxide and reusable menstrual cups. The use of pads also reduces the risk of TSS. Alternative menstrual products can be found at natural food stores or ordered directly from individual companies.

Legislation to test the safety of feminine hygiene products seems like something that would

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help solve the potential health risks and eliminate dioxins. Since 1997, House representative Carolyn Maloney (D-NY) has proposed a Tampon Safety & Research Act (H.R. 890), which would direct the National Institutes of Health to conduct research on the risks of dioxin, synthetic fibers and other additives. Maloney sponsored The Robin Danielson Act (H.R. 5181 in the 110th congress) which directed the Center for Disease Control to collect and report information on toxic shock syndrome. These bills are important because of the sheer number of women who use these products. Tampons are used by approximately 73 million American women. Women are entitled to definitive answers about the safety of these products. Millions of women may be at disproportionate risk for endometriosis, breast and reproductive cancers from simply using mainstream tampons. There is no standardized process of reporting of TSS to the CDC. The number of TSS cases and deaths is unknown. The collection and reporting of TSS cases would bring awareness of the continued risk of contracting the disease. The Robin Danielson Act requires the National Institutes of Health (NIH) to conduct research to determine the extent to which the presence of dioxin, synthetic fibers, and other additives in tampons and related products pose any health risks to women. Unfortunately, neither of these bills have passed even though versions of it have been introduced several times in congress. As of May 2009, the Robin Danielson Act has not been reintroduced in the 111th congress.

There are synthetic-free options for feminine hygiene products. One solution is sea sponges that naturally grow in the oceans and can be cultivated and harvested like any "land crop." After the sea sponge reaches harvest-size, they are then harvested and are re-shaped to "vagina-size." Natural sea sponge tampons are worn inside the vagina just like a tampon during menstruation. Unlike a tampon, a natural sea sponge tampon can be reused, but must be disinfected and boiled between cycles and uses. Natural Sea Sponge Tampons are similar to regular tampons in that they are comfortable to wear, they work like a tampon, and have the

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63 Susan Dudley, PhD
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added benefit that they will not dry out the vagina like a typical tampon. They are often used with floss tied around to act like a tampon string. Alternatives include cosmetic sponges and even household sponges cut in strips.

Menstrual Cups are small cups that are worn inside the vagina that capture the menstrual fluids during a woman’s period. There are several brands of Menstrual Cups that are made from various materials. Some of these cups include the Diva Cup, the Keeper, the Moon Cup, and the Lunette. These cups are shaped like a large cervical cap, and are placed a little lower in the vagina. They are folded twice lengthwise prior to insertion, and then released to form a suction to keep it in place. The cup generally holds one fluid ounce, about the same amount of fluid as a super-plus tampon. Menstrual Cups can last up to 10 years or longer. They come in 2 sizes – before vaginal childbirth size and after vaginal childbirth size. They can all be sanitized between uses in a mild vinegar solution, or the silicone cups can be boiled.

There are also several disposable feminine hygiene products, including organic cotton tampons, pads and panty-liners that are now made from certified, organically-grown cotton. Though they are still creating some waste, the materials are more-likely to biodegrade compared to the synthetic products. All-cotton sanitary products, however, may contain pesticide residues that could be absorbed similarly to dioxin. No research has been conducted to determine whether all-cotton tampons and pads are safer than the more commonly available tampons and pads.

Cloth pads are used both as a primary product, and to supplement or interchange with internal methods. They are good for women who find it uncomfortable to insert anything into the
vagina. Cloth pads are more absorbent than most disposable pads. They can be soaked in cold water with vinegar or other natural disinfectant, rinsed out, and then washed in the regular laundry. Some women sew their own pads. Flannel is soft and absorbent, and can be layered with terry cloth from an old towel to create an absorbent pad.

The diversity of cloth pads available far exceeds the variety of disposable products. Some lined pads with snaps can be folded up without a need for a bag. Used pads do need to be soaked or rinsed before the day is out or they will trap odors. Women who use cloth napkins agree that they are much softer than disposables. One negative aspect is that they tend to be a little more bulky.

Since sponges, cotton disposables, menstrual cups, and reusable pads contain no rayon or other synthetic fibers or chemicals, the TSS risk is very low. The sponge is the only one that has been associated with less than 1% of menstrual TSS cases.

Menstrual cups have undergone rigorous reviews for over 30 years. Both the FDA and Canadian government bodies have determined safety and efficacy. Consequently, they are a well-established, thoroughly reviewed feminine hygiene alternative. When they were reintroduced in the late 1980s they did not require additional testing. The cups are FDA accepted, and there have been no reported problems.

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III. METHODOLOGY

To further understand the above mentioned questions, a research survey of 160 people was conducted via Survey Monkey, free software that allows researchers to create professional surveys. Additionally, four interviews were conducted. The questions asked were devised based on the background information to answer the question, “Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?”

Most of the questions were multiple-choice to ease in trending the data with some room for comment and opinion.

Some of the questions investigated for this thesis include:

- Are women aware of the environmental concerns associated with using disposable feminine products?
  - Do women realize that sanitary napkins and tampons made from synthetic materials do not degrade for thousands of years?
  - Do women understand that In a lifetime, a women is likely to use between 12,000 and 15,000 pads which creates approximately to 250 to 300 pounds of waste per woman from using disposable sanitary products.
  - Are women aware that 17,000 tampon applicators were collected along U.S. coastal areas between 1998 and 1999?
- Are women aware of the health concerns associated with using synthetic feminine products?
  - Does convenience outweigh environmental impacts such as TSS, infections, and skin irritations?

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- **Do women understand how dioxin is persistent in the environment and many manufactures use chemical bleaching of sanitary products and that it is carcinogenic?**
- **Do synthetic sanitary products feel uncomfortable and unbreathable causing odor and discomfort?**
  - **How can green products be more convenient and accessible?**
- **If women could find greener products, would they purchase them?**
- **What opportunities exist for green alternatives and would the following be a factor:**
  - **Lower cost?**
  - **Healthier?**
  - **Less waste?**

The following firms provided data on specific demographics that are purchasing environmentally-friendly products and also, who is marketing these items.

- **LOHAS** Lifestyles of Health and Sustainability, a market segment focused on health and fitness, the environment, personal development, sustainable living, and social justice.
- **Mintel/Simmons NCS**- published market intelligence research firm that annually produces 600 reports on a wide array of European, and US consumer markets.

**Data Collection and Interpretation**

To identify and justify the relationship between data collection and data interpretation that will be most appropriate, this work looked at the types of feminine hygiene products that women purchased (both green and not green); and the environmental and health implications for using various products. Some products are biodegradable, create little to no waste, while others are hazardous to health and create tons of pollution. The demographic options considered are: age, education level, city/town of residence, profession.
Research Design

The approach taken to develop the research question was to ask industry experts about their products and the pollution problem. Maybe there is a balance between both the environmental and financial green. Perhaps more people are changing their minds about disposable items and consider the health benefits of green options. There will be a need to quantify what percentage of the population is educated to choose products that do not pose a negative impact on the planet and health. Also, through this research, there must be evidence to recognize if people fully understand the full life-cycle of the products that they purchase.

Interview Questions

To develop main interview questions and follow up probes that will aid in obtaining information needed for completing this thesis, the main themes were:

(1) The gaining popularity of eco-conservation and if this new trend is powerful enough to influence the purchase of green products;

(2) Environmental and health impacts of a throw-away culture;

(3) Education and marketing initiatives directed towards the consumer.

The interviews were primarily qualitative interviews. Some of the information gathered was quantitative, especially the waste information and the work survey. This research must get at the heart of the issue to see if there are ways to market items that would help people choose to consume less or make greener choices.

Interviewees

Clean Ocean Action (10/2009)

Brenda Mallory, Founder of the Keeper/Glad Rags alternative menstrual products (12/15/09)

Employee Assistance Professional at a Pharmaceutical Company (02/2010)

Tampon Sales and Marketing (05/2011)
Oregon Homemaker, retired navy officer (05/011)

Both MS Excel and Minitab were used to analyze the data. Some useful charts would be histogram, pie charts, stem and leaf plot, and some of the quality control charts. There is a need to better understand how some of the factors such as education level, age, etc. correspond to one another. Minitab offers a large array of tools that compare and contrast several layers of data.

IV. RESULTS

INTERVIEWS

On February 17, 2010, an interview was conducted with a counselor from the Employee Assistance Program at a large US pharmaceutical company. He had been working as a therapist for over 20 years.

