Eliminating Endocrine-Disrupting Chemicals from Our Plastic Drinking Bottles

An effort to raise public awareness on the dangers of plastic drinking bottles and start a movement to replace all RU plastic drinking bottles to EA free bottles.

Tag Words: Endocrine-Disrupting; EDC; Plastic; Water Bottles; disease; EA free; obesogens

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Summary:

Our plastic drinking bottles are saturated with endocrine-disrupting chemicals that enter our body and mimic our own natural hormones causing a host of diseases. By spreading the word on the dangers being posed by these contaminated bottles we hope that a demand for action will take place. By creating a Facebook page we will promote public awareness, also, by organizing a petition which will be signed by Rutgers University students, we hope the University will replace the current bottles with EA free bottles. This will hopefully be a step in the right direction towards a brighter and healthier future.

Video Link:

Eliminating Endocrine-Disrupting Chemicals from Plastic Drinking Bottles:
http://www.youtube.com/watch?v=UksQSaUKWCw

The Issue: Dangerous Plastic Bottles

Introduction

So, you follow the rules and adopt a healthy lifestyle, eat healthy, get the daily recommendation of vitamins, exercise and you drink a lot of water. Yet, you're at the doctor's office again! With numerous complaints ranging from infertility, cancer, child developmental and learning disorders, diabetes and obesity just to mention a few. Why is the prevalence of these disorders at an all time high? Just 40 years ago this was unheard of and genetics alone cannot explain these rapid changes. Attention Deficit Disorder(ADD/ADHD), Autism, endocrine disorders, these diseases are just a few new trends of the 21st century, but why? According to the medical definition, Obesity is caused by an increase in food intake coupled with a lack of exercise; can that be the sole cause?

It's that time of the month to go to the physicians office and ask for a refill on our medications for diabetes, high blood pressure, cholesterol, weight loss drugs, hormonal supplementation, he or she passes you the prescription and you are told to exercise more, drink more water, and eat healthier. Ironically, the very same diseases that we are trying to "cure" or prevent by adopting this so called "healthy lifestyle", are actually being inflicted upon ourselves. Each time you grab that plastic bottle of water before going on your morning run, to the gym, or to your yoga class, you might as well just stay in bed, its probably healthier for you! The more your exercise, the more you sweat, the more you drink, and the more obesogens and endocrine-disrupting chemicals you are allowing to build up in your body. –Amanda Tabone

There are over 96,000 chemicals we are subjected to regularly with only 1-2% of which are tested, and greater than 800 of which are know endocrine disruptors. One of our major problems that we can't escape is the use of plastics. Given our high paced and technologically advanced society, people seek convenient and disposable items, but these very same products are responsible for our current epidemics. So the question is, what came first the chicken or the egg? "Genetics holds the gun, the environment pulls the trigger." How true is this statement if what is in our environment is altering our genes? – Amanda Tabone

What are Endocrine-Disruptors?

Endocrine-disruptors also referred to as obesogens are chemical compounds that enter the body and mimic our natural hormones. With the ability to bind to the receptors on our cells, these toxins drastically alter normal cellular and metabolic functions either enhancing or silencing their actions. As a result we are seeing an increase in the prevalence of numerous pathological conditions. Exposure during crucial times of development, referred to as "windows of sensitivity" (i.e. prenatal development, nursing, and pre-pubertal adolescence) alters the delicate and crucial balance of these hormones that act as chemical messengers driving normal growth and development. Any shift in the balance of these hormones impairs the growth and development of all body systems including the central nervous system, immune system, endocrine system, reproductive system, etc. This disruption sets up an environment within the body predisposing these individuals to cancer, obesity and many other adult onset pathologies. Studies done have shown a correlation between prenatal or early exposure to these chemicals and an increase in Autism, ADD, ADHD, and other learning and behavioral problems. These chemicals affect literally every single system in our body. "Newly discovered alterations by endocrine-disruptors in the gene molecules, and cellular

environment have repercussions which don't manifest for decades, and become part of the DNA and are passed down through many generations." -Amanda Tabone

Obesogens, the new target of study:

Obesogens (endocrine-disruptors) are a new target of study as a causative agent in obesity. These chemicals disrupt lipid homeostasis, which leads to an increase the number of adipocytes (hyperplasia), producing an environment favoring fat accumulation. "These sets of chemicals interact with fat and weight regulatory mechanisms resulting in obesogenic phenotypes." In other words, they are making us fat by disturbing our normal homeostatic mechanisms in regards to energy intake and expenditure. –Amanda Tabone

Hormone-Disrupting Chemicals Exhibit Xenoestrogenic Effects

Hormone-disrupting chemicals exhibit xenoestrogenic properties, which "exert pro-adipogenic effects through a number of plausible mechanisms." Xenoestrogens mimic our natural hormone estrogen and are used in many commercial products. Significant studies have shown the detrimental effects these chemicals have on the human and wildlife population. Many diseases are associated with xenoestrogen exposure. Although there are many forms of exogenous estrogens that we are exposed to on a daily basis, such as phytoestrogens (plant estrogens) etc., xenoestrogens are artificially created and have potent estrogenic actions on the body.

Affects on the reproductive system include, but are not limited to, oocyte and sperm mutations, decreased fertility, gonadal malformation, hypogonadism, increase femininity in males, increase masculinity in females, cancers of reproductive organs, precocious puberty, and other diseases associated with an altered balance in estrogen and testosterone levels. "Xenoestrogens exhibit obesogenic properties," and increased levels in urine and human blood serum are associated with distressful endocrine disorders women are plagued with in the 21st century such as polycystic ovarian syndrome (PCOS), hypothyroidism, infertility, endometriosis, and diabetes just to name a few. Additionally, these estrogen-mimicking compounds favor fat accumulation and directly promote adipogenesis, setting up the road to obesity. –Amanda Tabone.

Modes of Action (AT)

There are Numerous Mechanisms in which these chemicals interact within our body. Some known mechanisms of action are: (information from Felix Grun and Bruce Bloombergs' journal "The Case for Obesogens")

1. Action on metabolic sensors (via interacting with NR-nuclear hormone receptors)
2. Cause sex steroid dysregulation (producing favorable conditions promoting obesity and its related counterparts)
3. Affect on hypothalamic appetite control centers within the brain and well as the Hypothalamic-pituitary-adrenal axis (affecting the immune system, the body's' stress response, and appetite control)
4. Resetting metabolic set points due to negative affect on thyroid function.
5. Mimicking estrogen causing changes in the body resulting in obesity, diabetes, and a host of metabolic and reproductive disorders.
6. Epigenetic mechanisms

Endocrine-Disruptors Affect Gene Expression via Epigenetic Mechanisms (AT)

Aside from the hormonal effects, these endocrine disruptors also interact with our genes, how so? Studies have shown that EDC (endocrine-disrupting chemicals) work via epigenetic mechanisms. Epigenetic changes are associated with the way our genes are expressed. These chemicals hijack our body's central dogma and act as switches that turn genes "on" and "off." Why is this a problem? Well, take the oncogene for example, a gene that is associated with cancer. Flipping the switch on and increasing gene expression will cause mutation and ultimately transform these cells into cancer. So, you may not have had cancer in your genes before, but now you do and these changes are passed down with each generation and cell division.

In 1940, 1 in 22 women were at risk for developing breast cancer, in 1960 it increased to 1 in 14 women, today 1 in every 7 women are at an increased risk for developing breast cancer, this trend is very disturbing.

EDC's also cause obesity via epigenetic mechanisms by hijacking stem cells and reprogramming them to differentiate into adipocytes. These chemicals can and do exert their effects at any age. Because of their ability to accumulate and live in fat cells, "their home" they have created for themselves within the body, these chemicals and their metabolites are transferred to the developing fetus when a woman becomes pregnant. Detectable levels have been found in the umbilical cord, and placenta. Exposure during embryonic development, and "gonadal sex determination appears to reprogram the male germline and subsequently promote trans-generational adult onset disease." Phenotypes include "tumor development, cancers and immune abnormalities." Studies done have shown these epigenetic mechanisms induce "new imprinted DNA like sequences in the germ-line which transmit these disease phenotypes through generations." Our bodies are in a state of chemical confusion and chaos!

These Chemicals are ubiquitous in our environment, what are some of them?

Bisphenol-A (BPA), phthalates are just a couple of the potent EDC's we are exposed to on a daily basis.

BISPHENOL-A (BPA)

"A monomer for polycarbonate plastics and epoxy resins."