The first round of questions delved into the profundity of cause regarding women’s choices of green products. The interviewee believes, “If women are really in to the green movement, they will purchase the product to be in congruence with their belief system”. Everything about this topic is really dependent on the individual and the choices she feels compelled to make in choosing feminine products.

Additionally, “We live in a patriarchal culture. It is very male-oriented and our society has fostered these beliefs about women. If our culture was more matriarchal, we would view periods differently.” In some cultures, young girls receive gifts when they begin their periods and their friends and family celebrate their transition into women-hood. If western culture was more matriarchal, perhaps there would be less of negative connotation associated with menstruation. There are women who have accepted and are comfortable with their bodies enough to refer to their periods as their “friend”. Unfortunately, many women see a period as a curse or plague. “Since the AIDS epidemic, some people have sensitivity to blood. There is a certain percentage of the population that will faint at the site of blood; however, most people feel comfortable when dealing with it.” On TV, we see a lot of shows that investigate murder.
There is always a victim lying in a pool of blood. To some degree, most people have become desensitized to the sight of blood and do not think of it as a big deal. Perhaps the “dirty” aspect of a period is a result of where the blood is coming from.

One story the interviewee told related back to the patriarchic culture that is alive and well in the US. “Several years ago, a colleague who was working for the feminine hygiene division was doing market research for the maxi pads with wings. According to the research, women liked the wing concept, but the majority of the personnel in the division were men and made a decision not to add the wings”. The third round of questions was getting at the root of the pollution problem. For the most part, the interviewee did not have a lot of knowledge regarding environmental impacts associated with disposable feminine hygiene products. The interviewer began by describing Scope of the issue...Women make up the majority of the population. Additionally, most women menstruate for approximately 40 years of their lives, every month. Since the mid part of the 20th century, women have used disposable sanitary napkins and tampons constructed of synthetic materials, bleached cottons, and plastics which end up in landfills, or incinerators, and sometimes on beaches. The interviewee has always associated the term pollution with air quality. However, he does understand that biodegradability of synthetic materials could pose a problem. One very fascinating tidbit that he did mention was. “J&J used to have a sanitary napkin that contained peat moss” The company was located in Massachusetts and called Chickapee. Unfortunately, J&J sold them sometime in the 1990's. “They were very innovative... did research and made diapers, blood-barrier gowns, and feminine hygiene products”.

Sometimes, alternative feminine products can be quite expensive. The interviewee thought of a very interesting argument, “Why can't insurance pay for feminine hygiene products? If women could trust their insurance with these costs, they may be more inclined to try alternative products! Also, insurance companies may promote reusables as a better alternative.” The last round of questions revolved around solving the problem. How can products be presented, encouraged, and marketed as green to help decrease the amount of
pollution?

The interviewee mentioned that perhaps it was a “conspiracy theory” that reusable and biodegradable feminine hygiene products were not readily available at all stores, but ultimately was unsure. “Green orientation plays a big role. Women need feminine products no matter what. They are going to buy them, but their choice is related to how green they are willing to go.”

Of course green is the right thing to do, but what types of incentives do businesses have? The interviewee mentioned, “Green stock is also becoming popular where some individuals will only invest in companies with a good environmental record.” This may be just enough to compel some companies to take a closer look at greening up feminine products. When asked if he felt that green feminine products were bad for business, he responded: “This is an ethical dilemma... profit vs. environmentally friendly. It affects the bottom line. This reminds me of that urban legend about the carburetor that could get 100 miles/gallon. Supposedly the auto industry purchased the rights to this invention and ensured that it would never make it to market.” Even though reusables would be the best option for the planet, “Disposables would be more attractive for a company to market.”

One interviewee was an R&D Director in consumer healthcare who is involved in addressing unmet consumer needs with new products and technologies. This interviewee has a passion for improving product sustainability through environmental impact evaluation and life cycle assessment.

His specialties include: Consumer product development, product and technology strategy and portfolio planning, product sustainability, life cycle thinking, life cycle assessment (LCA) and environmental modeling. The interviewee has been working in product development for over 17 years and holds a PhD in Chemistry.
Over the last several years as the green movement has gained in popularity, organic products have become main-stream. According to the interviewee, a peat moss sanitary napkin was developed by a division of J&J in Montreal. They got the idea from Native Americans. The peat moss is very absorbent. However, the pads were brown. Unfortunately, it takes thousands of years for peat moss to grow back once it is harvested, so this product was not very renewable and quite resource intensive. It was also expensive. The Canadian government provided a subsidy for R&D and costs of this product. Needless to say, this product was not successful on the market.

To be more sustainable, the interviewee suggests that women should use the “ob” brand. Ob tampons have less impact (50% less) as there are no applicators, packaging is minimal and rayon (derived from wood pulp) is 90% biodegradable. With concern to “synthetic materials”, rayon is simply cellulose. During a year, a woman would use 208 ob tampons compared to 170 pads.

Some women use reusables, but think about the issue of heating wash water. Pollution is created in this process. Additionally, 4% of the land in the US is used for cotton production. This land could be used to grow food instead. There are a lot of pesticides and water used to produce cotton. If a company were to switch to organic cotton, twice the amount of land would have to be used since organic cotton would have 50% less yield. Some advantages to using rayon is that it comes from wood. J&J obtains the rayon from Canada and Norway. These regions do not have arable land, and the wood is harvested sustainably. The suppliers use closed loop systems at the pulping facilities so that there is less impact on the environment.

American women tend to prefer tampons with an applicator which generates more waste. European women use applicator free tampons. Ob has 60% of the European market and only roughly 5% of US market.
According to a research study conducted by Royal Institute of Technology Stockholm, tampons are a more environmentally friendly option when compared to disposable pads.

**Figure 8- LCA Pads vs Tampons**

Life cycle analysis of maxi pads (red) vs tampons (green). As depicted in this study, tampons for the most part have less environmental impact. The land use category for maxi pads was not evaluated. Due to the smaller size, tampons overall require less resources and are more efficient to manufacture. Additionally, they occupy less space in landfills.

The raw materials processing and transportation of the final product results in fossil fuel consumption, release of respiratory inorganic carcinogens, and also in climate change. The use of cellulose as a virgin material creates negative impacts on land use as it decreases the amount of land used for forestry.\(^{81}\)

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\(^{81}\) Mazgaj, Marta, Katsiaryna Yaramenka And Oleksandra Malovana, *Comparative Life Cycle Assessment of Sanitary Pads and Tampons*; Royal Institute of Technology Stockholm, 2006., p. 18
According to one interviewee, feminine hygiene products are not significantly contributing to pollution as one ob tampon creates 10 grams of carbon dioxide. The interviewee believes that the carbon footprint from our morning routines such as drinking orange juice and washing one’s hair is a larger environmental impact. “Washing your hair with any shampoo creates two kilograms (or about 5 lbs) of carbon dioxide. Fossil fuel and water use have much higher impacts than small disposable items. If a woman used ob tampons her entire life, she would generate 184 pounds of carbon dioxide. Of course, pads and other brands of tampons have a much higher impact.” As far as disposal is concerned, the interviewee stressed the importance that sanitary napkins and tampons should be thrown away in the trash, not disposed of in the toilet as in the end, the sewer companies have to take an extra step to collect and dispose of sanitary products which in the end are sent to a landfill.

The topic was raised that there have been some rumors that tampons and pads are dioxin laden due to a toxic bleaching process. According to the interviewee, no one in industry uses...
elemental chlorine bleaching these days. ECF (Elemental Chlorine Free) is popular, but there may be traces of dioxin. TCF (Total Chlorine Free- uses hydrogen peroxide) and regular bleach are also used. The interviewee explained that oddly enough, unbleached cotton and rayon does not absorb as well as when it is bleached. More raw materials would have to be used to keep the product “natural”.

The interviewee shared that reusables such as the Diva Cup are great to minimize impact on the environment, but they are not so convenient. He has interviewed women who use menstrual cups and has learned that many women change the diva cup in the shower. Unless a person has renewable energy source to heat water, reusable pads must be laundered and there is the hot water impact.

On May 31, 2011, an interview was conducted a 35 year-old homemaker from Oregon. She is also a retired navy service woman who uses both reusable napkins and the Moon Cup. This interviewee was identified through a survey, conducted as part of this research and posted to the Glad Rags Facebook page. The interviewee has a unique perspective on green products. When she was 21, she was diagnosed with cancer of the cervix. She believes that tampons could have potentially caused her condition as she had painful and irregular periods, soreness, cramping, and other gynecological issues. After her battle with cancer, she stopped using tampons and five years later, became pregnant with her first child. While no doctor has stated that tampons caused her cancer, the interviewee believes that chemicals and the irritation materials in the tampons could have been a contributing factor. “Some experts believe that tampons have been linked to chronic and recurrent vaginitis. Plastic tampon applicators have sharp edges that can lacerate the vaginal wall when inserted. Every brand of tampon has been found to cause dryness and even tiny ulcers. The absorbing of chemicals causes more severe cramping.”