BPA is in virtually all products on the market. It was first developed for the use as an estrogen-mimicking compound! 4 out of 5 Americans are walking around with detectable levels of BPA in their blood and urine. Numerous studies have been conducted proving the negative effects this compound has on our endocrine system, as well as every other system in our body. When exposed to these chemicals during fetal development there is a direct correlation of adult onset diseases, for example, chronic reproductive disorders, developmental disturbances, diabetes and obesity by interfering with lipid homeostasis. Exposure is also associated with a predisposition towards the development of various cancers, specifically of the prostate and breast.

A major concern are studies done on "humans that have shown exposure to BPA during critical periods of development interfere with the formation of parts of the brain that are important for learning and memory retention. Additional studies have shown BPA exposure early in like causes males to behave like females and females who exhibit increases masculinity."

Due to the overwhelming evidence on BPA related effects from thousands of studies

done across the globe, the endocrine society presented these facts and now the sale of BPA free plastics have hit an all time high. But guess what? Some bottles that are labeled "BPA free" actually leach more BPA than bottles known to contain BPA. Additionally they have chemicals in them that are worse than the chemicals in the BPA bottles! There are no laws that implement the testing of these chemicals, until then we must be our own advocates.

Phthalates

Phthalates are "plasticizers" used to make plastics such as polyvinylchloride (PVC) resilient, softer and more flexible. Phthalates are nearly ubiquitous in modern society. Toys, foods, packaging, plastic bottles, hoses, raincoats, shower curtains, vinyl flooring, wall coverings, lubricants, adhesives, detergents, nail polish, hair spray, perfumes, shampoos and even in baby clothes as a flame retardant!! Phthalates have been found to disrupt the endocrine system so severely that recently the use of phthalates in children's products are prohibited, but unfortunately they are still numerous sources of contamination. Several phthalate compounds and their metabolites have caused reduced sperm counts, testicular atrophy and structural abnormalities in the reproductive tract of males and some studies also linked phthalates to liver cancer according to the U.S. Center for Disease Control's 2005 National Report on Human Exposure to Environmental Chemicals.

Along with BPA, the Environmental Protection Agency (EPA) has recently labeled phthalates as a potential risk to our health. Over 75% of the population has serum levels high enough to hinder endocrine function. "A recent epidemiological study has revealed a positive correlation between increased waist circumference and insulin resistance in men with high serum and urine levels of phthalates."

Scientific data proves the detrimental effects phthalates have o the developing boy, and the association between "increased levels of phthalates in the urine of pregnant mothers and the severity of health related disorders in boys."
Hypogonadism, also known as testosterone deficiency in the developing male causes abnormalities and malformation in male genital which remains life long. These individuals are predisposed to adult onset reproductive disorders. prostate cancer and infertility.

<u>Phthalate Syndrome</u>

"Phthalate Syndrome" is a term used to describe a list of pathologies seen In males who were exposed to phthalates during fetal development. A List of Pathological Conditions Associated with Phthalate Syndrome include:

1. Increased anogenital distance
2. Smaller penises
3. Cryptorchidism (a condition where 1 or both testes do not descend)
4. Decreased Sperm quality
5. Increased femininity
6. Lack of secondary sex characteristics

7. Asthma
8. Allergies
9. Immune disorders
10. Behavioral Problems
11. Obesity (DEH, a metabolite of phthalates interact with PPARs receptors Which play a role in lipid and carbohydrate metabolism)
12. Possible Carcinogen effects

Common Sources of Exposure

1. Plastic Bottles (all)
2. Makeup/ Cosmetics
3. Dental Devices (sealants)
4. Medical Devices (IV bags)
5. Plastic Food Containers (use glass when possible)

The NRDC (National Resource Defense Council) Provides information on how plastics are identified by its constituents. Information below is provided directly from http://www.nrdc.org/thisgreenlife/0902.asp

"Polycarbonates fall into the #7 category of "other" plastics in the identification system used to mark plastic containers. (The numbers appear inside a triangle of chasing arrows.) When it comes to 1 through 6, the numbers are relatively informative, but 7 is the mystery number. Here's the lowdown on each:"

- **#1 (PET or PETE)** plastic is the kind used for bottled water bottles, which are generally regarded as safe. They have been shown to leach antimony into the water in a couple of studies, but at levels considered safe by the EPA. The scare about their leaching DEHA if reused, which you may have come across, turns out to be an urban legend. If there is any risk from reuse, it probably comes from bacterial contamination. (The bottles' narrow necks make them hard to clean.)
- **#2 (HDPE), 4 (LDPE) and 5 (polypropylene)** plastics are generally regarded as safe.
- **#3 (PVC) and 6 (styrene)** plastics pose health risks and should be avoided. (They are not ordinarily used for water bottles, but are used for other food and beverage containers.)
- **#7** plastic is usually polycarbonate and contains BPA. If you are in love with a particular #7 bottle, you could call the manufacturer to identify the plastic, but that might not make matters clearer. Learning, for instance, that the plastic is Tritan would not tell you enough. The "better safe than sorry" approach would be to avoid #7 altogether in my opinion.

Despite the "generally regarded safe" remarks above, a recent analysis by the *Milwaukee Journal Sentinel* of 10 products advertised as microwave-safe found that BPA leached into food from packaging labeled #1, 2 and 5. This analysis was part of ongoing coverage by the paper of chemicals in consumer products in a series called "Chemical Fallout," which won the 2008 John B. Oakes Award for Distinguished

Conclusion

As an aspiring physician I care deeply about the health of myself, family as well as the public. These chemicals are everywhere, saturating our environment and causing a host of diseases

and epidemics that adults and our children are faced with today. The public is uneducated about what we are consuming and what exactly is in our everyday products. These chemicals need to be identified, thoroughly tested and proven safe before sold to consumers. The Endocrine-Disrupting Chemical Exposure Elimination Act of 2011 was "introduced in the US Senate by Senator John Kerry of Massachusetts, and in the US House of Representatives by Congressman Jim Moran of North Virginia." This bill "propels the rigorous 21st century health research being done through the National Institute of Environmental Health Sciences to the forefront of regulatory decision making. It facilitates cooperation between the NIEHS and the EPA, and other regulatory agencies to reduce the exposure to chemicals identified as endocrine-disruptors. The passing of this Bill will prove that the prevention of cancers, developmental disorders in our children, obesity and so on are a first priority. We need secure government guidance and leadership to defend and assure public health, and we need you, the public to be willing to make that change!

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PlastiPure- The Current Solution (NH)

In Recent years, companies have been manufacturing water bottles and other products that are advertised as being BPA (Bisphenol A) free. These seemingly healthy alternatives, however, have led people to believe in a false sense of security. One should not stop their concerns at the existence of Bisphenol A, as most of these products still contain a high amount of chemicals that mimic estrogen. A study published in Environmental Health Perspectives proved that out of 450 plastic products (many of which were BPA free), 90 percent of them were found to release endocrine disruptors. This study was carried out partially by a company known as Plastipure. The small company, based in Austin, Texas and founded by Dr. George Bittner in 2000, has reacted to the growing concern on the subject and has believed to find the solution in developing plastic products completely free of estrogenic activity (EA). The main issue, according to Plastipure, is that most materials that start out without estrogen disrupting chemicals won't remain that way. The key to producing EA free products is to make sure that all the materials can withstand the production process. This is easier as it sounds as a simple plastic water bottle can contain over 40 different materials, each of which need to be able to remain EA free after production. By receiving more than a million dollars in grants from both the National Institutes of Health and the National Science Foundation, Plastipure was able to develop their solution into a reality. In conjunction with testing done by their sister company CertiChem and other developers, Plastipure has developed several products that are completely EA free. In 2009 Plastipure released several different resins, colorants, additives, and processing aids that can also be used by other companies. These include (but not exclusive to) EA free polyethylene, polypropylene, polycarbonate replacements, and formulations for silicone-based products. They also offer blow-moldings of bottles, film production, extrusion, thermoforming, and calendaring. Also in conjunction with CertiChem, other companies can use their services to test for hormonal activity in products. A large range of industries such as; food and beverage, infant feeding and other baby goods, pet food, toys, personal care and cosmetics, pharmaceuticals, and medical supplies can clearly utilize the uses of these services. Besides the great amount of EA free products that other companies can utilize, PlastiPure also released the very first EA-free water bottle in 2009. What they call the PureBot, produced with the company Hydrapak, is highly affordable at $7.99 and reusable. The next product soon to be released is a baby bottle completely EA-free. Which can be argued to be more beneficial than the PureBot since infants are far more susceptible to endocrine related disorders than adults. Having these PlastiPure products replace the existing plastics would seriously reduce the amount of endocrine related disorders.