The interviewee now favors the Moon Cup, a silicon insertable with a longer tail that can be removed easily. Her periods are now regular and lighter. Her primary reason for using the
Moon Cup is for the health benefits. Of course, the lower environmental impact and the dollars saved with reusables also provides a benefit.

If women are considering the reusable cups, the Moon Cup as well as the Keeper (natural rubber version of the Moon Cup) both offer a three month money-back guarantee. Most of the reusable menstrual products are available strictly on-line and there are sometimes discounts or coupons available if women search. Lucky Vitamin and Glad Rags both offer some discounts on the products. In addition to the Keeper line, there is the Luna that is quite flexible. The only downside is that it is more difficult to remove since the tail is rather short. With practice, the reusable cups are not any more difficult than conventional tampons or napkins to use. Most women can simply empty the cup when they shower depending on their daily menstrual flow. Using the cup in a public restroom is possible and can be reinserted without rinsing on the spot. An intermediate product that can be reused, but is designed to be biodegradable and disposable is the Instead Cup. According to this interviewee, the Instead Cup can be used during intercourse as it cannot be felt and is quite comfortable. Also, since these are disposable, they are good for travel.

“Reusables are a better alternative. They have an initial investment cost; however, reusables pay for themselves in less than a year and last a decade or longer with proper care. Reusables are more convenient because a person already has them and does not need to keep running to the store to buy more.”

As far getting the word out on reusable menstrual products, the interviewee suggests that these companies should use commercials. Much like the folks in the surveys, she believes that resuables should be addressed in school sex education classes for females. Additionally, companies could give free product to teachers to hand out to girls at school.
SURVEY

Between April 26, 2011 and May 17, 2011 160 people took the Green Feminine Hygiene Products Survey through Survey Monkey. Colleagues, friends, and family of coworkers participated in the poll. Additionally, the survey link was posted to Facebook. Some Facebook account holders and groups including: NJ Pagans, Gladrags, RIT students and alumni participated in the survey. Two web bloggers also posted and forwarded the link to reach a more diverse population. Surprisingly, four men took the survey.
In the research survey conducted in May 2011, the first round of questions was regarding demographics. 155 women took the online survey. Nearly 80% of the women were Caucasian, 9% were Asian, 4% were African American, 4% were Latina, and 3% identified their race as Other. Comparatively, the Mintel group data focused a much of their research based on race and choices as they saw a population increase in the Latina community. The research conducted for this survey only had 6 respondents who identified themselves as Latina, so it would be difficult to make any analysis based on such a low representative sample.

One area that this survey examined was education level. All of the respondents graduated high school. 94% attended college with 10% earning a two year degree, 38% earning a 4 year degree, and 26% holding a post graduate degree. Needless to say, the sample population is highly educated. The majority of those surveyed were from New Jersey (62 participants), followed by Pennsylvania, New York and Virginia. There were a spattering of participants from other parts of the country and 7 international women took the survey.

The next set of questions had a lead in paragraph giving examples of environmental and health concerns associated with disposable sanitary napkins and tampons before asking the women, *To what extent were you aware of environmental concerns associated with using disposable feminine products?* According to the survey, most of the women were only somewhat aware of the environmental concerns associated with using disposable feminine products. Nearly 30% were not aware and there were some comments to suggest that a lot of women do not think of the waste associated with disposable feminine hygiene products.

As far health concerns associated with using synthetic feminine products, only 18% of the survey participants were not aware of the health risks associated with using synthetic feminine products.

When asked “*How likely would you be try a reusable product that has to be washed or laundered to minimize your environmental and health risks?*” 44% of the women would not
unlikely use such a product. However, the other 56% either use or would consider using such a product.

When asked “How likely would you be to use a biodegradable tampon or pad made from 100% organic cotton that would be less of an impact on your health and the environment?” 61% of the respondents said that they would be very likely to use a biodegradable product. Only 7% said that they were not likely to use such a product.

There was a lot of variation and nearly an even break across the price category, when asked, “How likely would you be to use a reusable or biodegradable feminine hygiene product if it was more expensive than mainstream products?” 20% voted very likely, 30% voted likely, 26% voted somewhat likely, and 25% voted not likely. However, a similar question was asked later in the survey regarding the order of importance of factors (lower cost, less waste, healthier, comfort, effectiveness) in choosing a sanitary product. Lower cost was the winner followed closely by less waste.

69% of the respondents were not aware of any green (eco-friendly) feminine hygiene products. Of the 31% who were aware, Diva Cups, Moon Cup (Keeper), ob, Seventh Generation Naturacare, Glad Rags, Luna Pads, Instead Cup, Rhythm n Blues, and homemade pads were identified as alternatives to disposables. Surprisingly, there was no mention of sea sponges.

There were two open-ended questions on the survey. The first one was, “How can green feminine products be more convenient and accessible”? The second one was, “How could companies and organizations better educate women about the positive and negative attributes of feminine hygiene products”?

Many women wonder why gynecologists, schools, mainstream media, and other outlets are not sharing information about the health and environmental impacts of feminine hygiene products. Additionally, reusables and biodegradable products are not widely available save for online
stores and health food markets. Most women have not seen an advertisement for a reusable feminine product. Glad Rags, a manufacturer of both reusable napkins and the Keeper, made a comment that they are trying to increase advertising, but it is very expensive. Even though many of the women who took the survey are currently using reusable feminine products, the majority would not use a napkin or insertable cup that has to be rinsed or laundered. These items are seen as “gross”, unsanitary, or very inconvenient to suit a women’s busy lifestyle.

After taking this survey, 15% of the women said that they would switch to “greener” feminine products. 18.5% said, “no”. However, this is discussed further in the Conclusion as many of the women who took the survey are already using cups and reusable pads. There was no option to indicate if a woman was already using an eco-friendly product. Surprisingly, 66% said, “maybe”. Some of the women who replied after the survey said that this was a thought provoking concept and they will like to learn more about their options when choosing feminine products.

IV. ANALYSIS AND CONCLUSIONS

This research examined the question, “Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?”

The answer to this question is no. Many women do not realize that there are environmental and health concerns associated with menstruation products. Based on the results of this research, cost is considered as the most important factor by women in choosing a feminine hygiene product. These products are seen as something that will be thrown away, without consideration to their impact on the environment and are viewed as safe for human health. After taking the survey, many women were willing to consider some lifestyle changes that would have a positive impact on the environment and overall human health.

Women’s Choices

This work is unique because it made women think about their impact on their own health and the environment through their purchasing choices. As expected, given the right information,
most women will choose feminine hygiene products that have less or no impact on the environment and their health, but it must be cost effective. The basis for the choices that US women make when purchasing feminine hygiene products such as tampons and sanitary napkins according to the Survey Monkey research, cost followed by environmental impact was the most important factor. Surprisingly, based on an interview that was conducted for this paper, generally functionality and comfort are the main concerns of women choosing a feminine hygiene product.

As green becomes more trendy, it is a real positive that more women will now consider alternative menstruation products since the menstruating population is expected to rise 6% according to Mintel data. Additionally, if the Hispanic and Asian populations and baby boomers continue to prefer pads to tampons, there will be a larger environmental impact. However, if only 6% of these women could be influenced to make a change to reusable items, the pollution issues and health related complications will at least remain flat. Products such as Glad Rags and Luna pads could realize a gain if only there was more opportunity to educate women on the availability of these products.

However, there are some potential challenges with women going fully green when choosing menstruation products. There are initial upfront costs associated with purchasing reusables. Additionally, biodegradables may be more expensive that traditional disposables. The products have to be cost-effective for women to make the switch.

Of, course, convenience is a factor in choosing products. Many products are not readily available at major grocery or convenience stores. Women may have to take extra time to mail order products, or drive to a health food stores to find these products.

Some women find that reusable pads are bulky and require washing and soaking. Sea sponges and cups are rather alien concepts to most American women and may be met with some
uncertainty and the gross factor can be too much as these products a little more intimacy and must be emptied and cleaned after use. This can prove difficult while traveling or working.