The Endocrine-Exposure Elimination Act of 2011 (NH)

The first step in limiting the ubiquitous nature that endocrine disruptors have taken on begins with informing society. By increasing awareness in both the general public and the manufacturers, people will start to take action against these harmful chemicals. Eventually, with enough support and scientific backing, the existence of endocrine disruptors will become a serious issue that demands change. There have been attempts in the past to mitigate the existence of endocrine disruptors, but clearly they have not been strong enough.

In 1996 Congress passed both the Food Quality Protection Act and amendments to the Safe Drinking Water Act. Within these acts demanded screening and testing of chemicals and pesticides that may contain endocrine disrupting effects. In turn the Endocrine Disruptor

Screening Program (EDSP) was created to research whether or not certain chemicals would mimic hormones in a human body and a committee would be formed to develop how it would be done. Therefore, the EPA put together a committee consisting of representatives from industry, government, environmental and public health groups, worker safety groups, and academia. After two years of convening (in 1998), the Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) developed a two-tier screening and testing system that they submitted. In this system the interaction that a chemical has within the endocrine system is studied within the first tier and the endocrine disrupting effects are tested within the second tier. In the tier one screening process, EDSTAC developed a framework to see if a chemical would act like an estrogen, androgen, or thyroid hormone within the endocrine system. The criteria to carry out tier one was to:

- Maximize sensitivity, which serves to minimize false negatives;
- Include a range of organisms representing differences in metabolism;
- Detect all known modes of action for the endocrine endpoints of concern;
- Include a sufficient range of taxonomic groups among the test organisms; and
- Incorporate sufficient diversity among the endpoints, permitting weight-of-evidence conclusions

In the tier two testing process, the chemicals would then be tested to see if they exhibited endocrine-mediated adverse effects and in turn be quantified. There were three principles for tier two that stated:

1. Tests must include the most sensitive developmental life stage.
2. Tests must identify the specific hazard caused by the chemical and establish a dose-response relationship.
3. A range of taxa must be included in Tier 2 tests.

Following EDSTAC's recommendations, the EPA formed the EDSP with the two-tier program and in 2000 submitted a report to Congress. However, it wasn't until 2005 that the EPA published the Chemical Selection Approach for Initial Screening, which presented how the EPA would select the 50 to 100 chemicals that would be subjected to screening. The EDSTAC outlined potential chemicals to be tested in 6 categories known as the universe of chemicals. These included: pesticides, commercial chemicals, cosmetic ingredients, food additives, nutritional supplements, and certain mixtures. Within these categories the EPA compiled a final list of 67 chemicals and substances in April 2009 under the drinking water and pesticides programs. These were all chosen because they both contain pesticide inert ingredients and have High Production Volume (HPV). However it won't be until 2012 that the tier two testing is complete on these chemicals. Therefore, action won't be taken to reduce the presence of the chemicals found to be hazardous for sometime. A second list of 134 chemicals was also compiled in 2010 but won't be addressed until the prior list is completed. Although it's clear that steps are being taken in an effort to reduce the amount of endocrine disruptors in the environment, not much has been done in the past 15 years since the inception of the EDSP.

A more recent legislation introduced by Representative Jim Moran and Senator John Kerry intends to take a much quicker approach than the EDSP. What is called the "Endocrine-Disrupting Chemicals Exposure Elimination Act of 2011" states that its intention is to "reduce

human exposure to endocrine-disrupting chemicals." This very ambitious bill, if instated, would potentially give the director of the National Institute of Environmental Health Sciences (NIEHS) and an expert panel (the Endocrine Disruption Expert Panel) the ability to categorize up to 10 chemicals a year as being high concern. If a chemical received the characterization of high concern it would be deemed unlawful 24 months afterwards. Under the bill each Federal agency that has authority over any chemical in question would be forced to take action in prohibiting the product. However, any state, tribe, local government, federal agency, or person have the ability to petition any chemical deemed being high concern. Besides for attempting to simply outlaw certain endocrine disruptors, this act also addresses trying to further education on endocrine disruptors. By conducting workshops and forums, the act suggests educating attendees on the dangers of endocrine disruptors, coming up with recommendations towards researching and approaching the issue. Although this act has some strong ideas, its' guidelines for selecting and screening the potentially outlawed chemicals are much less developed. The newly developed bill states that the director of the NIEHS will:

> (1) establish and implement a research program designed to strengthen the scientific basis of information used by Federal agencies to understand the effects of, and reduce human exposure to, endocrine- disrupting chemicals;
> (2) establish (subject to subsection (b)(1)) an Endocrine Disruption Expert Panel and direct the Panel to consider and report to the Director on issues related to identification, classification, or evaluation of endocrine-disrupting chemicals as specified in subsection (b)(2)
> (3) for each chemical determined by the Director to be a potential or actual endocrine-disrupting chemical—
> (A) identify the level of evidence that such chemical is or may be an endocrine-disrupting chemical;
> (B) identify the level of concern that such chemical may disrupt the human endocrine system; (C) identify the pathways of exposure to the chemical for humans and animals; and
> (4) not later than 2 years after the date of the enactment of this Act, and every 2 years thereafter, provide to the Congress and each relevant Federal agency and make publicly available—
> (A) an up-to-date list specifying each chemical identified by the Director to be a potential or actual endocrine-disrupting chemical and identifying the level of evidence that the chemical disrupts the human endocrine system, the level of concern that the chemical disrupts the human endocrine system, and the pathways of exposure to the chemical for humans and animals; and
> (B) a report on—
> (i) the National Toxicology Program's activities pertaining to endocrine-disrupting chemicals; and
> (ii) the activities of Federal agencies with respect to endocrine-disrupting chemicals, including actions taken or expected to be taken pursuant to section 201.
>
> (http://www.endocrinedisruption.com/files/EndocrineDisruptingChemicalsExposureEliminationActof2011-Jun24.pdf)

Although these guidelines are a good start towards identifying potential endocrine disruptors, this bill would clearly benefit from coordinating with the EDSP. By combining the best ideas

of the EDSP and the Elimination Act, the result would be a truly effective legislation. However, it seems that a bill as strong thinking as the Elimination Act will have a difficult time becoming a reality. As it stands, the bill still has to pass through the House and the Senate both of which controlled by Republicans. So it seems the EDSP is the only legislation addressing the issue currently, which won't result in action for quite some time. (NH)

The Service Project: Spreading the Word (NH)

My service project focused mainly on spreading the word on how dangerous endocrine disruptors are towards human growth and supporting the Endocrine Disrupting Chemicals Exposure Elimination Act. Without a large enough concern regarding this issue, people and especially manufacturers of plastic products won't see a reason to eliminate endocrine disruptors in products. A campaign focused on showing the dangers behind current plastic products would help to make people realize that changes need to be made. If the bill proposed by Senator John Kerry and Representative Jim Moran focused more strongly on informing the public, pressure to make such a drastic action, as the bill does propose, would have a much better chance of being instated. As I sent local senators Frank Lautenberg and Robert Menendez emails to cosponsor the Endocrine Disrupting Chemicals Exposure Elimination Act of 2011 I also sent them emails asking if they would consider starting a campaign to inform the public on endocrine disruptors. Furthermore, I created a facebook group (http://www.facebook.com/groups/155989341145282/) entitled Support The Endocrine-Disrupting Chemicals Exposure Act of 2011 that explains the dangers of endocrine disruptors and has over 120 members. The group also asks members to cosponsor the act and check out the plastipure website. Hopefully the group will continue to grow and really help to inform people. (NH)

Editorial
Nicholas Holdorf
Sent to Natural Health Magazine (7/29/11)

Title: The Threat of Plastic

In today's society, people are constantly worried about the health risks that may be posed to them on a daily basis. Everyone has enough worries in their life that they don't need to fear whether or not their household items may in fact be working against them. So clearly something as simple as hydrating shouldn't have to worry a person. However, if your aware of what a plastic water bottle contains it will do just that. You may have seen several plastic products on the market being advertised as BPA free. Well BPA stands for a chemical known as Bisphenol A, which has sparked wide concern since it's been known to be found in most plastics and is classified as an endocrine disruptor. What an endocrine disruptor does is interfere with a person's hormonal growth and may lead to (but not limited to) tumors, birth defects, ADD, and brain development issues. Now making some of the plastics on the market BPA free is all well and good; but BPA is just one of many different endocrine disruptors that are found within plastics. A study published in Environmental Health Perspectives, proved that 90 percent of 450 plastic products analyzed, many of which were BPA free, contained endocrine disruptors. There's a company in Texas known as PlastiPure who has developed several different products that are free from endocrine disruptors and affordable. However,

educating the public is necessary to make people realize that something needs to be done. A legislation called The Endocrine-Disrupting Chemicals Exposure Elimination Act of 2011, introduced by Senator John Kerry, is meant to address this issue exactly. By simply writing to your senators to cosponsor this act, you can help to get this problem dealt with. Short of that, spreading the word, in any way, behind the dangers of endocrine disruptors will help make people realize that something can be done to eliminate this everyday threat.