**Education and Purchase**

Women would like to be better educated to options for menstruation products. Many of the manufacturers focus on discreteness and convenience in their advertisements. While there are some women who feel embarrassed or timid about their periods, according to the survey, most women want a product that is cost effective and creates less waste. Alternative menstruation products need better marketing. They have everything that women want in a menstruation product. They are cost-effective, create less waste, comfortable, pose lower health risks and perform well.

Government grants could be used for research projects to study organic tampons and conventional tampons in determining if there are any health benefits to using organic. Although there has been some research as to how disposable menstruation products impact environment and health, most of the information available is based on old research from 1970 through 1990. There was not much in the way of newer information. This research may spawn others with better resources to look at specific aspects of the survey and concentrate on performance, environmental impact, or health benefits and/or risks.

It is clear from this research that doctors, product developers, marketers, and schools need to do a better job to educate women about options related to menstruation products. The surveyed population had many comments and recommendations. Many women expressed a need for more advertisement and general awareness. Advertising all comes down to dollars. It needs to reach beyond the granola crunchers and organic vegetarian foodies. Perhaps LOHAS and other green based marketing organization, or doctors could provide assistance. Alternative reusable brands need to get the word out. It all comes down to money and marketing. More people and perhaps companies should sponsor more research related to menstruation products, health and environment.
Reusables must become more main-stream and readily available. The majority of women who took the survey were college educated and many had an environmental or scientific background, so there could be a correlation to education and choice. Many women were not aware of the existence of alternative menstruation products as mainly conventional items fill the shelves of the average discount store or supermarket. Before taking this survey, many women expressed that they did not think about the impact of pads and tampons on the environment. Online, there are many websites and blogs that speak of alternative products, but there needs to be more mentioned in main-stream outlets such as the news, women’s magazines, science journals and other media outlets.

Many women were aware of some of the health risks and concerns, but many women viewed the conventional disposable menstruation products as a necessary evil and did not understand that there are different options. There just needs to be further research to understand more of the health risks associated with conventional tampon usage. Regarding health issues, the research information that is available seems rather dated and there is a lot of speculation. Since the mid 1990’s manufacturers have not used elemental chlorine bleaching and absorption factors are heavily regulated by the FDA. From the interview with the Oregon housewife, it would seem that her health has improved from switching strictly to reusables. Many women who post to the Gladrags and Diva Cup sites have also stated that they have had less infections and other women’s health related issues since using reusable pads or cups. According to the Mintel Data (see appendix D) 54% of non-tampon users surveyed claimed that the primary reason for not using tampons is because they are uncomfortable. It makes sense that some women experience discomfort and gynecological problems related to the use of tampons, but further research must be conducted to find a direct correlation to tampon/disposable pad usage and health issues.

According to the results of the survey, women would prefer more “natural” products. This is right in line with a 2010 study conducted by the Hartman Group (Refer to Figure 4 in Literature
Review Section).

**Inconsistencies and flaws in this research**

In the survey conducted for this paper, women named price as the main factor in considering a purchase. In another question, they were split regarding the purchase of a more expensive “green” product. According to the researcher that was interviewed, performance and comfort are generally the main reasons for choosing a product. The difference may have been that the Survey Monkey research explained the upfront environmental and health concerns of conventional tampons and pads. However, this may be deemed slanted as statements regarding health and environmental impacts were included in the body of the question. This may have been influencing the survey to prove the hypothesis statement as true.

There were quite a few questions raised as the research or project was conducted. Many of the women surveyed already use alternative menstrual products. There was nowhere in the survey that explicitly asked if the respondent was currently using a product. The last question which asked “Will you be switching to a “greener” product” was answered “no” by many of the survey respondents because they are currently using Luna pads, diva cups, etc.

A large bulk of the survey poll hailed from New Jersey. This area of the country tends to have more progressive ideas about “green” and tends to have a higher level of college graduates. Although the survey and concept were a good start, “green” in the case of disposable menstruation products needs to be more clearly evaluated.

Most women were willing to try a biodegradable or “greener” disposable product; however, the definition of “green” is open for debate. There may be some confusion or further research needed to understand what is meant by “green” when it comes to disposable menstrual products. While resuables are the ideal for most parts of the country (i.e. water and electricity to wash and dry resuables may be a downside), organic cotton products require a lot of
resources. The lessons learned from the interview with the research scientist, unbleached organic cotton may not be the best option as it would require twice the amount of farmland of regular cotton and the absorption rate would be lower requiring even more cotton. Additionally, these products would still end up in a landfill and sewers. The products would take time to biodegrade. A small applicator free tampon (ob) might be the next best choice to a reusable since there is less of an impact to the environment. It may be that one product is better for health, and another is better for the environment. The information shared regarding conventional pads and tampons proved quite helpful, but it would have been beneficial to compare data from Seventh Generation or another organic band to hear their side of the argument.

From a health perspective, organic cotton is free of pesticides, harmful chemicals and bleaching. It would seem healthier and less irritating than a synthetic fiber or conventional cotton, so from a health perspective, the organic feminine products might be greener. Even though there may be many pros to green products from a health perspective this research did not uncover any definitive medical research that confirms the health benefits of reusables.

**Further areas for research**

If another graduate student were to conduct further research on menstruation products from an environmental health and safety perspective, the student should examine some of the gaps in women’s health education programs and find more current research on the health dangers of disposal tampons and napkins. Additionally, the student could interview a representative from a government agency such as the Department of Health to discuss alternative menstruation products and understand why there is no mention of these products at doctor’s offices or in clinics. It might be beneficial to partner with a company such as Gladrags or Seventh Generation to conduct a user survey which would provide sample products to women to try and obtain feedback. If the student could look more in depth at the “ick” factor associated with menstruation products, there may be correlations with American culture and reluctance to try reusables.
VI. SOURCES CITED:

Axel-Lute, Miriam. Choosing Alternative Menstrual Products,  

Becker, Paul. In the United States, women are turning to reusable and greener menstrual products due to environmental pollution, health and waste concerns. Interview conducted by Ann Modro Borowski, February, 17, 2010.


Clean Ocean Action, 2009 Beach Sweeps Report,  

Congresswoman Carolyn B. Maloney,  


Feminine Hygiene, Green Menstruation,  

Garland, Holly. In the United States, women are turning to reusable and greener menstrual products due to environmental pollution, health and waste concerns. Interview conducted by Ann Modro Borowski, May, 2011.

Hartman Group’s report, “Marketing Sustainability 2010: Bridging the Gap Between Consumers and Companies”, p. 28. (Received via e-mail May 14, 2011).

Mazgaj, Marta, Katsiaryna Yaramenka And Oleksandra Malovana, Comparative Life Cycle Assessment of Sanitary Pads and Tampons; Royal Institute of Technology Stockholm, 2006.

http://academic.mintel.com.ezproxy.rit.edu/sinatra/oxygen_academic/search_results/show/display/id=482634/display/id=482634/displaytables/ (Accessed 03.27.2011).
Moscherosch, Michael. *In the United States, women are turning to reusable and greener menstrual products due to environmental pollution, health and waste concerns.* Interview conducted by Ann Modro Borowski, May 21, 2011.


VII. ADDITIONAL RESOURCES


ADDITIONAL RESOURCES (Continued):


ADDITIONAL RESOURCES (Continued):

Mallory, Brenda. *In the United States, women are turning to reusable and greener menstrual products due to environmental pollution, health and waste concerns.* Informal interview conducted by Ann Modro Borowski, December, 2009.


*Soderstrom, Richard M., MD. Latest Developments in Menstrual Protection*" April 15, 1996 in *CONTEMPORARY OB/GYN* “Latest Developments in Menstrual Protection,” *Contemporary OB/GYN.*
Appendix A: Research Subjects Protection Protocol

1.0 Introduction

My name is Ann Modro Borowski. I am a graduate student at Rochester Institute of Technology, located in Rochester, NY. Currently I am working on a thesis to achieve my Masters of Science in Environmental Health and Safety Management. Additionally, I work full time as an Environmental Engineer at a fortune 50 Pharmaceutical company. I am providing a copy of my resume for your review. (See attachment)

2.0 Research Topic

I am conducting research on the following topic, “Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?” I would like to invite you to participate in interviews so that I can further understand the concerns and presumptions that influence women’s choices of feminine hygiene products. It is a very important area of focus and I want to concentrate on how these decisions are impacting the environment. I am interested in all points of view on the topic and would appreciate your unique insight.

3.0 Interview Process

Here is the manner for which I will arrange for interviews:

- Research materials such as: company profile, authored books, websites, etc. pertinent to each interview;
- Contact the interviewee via phone or e-mail to explain my research topic;
- Schedule a date to conduct interview via phone, in person, or via web;
- Forward a general list of topics and/or questions that we will be discussing.

4.0 Subject Protections and Parameters

- Prior to the interview, I will request your permission to audio record or transcribe our conversation.
- You may request that I stop recording or scribing at any time during the interview.
- All of the information gathered will be used for my graduate research thesis and not for professional gains.
- Our interview will not be shared or reviewed by others.
• All materials such as notes, audio recording, etc. will be kept electronically in a secured
manner with password protection.
• If I use excerpts your interview, I will use proper citations to give you credit as a source.
• If you want our interview to remain confidential, I will provide you with a rationale of my
coding methods for your review to ensure that you can remain anonymous.
• In the event that my research paper is publishable, I will inform you if I have used
information from your interview.
• You will not be compensated for providing an interview.

5.0 Special Topic Policy Statements
• Federal Protection Statement 45 CFR 46.177
  o http://ohsr.od.nih.gov/guidelines/45cfr46.html#46.117
• RIT Research Policy Statement
  o http://www.research.rit.edu/%7E620www/Manual/sectionC/C5.html
• RIT Conflict of Interest Policy Statement
  o http://finweb.rit.edu/legalaffairs/docs/ICICpolicy050907.pdf

6.0 Terms of Agreement

I, the interviewee have read and understand the Research Subjects Protection Protocol and I
agree to participate in the above mentioned research project.

Researcher: Ann Modro Borowski

Interviewee:

Signature: __________________________________________ Signature: __________________________________________

Date: __________________________________________ Date: __________________________________________

Please scan or fax this page to amb2934@rit.edu or 908.707.9211. If you are faxing this document, use
a cover page.
Appendix B: Survey Participation Request

“Are American women turning to reusable and greener menstrual products due to health and environmental pollution concerns?”

I would like to invite you to participate in a research survey. I am currently a graduate student at Rochester Institute of Technology. The survey is related to my research thesis. I am trying to understand concerns and presumptions that influence women’s choices of feminine hygiene products. It is a very important area of focus and I want to concentrate on how these decisions are impacting the environment and women’s’ health. I am interested in all points of view on the topic and would appreciate your unique insight. This survey should take about 10 to 15 minutes to complete. I am attempting to pull any company associates for this survey. The decision to participate in this research project is voluntary. You do not have to participate and you can refuse to answer any question. You can stop taking this survey at any time. There is no compensation (payment) or direct benefits for taking this survey. Your responses will help me to better understand why people choose certain products and to what degree these decisions are driven out of environmental concern. You may remain anonymous and do not have to provide any information that you do not wish to disclose. Any reports or publications based on this research will be examining demographics and multiple choice answers and will not identify you or any individual as being affiliated with this research. If you have any questions regarding my research topic, please contact me at amb2934@rit.edu or 908.218.6007.

Thanks for your valuable input!

Ann Modro Borowski – RIT Graduate Student in MS EHS Management Program
Appendix C: Outline for Interview Questions

Some more concrete questions for exploration and development of survey may include:

1. Is the gaining popularity of eco-conservation powerful enough to influence the purchase of feminine hygiene products;
   - [Profundity of Cause] - How deep is the green movement? Are periods even something of consideration to eco-conscious individuals?

2. What are the environmental and health impacts of disposable napkins and tampons;
   - [Scope of the issue] – There are a lot of women in this country, most of whom are using disposable feminine hygiene items. How large is this problem? How is it affecting our planet and our health?

3. What are the current themes of education and marketing initiatives directed towards women from industry and other groups?
   - [Solving the problem] – the green movement has been influential at brining environmental causes to the mainstream; however, green feminine hygiene products seem to be targeted at certain types of people. Who are these women? What changes are companies making to their current product lines to ride the green wave? What information is currently communicated to most women on the health risks/benefits and environmental impacts of feminine hygiene products?

Q1 Introduction. Over the last several years, the green movement has gained in popularity. Organic products have become main-stream and disposable or single use items, such as paper plates, plastic bags, and bottled water are considered wasteful and have been replaced with reusable items. With this growing trend, many women are thinking about all of the money that they spend and waste that they create by purchasing disposable feminine hygiene products.

- Q1.a. Do you believe that women are concerned enough about their environmental impact to purchase green feminine products?
  - Is a “green” period even something that is completely understood?
  - Is convenience a weighty factor?
- Q1.b. How far are women willing to go to be green?
  - Biodegradable, applicator free, or completely reusable?
  - [Profundity of Cause]

Q2 Introduction. Women make up the majority of the population. Additionally, most women menstruate for approximately 40 years of their lives, every month. Since the mid part of the 20th century, women have used disposable sanitary napkins and tampons constructed of synthetic materials, bleached cottons, and plastics which end up on beaches, in landfills, or incinerators.
Q2.a. Do you think that feminine hygiene products are significantly contributing to pollution?
  • Air, water, landfill space, dioxin?
  • What about health issues?
Q2.b. Are there better alternatives to synthetic materials?
  • Unbleached cotton, reusable?
  • Cheaper options?

[Scope of the issue]

Q3. Introduction. In current fitness magazines and in upscale health food stores, women find advertisements for reusable menstruation products such as the Diva Cup as well as biodegradable disposables that contain no synthetic or bleached items. The regular grocery store still sells the synthetic disposable items.

Q3a. Do you think education or other demographics plays any factor in choosing green feminine products?
  • Does awareness of environmental impact make a difference on purchases?
  • Does body image have an effect? (I.e. healthy, fit, vegetarian, self image, confidence, etc.)

Q3.b. Are main-stream companies going to follow the green movement?
  • Are reusables bad for business?
  • Would biodegradable and unbleached be cheaper for the customers?
  • Would industry even want to market such items?
  • How would they market “green”? (I.e. Always – already has Happy Period, ob – has a “green” site)

[Solving the problem]
Appendix D: COMPARATIVE MINTEL DATA

Figure 42: Attitudes toward use of tampons, by age, February 2010

<table>
<thead>
<tr>
<th>All agree</th>
<th>All</th>
<th>18-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45+</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>I wish they were safe to flush (the tampon not the applicator)</td>
<td>83</td>
<td>83</td>
<td>87</td>
<td>78</td>
<td>86</td>
</tr>
<tr>
<td>I try out new tampon brands occasionally</td>
<td>77</td>
<td>71</td>
<td>79</td>
<td>79</td>
<td>76</td>
</tr>
<tr>
<td>I try out new tampon types occasionally</td>
<td>69</td>
<td>68</td>
<td>67</td>
<td>73</td>
<td>67</td>
</tr>
<tr>
<td>I think they work great and wouldn’t change a thing</td>
<td>69</td>
<td>77</td>
<td>69</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>I’d like to find ones made from recycled materials (both the tampon and</td>
<td>61</td>
<td>60</td>
<td>64</td>
<td>56</td>
<td>65</td>
</tr>
<tr>
<td>the applicator)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I always have to use them along with a pad of some sort</td>
<td>52</td>
<td>43</td>
<td>43</td>
<td>57</td>
<td>67</td>
</tr>
<tr>
<td>I use the same tampons my mother/sibling/family members use</td>
<td>24</td>
<td>41</td>
<td>24</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>I stick to one brand and don’t try others</td>
<td>23</td>
<td>29</td>
<td>21</td>
<td>21</td>
<td>24</td>
</tr>
</tbody>
</table>

Base: 425 female internet users aged 18+ who use tampons
Source: Mintel

Attitudes towards Product Usage and Reasons for Not Using

Figure 43: Reasons for not using tampons, topline, February 2010

<table>
<thead>
<tr>
<th>Questions</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
</tr>
<tr>
<td>I find them uncomfortable</td>
<td>54</td>
</tr>
<tr>
<td>I’ve never been comfortable with the idea</td>
<td>40</td>
</tr>
<tr>
<td>I worry about TSS (Toxic Shock Syndrome)</td>
<td>40</td>
</tr>
<tr>
<td>I don’t know how to insert them or worry about</td>
<td>27</td>
</tr>
<tr>
<td>inserting them</td>
<td></td>
</tr>
<tr>
<td>I worry about not being able to remove them</td>
<td>26</td>
</tr>
<tr>
<td>I tried them, but I don’t think they work very</td>
<td>22</td>
</tr>
<tr>
<td>well</td>
<td></td>
</tr>
<tr>
<td>I think they are unnatural</td>
<td>13</td>
</tr>
<tr>
<td>In my culture they’re not considered appropriate</td>
<td>4</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>10</td>
</tr>
</tbody>
</table>