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Appendices

Letter To The NY Senator (AT)
July 26, 2011

The Honorable Senator Schumer
145 Pine Lawn Road #300
Melville, NY 11747

Dear Senator Schumer,

My name is Amanda Tabone, I am a resident of Syosset, Long Island. I am currently a senior at Rutgers University, New Brunswick NJ.

On July 13, 2011 Senator John Kerry introduced the Endocrine-Disrupting Exposure Elimination Act of 2011. This bill addresses the need for vigorous testing of toxic endocrine-disrupting chemicals, which saturate our environment and consumer products.

Presently, there are no laws or regulations protecting the public and our environment from exposure to uncontrolled amounts of endocrine-disruptors.

Several studies have been done, and prove the direct relationship between exposure to these chemicals and endocrine dysfunction affecting the brain, immune system, metabolism, as well as many other body systems. Many of these detrimental affects, which alter our genes, lead to a predisposition to adult onset pathologies such as cancers, obesity, diabetes and so on. These changes remain within our bodies and are passed down through generations leading to the epidemics we are now facing.

Chemicals are everywhere, and the public is uneducated about what we are consuming and what exactly is in our everyday products. These chemicals need to be identified, thoroughly tested, and proven safe before sold to consumers.

As an aspiring physician I care deeply about the health of my family, myself as well as the public. Co-sponsoring this bill will prove that the prevention of cancers, developmental disorders, obesity and so on, are a first concern. We need secure government guidance and leadership to defend and assure public health.

As a senator, you rely on the publics vote, and as the public, we rely on your leadership and help.

Thank you for your attention and consideration of the Endocrine -Disrupting Chemicals Exposure Elimination Act of 2011.

Sincerely,
Amanda Tabone

PUBLIC AWARENESS---SERVICE PROJECT- Amanda Tabone

Dr. George Bittner, a professor at the University of Texas at Austin and the founder of PlastiPure has created a plastic free estrogen activity. Unfortunately, the public is uneducated on the harmful effects these endocrine-disrupting chemicals have on our body. As an attempt to spread the word, Dr. Julie Fagan, a professor at Rutgers University and an environmental and health advocate, and I, a Rutgers University Senior, have decided to target the students of Rutgers University and UMDNJ (University of Medicine and Dentistry of N.J.) to promote the sale of EA free plastic drinking bottles. Ultimately I hope to encourage both Universities to replace these mass marketed contaminated drinking bottles sold in the book store with these safe alternatives.

Dr. Fagan has contacted PlastiPure directly, discussing our idea to purchase their Hydropak PUREBOT bottles to Rutgers University. Together we have decided to place a bulk order with the "R" logo on the body of the bottle. The only obstacle we are faced with is that it has to be approved and licensed for sale by Rutgers.

To alert the public I created a Facebook page with explicit details of what endocrine-disruptors are, and the effects they have on our body. This page will also provide adequate information to educate the public on sources of contaminants and offer PlastiPures' safe EA free alternative plastic drinking bottle.

To target University students, I am going to set up an information table outside of Rutgers, and sell PlastiPures' Hydropak PUREBOT drinking bottles with the "R" logo on it. Additionally, I will organize a petition asking Rutgers to replace their current plastic drinking bottles with these EA free plastics. Each time a student purchases a Hydropak PUREBOT, which comes with a complimentary information packet, they will be asked to sign this petition. I hope with an overwhelming amount of purchases and signatures that Rutgers will listen to their student body and offer the EA free plastic drinking bottles for sale. I will contact the office of Rutgers University relations and product licensure, and submit my petition asking for the replacement of bottles within the bookstore.
Together, Rutgers University, a top research institution, and UMDNJ, a top US medical school will hopefully set the trend for a brighter and healthier future!
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