Base: 156 female internet users aged 18+ who do not use tampons
Attitudes towards Product Usage and Reasons for Not Using (Continued)

Figure 45: Attitudes towards use of sanitary pads, by age, February 20:

<table>
<thead>
<tr>
<th>By agree</th>
<th>All</th>
<th>18-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45+</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>I try out new pad types/sizes occasionally</td>
<td>79</td>
<td>64</td>
<td>76</td>
<td>85</td>
<td>88</td>
</tr>
<tr>
<td>I use them, but I wish they were less bulky</td>
<td>75</td>
<td>80</td>
<td>72</td>
<td>77</td>
<td>73</td>
</tr>
<tr>
<td>I frequently experience leaks despite the pad size</td>
<td>53</td>
<td>42</td>
<td>51</td>
<td>57</td>
<td>58</td>
</tr>
<tr>
<td>I think they work great and wouldn’t change a thing</td>
<td>33</td>
<td>30</td>
<td>37</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>I stick to the same brand and don’t try others</td>
<td>27</td>
<td>47</td>
<td>26</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>I use the same pads my mother/sibling/family member uses</td>
<td>23</td>
<td>49</td>
<td>20</td>
<td>13</td>
<td>16</td>
</tr>
</tbody>
</table>

Base: 441 female internet users aged 18+ who use sanitary pads
Source: Mintel

Figure 46: Reasons for not using sanitary pads, topline, February 2010

<table>
<thead>
<tr>
<th>Questions</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
</tr>
<tr>
<td>They feel bulky like a diaper so I don’t wear them</td>
<td>71</td>
</tr>
<tr>
<td>I prefer to use tampons as they give me more freedom (i.e. the ability to go swimming, other sports, etc.)</td>
<td>71</td>
</tr>
<tr>
<td>Tampons alone work just fine; no need for a pad</td>
<td>54</td>
</tr>
<tr>
<td>They seem unhygienic to me</td>
<td>34</td>
</tr>
<tr>
<td>They’re hard to dispose of discreetly</td>
<td>31</td>
</tr>
<tr>
<td>I worry that someone can see them through my clothing</td>
<td>28</td>
</tr>
<tr>
<td>I’ve tried them, but they always leak or leave spots behind on underwear/clothing</td>
<td>26</td>
</tr>
<tr>
<td>I am allergic to sanitary pads</td>
<td>4</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>5</td>
</tr>
</tbody>
</table>

Base: 140 female internet users aged 18+ who do not use sanitary pads
Source: Mintel
Appendix E: Survey Results

### Green Feminine Hygiene Products Survey

#### 1. Are you a woman?

<table>
<thead>
<tr>
<th></th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>97.5%</td>
<td>155</td>
</tr>
<tr>
<td>no</td>
<td>2.5%</td>
<td>4</td>
</tr>
</tbody>
</table>

answered question 159
skipped question 1

#### 2. How old are you?

<table>
<thead>
<tr>
<th></th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>3.1%</td>
<td>5</td>
</tr>
<tr>
<td>25-34</td>
<td>43.4%</td>
<td>69</td>
</tr>
<tr>
<td>35-44</td>
<td>30.8%</td>
<td>49</td>
</tr>
<tr>
<td>45+</td>
<td>22.6%</td>
<td>36</td>
</tr>
</tbody>
</table>

answered question 159
skipped question 1
### 3. What do you consider your race?

<table>
<thead>
<tr>
<th>Race</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>8.8%</td>
<td>14</td>
</tr>
<tr>
<td>Black</td>
<td>4.4%</td>
<td>7</td>
</tr>
<tr>
<td>Latina or Hispanic</td>
<td>3.8%</td>
<td>6</td>
</tr>
<tr>
<td>White</td>
<td>79.9%</td>
<td>127</td>
</tr>
<tr>
<td>Other</td>
<td>3.1%</td>
<td>5</td>
</tr>
</tbody>
</table>

- answered question 159
- skipped question 1

### 4. What is your highest level of education?

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>some high school</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>high school graduate</td>
<td>6.3%</td>
<td>10</td>
</tr>
<tr>
<td>some college</td>
<td>19.5%</td>
<td>31</td>
</tr>
<tr>
<td>2 year degree</td>
<td>9.4%</td>
<td>15</td>
</tr>
<tr>
<td>4 year degree</td>
<td>38.4%</td>
<td>61</td>
</tr>
<tr>
<td>post grad</td>
<td>20.4%</td>
<td>42</td>
</tr>
</tbody>
</table>

- answered question 159
- skipped question 1
Location of Survey Participants

Adapted from Survey Monkey Data (May 2011)
6. To what extent were you aware of environmental concerns associated with using disposable feminine products?

<table>
<thead>
<tr>
<th>Response</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Aware</td>
<td>19.4%</td>
<td>31</td>
</tr>
<tr>
<td>Aware</td>
<td>20.0%</td>
<td>32</td>
</tr>
<tr>
<td>Somewhat Aware</td>
<td>32.5%</td>
<td>52</td>
</tr>
<tr>
<td>Not Aware</td>
<td>28.1%</td>
<td>45</td>
</tr>
</tbody>
</table>

answered question 160
skipped question 0
7. To what extent were you aware of the health concerns associated with using synthetic feminine products?

<table>
<thead>
<tr>
<th>Awareness Level</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Aware</td>
<td>23.3%</td>
<td>37</td>
</tr>
<tr>
<td>Aware</td>
<td>28.3%</td>
<td>45</td>
</tr>
<tr>
<td>Somewhat Aware</td>
<td>30.2%</td>
<td>48</td>
</tr>
<tr>
<td>Not Aware</td>
<td>18.2%</td>
<td>29</td>
</tr>
</tbody>
</table>

answered question 159

skipped question 1

8. How likely would you be try a reusable product that has to be washed or laundered to minimize your environmental and health risks?

<table>
<thead>
<tr>
<th>Likelihood Level</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
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</tr>
<tr>
<td>Likely</td>
<td>11.8%</td>
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</tr>
<tr>
<td>Somewhat Likely</td>
<td>27.0%</td>
<td>41</td>
</tr>
<tr>
<td>Not likely</td>
<td>44.7%</td>
<td>68</td>
</tr>
</tbody>
</table>

answered question 152

skipped question 8
9. How likely would you be to use a biodegradable tampon or pad made from 100% organic cotton that would be less of an impact on your health and the environment?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
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<tr>
<td>Likely</td>
<td>20.4%</td>
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<tr>
<td>Somewhat Likely</td>
<td>10.5%</td>
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</tr>
<tr>
<td>Not likely</td>
<td>7.9%</td>
<td>12</td>
</tr>
</tbody>
</table>

answered question 152
skipped question 8

10. How likely would you be to use a reusable or biodegradable feminine hygiene product if it was more expensive than mainstream products?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
<td>19.7%</td>
<td>30</td>
</tr>
<tr>
<td>Likely</td>
<td>29.6%</td>
<td>45</td>
</tr>
<tr>
<td>Somewhat Likely</td>
<td>25.7%</td>
<td>39</td>
</tr>
<tr>
<td>Not likely</td>
<td>25.0%</td>
<td>38</td>
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</table>

answered question 152
skipped question 8
11. Are you aware of any green (eco-friendly) feminine hygiene products?

<table>
<thead>
<tr>
<th></th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
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<tr>
<td>no</td>
<td>68.7%</td>
<td>103</td>
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</table>

answered question 150
skipped question 10

12. If you answered "yes" to the previous question, please name the product(s).

<table>
<thead>
<tr>
<th></th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
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</tbody>
</table>

answered question 46
skipped question 114

45 of the survey takers are aware to the existence of alternative menstruation products and many are using some of the following products.

Comments:
- Divacup, insteads, mooncup, reusable pads
- Diva cup
- Luna pads
- diva cup and similar products, cloth pads.
- natural tampons, the "cup"
- Applicator-less tampons, Tampax used to have a cotton (albeit bleached) alternative, Diva Cup
- mooncup, divacup, reusable cloth pads
- "Diva cup
- Seventh generation
- Natural care
- Glad rags"
- I use washable pads and a silicone "Moon Cup." Most of my pads are hand made by me. But I recently purchased Happy Heinys brand pads because I needed more and didn't have time to make them.
- Seventh Generation Chlorine Free pads
• The Diva Cup, Moon Cup, reusable organic cotton pads, organic cotton tampons without applicators.
• The Instead Cup
• I can’t remember the actual name of it but it’s the diaphragm type cup that is reusable.
• Moon/Diva cups, cotton pads such as gladrags and other brands. I use both options and make my own reusable pads from 100% cotton flannel.
• Can’t think of name but they are in the organic section at my local ShopRite
• non-bleached cotton ones
• Lunapads, Moon cups
• Seventh Generation has chlorine free tampons and pads
• "insertable cup
• glad rag"
• THE KEEPER (THE MOON CUP),
• organyc
• Diva Cup
• The Diva Cup, washable/reusable pads (brand?)
• Menstrual cups (I use a Diva cup), cloth pads or moon panties.
• re usable cloth menstrual pads
• I’ve tried several brands and love Rhythm n Blues for reusable normally, Natracare disposable for travel (company supportive to my daughter's school)
• handmade luna cloths
• glad rags
• homemade
Factors in choosing a sanitary product

Please rank the following on a scale of 1 through 5 in order of importance (1 = most important; 5 = least important) regarding your purchase of sanitary products.

Adapted from Survey Monkey (May 2011).
Comments:

- If they are available at stores where I shop
- They should be readily available at the retailer
- Reusable is cheaper, doesn't need to be bought every month, healthier and works better in my opinion.
- The price cannot be too much higher than that of regular tampons in order for me to be more likely to purchase
- They are convenient-you just have to search and care
- Not making it reusable, but quickly biodegradable instead.
- Advertisement since I didn't even know they existed.
- Available in supermarkets or pharmacies
- Should be advertised as such
• Sell them on line
• If they were cheaper and they advertised them
• Placement in supermarkets, where most of these products are sold.
• Cost
• Lower cost; multiple options in the market.
• Putting them in mainline stores and providing coupons/incentives to try.
• If they worked as well as the current products available. The price is the same or cheaper. Lastly the information of how they are sanitized and created must be explained extensively. The idea of using a recycled feminine product raises concerns of cleanliness.
• If they are readily available in stores, especially at membership warehouse stores, where I could purchase them for a better price than smaller boxes sold at department stores.
• People must know they exist
• Commercials, advertisements. I have seen none.
• Available in more outlets, and less cost restrictive.
• They need to be available in stores that are accessible to general public.
• Have them sold and highlighted on the shelves in the stores, esp. pharmacies. I would not consider a reusable sanitary product.
• Make them available where I already shop - like a bulk discount store (BJs, Costco, similar)
• Need more education about them and information on availability
• Have more choices at the grocery store or drug store
• I find them easily accessible
• It would be nice to visually see them in the stores (on the package) or advertised more. I would like to see more information on their disposal as well. I honestly haven't thought about it until this survey!
• By talking about them and their benefits
• If all stores that carry conventional feminine hygiene products carried them or at least the large chain & groceries stores (Whole Foods, Walmart, Target, K-mart, Fred Meyer/Kroger, Safeway/Ralpf’s, Thiftway Bi-mart Piggly Wiggly, WinCo & Trader Joes) carried the alternative products & the largest selection of them as they could possibly get, not just 1 or 2 kinds of the same type of product. I have never heard of a woman returning feminine hygiene products to a store.
• Advertise
• Advertisement!
• More in the supermarkets at a fair price
• Better labeling
• Be available in more stores. Come with washable/waterproof bags to store in when used.
• Let consumers know about them
• Better advertisements and general accessible information.
• I don't know that I've ever seen one for sale; I have no idea.
• More retailers should carry the products.
• I would love to see them sold in mainstream stores.
• Sell them in more places!
• I don't know.
• If there are some better promotions would be a start.
• Online advertising if unable to be picked up by major distributors to chain grocery/drugstores
• Is that the point?
• Have them available with all the other feminine products.
• They're pretty easy to find and purchase.
• I think people are just unaware that greener feminine products exist.
• Cheaper
• Having green feminine products in stores rather than only available online will help them become more mainstream and easily available to women. They are already quite convenient; it is more our societal response to having to "deal with" used menstrual products that makes them appear inconvenient.
• Sell them in more stores.
• Make them cheaper and readily available in supermarkets or stores like CVS & Walgreens or Target and Wal-Mart.
• Visible and common
• Availability and visibility - I am more likely to buy from warehouse store or supermarket which I already go to than green/specialty store. (Going online counts as going out of my way.)
• I’ve noticed little incremental changes in the brand I always use (Always, ironically enough). I stick with that brand because of its performance, which is most important to me. If it gets greener while keeping the solid performance, I'm for it.
• They should be free and available in all restrooms and medical offices/pharmacies. Not exactly a luxury item but a necessity.
• More places to buy, discrete when carrying
• The thing that keeps me from considering reusable products is the need to have to either emerge from a public toilet stall with blood on one's hands/a used cup, or carry a soiled pad around in one's purse after use. I'm not sure how to solve these problems.
• By placing them in places like Walmart, CVS, Rite Aid, and Walgreens. Forget Whole foods.
• Carried in every CVS or Rite-Aid, easy to wash (if re-usable).
• Sell them at more places besides while foods!
• I think they are very accessible, they just need to be made more well known. Advertisement is the key. Making women aware of the facts you are stating here on a larger scale could do a great deal for greener products.
• I would like to see them at my pharmacy.
• There has to be a balance between the "green"-ness of a product and its cost and comfort. Very few woman will buy a product just because it's green if it's clunky, cumbersome, or costs significantly more. It's the same with, say, solar power. Once it's competitively priced and as efficient, it can compete in the market place. It's more a matter of getting those Wal-Mart and big box store shoppers to be willing to try them out. If Always or Tampax came out with a greener alternative, that would be something that they could provide as a sample with their regular products.
• Make them available in mainstream grocery stores and not just Whole Foods or other so-called "hippie" stores.
• Perhaps having a greater part of sex education or health classes in schools? Girls should be educated on all the aspects-- not just pads vs. tampons, for instance, but health and environmental concerns and options.
• Simple: imitate the cost and effectiveness of less green products
• Put them in main stream consumer outlets
• Advertising
• Use better marketing.
• As long as they are as comfortable and work as well as what I normally use and aren’t much more expensive I would use them
• I think this has to start with green products being more acceptable by more women. There is still a stigma or an ick factor that many women have a hard time with. I think it is far ickier to risk infection and illness from synthetic products. So, education is key though I think women have to be receptive to the information for it to have any impact. I think they would be more receptive if they saw women like them using the products.
• By providing for comfort, and being healthier
• Cost the same
• Widely available competitively priced and easy to use
• education, knowledge and understanding... I think many people do not know the damage feminine products do to the earth or it hasn’t sunk into their heads yet... after the education portion, you can commercialize.
• Sold in mainstream type stores not just stores that carry "green" products
- Sell in stores, not just online
- Not sure
- Not sure.
- Wider marketing. I was unaware of any commercial product.
- More visibility in supermarket, drug stores, etc
- They could be sold in regular grocery stores, pharmacies or big box stores.
- Accessibility and information about existence of such products.
- IF THE OB/GYN ENDORSED THE USE OF THE PRODUCTS AND OFFERED FREE SAMPLES. IT WOULD ALSO BE BENEFICIAL TO PROVIDE THEM AT MORE STORES LIKE WALMART OR WALGREENS
- They have to be offered everywhere
- A Campaign on the subject is a most especially for those of us who are not informed
- Probably by costing less. Also, I think if they were available in more major markets and less in niche stores.
- I have never seen them in a grocery store or drug store where I shop the most.
- Sell them in known stores and be cost effective!
- Honestly, I wasn’t aware of them before this survey. Perhaps more advertising and availability?
- Being able to purchase them at the big popular stores, like Wal-Mart and Target would be a help. I’ve only ever seen them online or in a health food store.
- Available at mainstream stores.
- Same costs as leading store brands
- Need more information on how the products will be pressed.
- They need to be competitively priced and in the mainstream stores where most women buy their products now.
- I have never seen any so I guess make them more available
- I would raise awareness first and promote in traditional channels, like food, drug and mass.
- Accessories more critical (washable sealed bags for carrying to and from school. cotton underwear w waterproof layer to comfort wearer accident will not show
- A mind shift in women is necessary. Women need to stop looking at their periods/fertility as "gross" and embrace who they are as women. Then women will begin looking at what is healthier for them and the byproduct of that will be use of a product with less environmental impact.
- Offered in mainstream stores. More mainstream marketing, I think many people don't know they exist.
15. How could companies and organizations better educate women about the positive and negative attributes of feminine hygiene products?

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>answered question</td>
<td>100</td>
</tr>
<tr>
<td>skipped question</td>
<td>60</td>
</tr>
</tbody>
</table>

Comments:

- Advertising
- seminars, advertising
- I think they should be honest about all the chemicals and how disposables end up in landfills.
- include this info in commercials and ads for these products
- pamphlets, info to schools
- in magazines directed at women, Dr's offices, articles in newspapers
- Advertise and have the OBGYN offices tell their patients
- They should teach you about it in health class
- Internet
- information
- Advertisement on television, magazines, etc.
- info ads in magazines, coupon inserts
- Education is important; the more important is to getting people's desire up. Like myself, this information is certainly useful, but I feel like all medical related product uses the potential disease that I might contract as marketing strategy, this is widely used and have becoming a tag line type of commercial. I am more concerned with comfort and effective. For example, I do not like have to worry about the embarrassing moment I might have during the cycle. If this product address what I am concerned the most: effective and comfort, and at the same time is biodegradable and healthier, it would be a product I would use.
- I find advertisements on TV and print tends to help spread the word. Even though internet advertisements tend to be the tread, people are so bombarded by internet/email ads that they do not pay attention at all.
- More advertising in magazines and TV commercials explaining the benefits to both women and the environment.
- Internet ads and television, educate doctors as well.
• The products should be labeled with the effects that it can cause. The gyn office should also distribute information to women about the products that are available and what they can cause.
• I think that the information should be coming from the manufacturers of the product.
• Get some literature to schools to educate the kids in health class
• place info at the OB/GYN office
• better packaging; work with doctors to discuss/distribute info at annual exams
• ads in women's and environmental magazines and online. I don't know if girls still get "the talk" when they are in 4th grade anymore, but this would also be a very good time to introduce them to the options.
• teaching it in schools
• I would say just more advertising! They could put information in gyno doc's offices, television, stores, etc. Pretty much just more advertising and education when visiting doctors.
• by talking about them and their benefits
• Go to the websites of the companies of the products they (each store) choose to sell, print the information about the product, laminate the printed information, punch a hole in the upper left side corner & hang the informational sheets by a chain where the products are sold in the store. When I was in public school Stayfree, Always & Playex sent pamphlets & free samples to the schools for the Sex Ed teachers to hand out. Pamphlets sound smart to me. I had my first Sex Ed class segregated girls alone in fourth grade that continued once a year until ninth grade & then the segregation stopped & everyone was taught Sex Ed together. My school stops giving Sex Ed classes after the 10th grade. I did not receive any more sexual education classes in my 11th or 12th grade years in high school.
• Advertise
• pamphlets, in the boxes of products we already buy.
• commercials
• commercial and magazine print ads
• Not worry so much about profit, but about education.
• information to gynecologists for their patients
• Make info available in Dr's offices, put ads in coupon flyers
• By posting surveys that are purportedly in the interests of fact finding but are actually meant to convert, of course!
• More advertising.
• share pamphlets at planned parenthood, the doctors? make a fb page?;)
• I don't know.
• On inserts of the packages, on the labeling, commercials, etc,
• communication and disclosure of information
• Well, I haven't seen a single advert about it. If you got a larger company behind something like this - why not, all kinds of other companies offer green stuff - with their advertising dollars, maybe you'd have something. I'd switch to organic OBs in a heartbeat if it were offered.
• start in the schools, during health, and also more healthy advertisements for example. TV commercials, radio advertisements, etc...
• Advertising the products and the benefits.
• Ob/gyn's are a great source of information. Marketing (i.e., TV, informational articles in women's' magazines, etc.)
• I thought they were already doing this.
• Marketing
• ???money for marketing would drive cost up. Maybe samples.
• We're trying! But large-scale PR efforts take funding. Widely publicized research would be great.
• Put the chemicals used on all the labels.
• (note about the below question: I won't be switching because I already use eco friendly feminine products. I don't know if that's important to the survey)"
• Mainstream magazine articles.
• Commercials
• I don't think many women realize the impact on themselves or the environment of disposable products.... awareness is the first MAJOR hurdle... perhaps ads in women's magazines? Green blogs?
• Not sure. I have not encountered any education from organizations or companies, only word of mouth from users.
• I got nothing.
• Give all the Mommy Blogs easy to digest info with links back to harder info and free samples.
• Commercials that describe the negative effects of non-biodegradable products.
• advertising
• As I said, advertisement. But also working with gynecologists and midwifes to help them understand and pass the word onto their patients.
• Online Advertising is the only advertising I see.
• Speaking where women are. Targeted marketing during shows women watch, or in women's magazines. Getting on a show like Rachel Ray or Ellen. You have to speak to women when they are already in a receptive mode. And speak to them, not lecture them.
• 100%, full disclosure of the product's ingredients. I am convinced that major brands are lying to us about what is in my pads and pantiliners, what chemicals are used in the manufacturing process, etc. I have since stopped using widely available and
popular pads, because I get contact dermatitis (skin rash) from prolonged exposure to the plastics or whatever the manmade materials are. I use only organic cotton reusable, washable felt pads I bought from an artisan online. She custom makes them from fabric patterns you think are pretty. High up-front cost, but much cheaper in the long run.

- Perhaps have flyers/coupons with printed materials in the appropriate grocery store aisle, and a healthy social media/media campaign?
- Integrate it into their marketing
- legislation
- Intranet sites, emails, postings, lunch and learns
- TV commercials and using the media
- I think that I was lucky enough to receive decent sex education from my family and school. I think that teaching girls at a young age about their bodies and feminine hygiene would be the biggest help, companies could sponsor them.
- With honest information presented in a real "mainstream" way. I think too many people see reusable feminine hygiene products as something for "hippies" or other such women thought to be on the fringe of society. Average women need to see other average women using these products. (PS) answered no to 16 because I already use these products so I cannot switch to them. :)
- it’s necessary so there’s no negative that will make ppl stop using it..
- A targeted ad campaign
- Not sure. Mainstream advertising Facebook targeting of market
- Spend more marketing dollars to educate, go into schools to teach about positive and negative attributes, bribe doctors with many freebies and golf trips. It may still be possible that some people still don't know how to use condoms.
- Ads
- There are often various women expose in each year- several that I know of in my city. An info booth, esp. with products to show and/or sell, could be successful.
- Give us a choice
- I am surprised that my primary care of gyno has never discussed the issues I know to be of a concern with me. I think it starts with educating medical professionals.
- not sure
- Internet, magazines, newspapers, women’s health journals
- News media, internet and published articles, emails.
- COMPANIES SHOULD HAVE A REPRESENTATIVE LIKE THE DRUG COMPANIES TO GO TO THE DOCTORS' OFFICES AND EDUCATE THE PATIENTS OR LEAVE PAMPHLETS. IF THE DOCTOR STOOD BEHIND THE PRODUCT, MORE WOMEN WOULD BE LIKELY TO BUY. ALSO HAVING PRINT ADS IN POPULAR MAGAZINES WOULD BENEFICIAL.
- They could use the ads on TV
• Advertisement, and a dedicated online site with the information.
• Communicating through OB/GYNS. You know how when you go to the dentist you get a free toothbrush? What if when you go to the gyn you get a sample pack of green products???
• The internet. Articles in magazines.
• demos
• Articles in women's magazines, commercials etc...
• Campaigns and advertising are always the best ways. It would help to use Social Media You Tube, Twitter, Facebook, and blogs. Special promotions for Earth Day, Mother's Day, etc. Partnering with more popular organic and eco-friendly brands to help spread the word. Getting information to doctors, ob/gyns, midwives, and doulas in hope of finding support.
• Word of mouth is great since you hear real women's experiences with them.
• commercials
• Email information about the new ideas and accomplishments.
• Better advertising, education in schools,
• the negatives are never discussed. make them more known.
• Through television commercials
• I am a spouse of a US Air Force personnel living in Europe. I have used reusable feminine products for 4 years now.
• more support in schools. if Playtex can supply school nurses, Natracare can (and does but it is tough to set-up). Workplace machines or health station for healthy ones. Normal placement in green catalogs of easy care washables like R&B (they are not noticeable on family clothesline. sell near drying racks in green product catalogs.
• I'm not sure. The mainstream products are made by Big Pharmaceutical players who seem to have a lot of lobby power and control over the media. I will not switch to a greener feminine product because I already use luna cloths that are washable.
• Good Advertisement in the stores
• more marketing
16. After taking this survey, will you be switching to greener feminine products?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15.2%</td>
<td>23</td>
</tr>
<tr>
<td>No</td>
<td>18.5%</td>
<td>28</td>
</tr>
<tr>
<td>Maybe</td>
<td>66.2%</td>
<td>100</td>
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</tbody>
</table>

answered question | 151
skipped question  | 9