

Obesogens, the Term Obesogenic, and Obesity

Introduction

Obesogens are chemicals foreign to the body, both man-made and naturally occurring, that are attributed to causing obesity in people. They are proven to alter the way that the human body metabolizes and stores lipids, or fats. These effects can take place on a person before they are even born by the obesogens ingested by the mother. Obesogens are found in many foods that are commonly consumed, especially by people in the United States where junk food is popular. One common source of Obesogens is high-fructose corn syrup which is a common ingredient in sodas, snacks, and various foods. Even when avoiding junk foods Obesogens can still be found in foods thought to be healthy, such as yogurt or pretzels. Obesogens can really mess with your body's metabolism by slowing the process down and even making you hungry or craving food. Society is being defined as becoming Obesogenic or affected by these obesogens. People are becoming inactive, over eating these foods, and people are over eating. These actions lead to people being called Obesogenic.

I chose to study Obesogens because obesity is a common issue in America and many people don't understand why that is. The term Obesogenic is becoming a popular term used in the health world and I had never really heard of it before. When I found out what it was I found it interesting because many people overeat, consume obesogens, and are very inactive. It interests me that Obesogens play a main role in why society is becoming obese and yet so many people don't even know what they are or that they even exist.

Section 1: Background and Problem Statement

- **Web site #1 Name: Centers for Disease Control and Prevention**
- **Web address:** <http://www.cdc.gov/obesity/index.html>,
<http://www.cdc.gov/obesity/defining.html>
- **Background Information:**
 - The Web site, Healthy People 2020, was unable to provide any information for me about Obesogens. I however researched as to why Obesogens are a Public Health problem and found information for the Centers for Disease Control and Prevention Web site.

This Web site describes American society as becoming overly "obesogenic". To be considered obese you must have a BMI (body mass index) of 30 or higher. Obesity is a Public Health issue because over eating, nonhealthful foods, and physical inactivity are all becoming environments accepted by society. Organizations such as The Division of Nutrition, Physical Activity, and Obesity are working against obesity by developing state programs. They work to inform people about Obesogens, lend assistance, and provide research, intervention development and evaluations.

- **Web site #2 Name: World Wide Words**
- **Web address:** <http://www.worldwidewords.org/turnsofphrase/tp-obe1.htm>
- **Background Information:**

- **World Wide Words breaks down the word obesogenic and explains it. Obesogenic is the word obese with the ending –genic added. Genic usually refers to something that tends to generate or create. Obesogenic is a trending term in developed countries and refers to the conditions that lead to obesity. People who are inactive, consuming foods with Obesogens, and those who over consume food tend to become obesogenic. This issue is commonly attributed to social causes such as consumer lifestyles such as consuming prepared meals excessive in fats and sugars. This is a term that has recently become talked about and is becoming a Public Health topic discussed in newspapers and medical journals.**

- **Web site #3 Name: Open Market**
- **Web address: <http://www.openmarket.org/2010/12/03/can-epa-regulators-solve-the-obesity-problem/>**
- **Background Information:**
 - **Open Market defines Obesogens as being man-made chemicals that may be responsible for the “obesity-epidemic”. Quotes from noted doctors are included in this text such as a quote from Doctor Mehmet Oz. He is quoted as saying, “We blame weight gain on eating too many burgers and burning too little fat, but scientists are discovering that chemicals we’re exposed to everyday could be a big part of the obesity epidemic,” (Logomasini, 2010). The U.S. Environmental Protection Agency has recently been meeting on the topic to discuss what actions, such as regulatory steps in the marketplace, should be taken. Taking actions on regulating obesogen intake will not end obesity or anything drastic but it may help.**

- **Web site #4 Name: University of California Irvine**
- **Web address: http://www.uci.edu/features/2009/10/feature_obesogens_091019.php**
- **Background Information:**
 - **This Web site provides information on Biologist Bruce Blumberg’s research about obesogens. Obesity is a health threat to Americans. Many researchers are exploring how industrial compounds are affecting weight gain such as chemicals in plastics, food packaging, pesticides, and even cosmetics are attributing to weight gain. Blumberg and other researchers around the world are finding out troubling information about obesogens and their effects on weight gain. Obesogens are able to reprogram someone’s metabolism and greatly favor fat cell development. Obesogens are found in such common materials and it is being suggested to avoid using plastics and instead using stainless steel or glass. Obesogen studies are in early development but it is becoming more widespread.**

Section 2: Research

Web site #1 Name: The Role of Environmental Obesogens in the Obesity Epidemic

- **Web address:** <http://blumberg.bio.uci.edu/reprints/janesick-2011a-proofs.pdf>
- **Summary of the research:**
 - **This study was conducted by Bruce Blumberg, one of the leading researchers in the field of obesogens. In this study, Blumberg wanted to test the role of prenatal exposure to environmental obesogens in obesity in life. Of course the study was not done on human fetuses but it was however conducted on prenatal mice that have very similar makeup to humans. In the prenatal mice, a single exposure to TBT, an obesogen, led to premature accumulation of fat in the adipose tissues. It was concluded that prenatal exposure to obesogens is an underestimated contributor to the obesity epidemic. This study suggests that obesity is programmed prenatally by these obesogens.**

- **Web site #2 Name: PubMed**
- **Web address:** <http://www.ncbi.nlm.nih.gov/pubmed/20019905>
- **Summary of the research:**
 - **This study was to find out the effects of BPA, another common obesogen, on perinatal rats. The goal was to see how the BPA affected early adipose tissue storage at weaning. While pregnant, the rats were ingesting water with a low amount of BPA in it. After, the pups were weaned and measures of their adipose tissues were taken (adipogenesis). The study showed that perinatal exposure to the low doses of BPA increased adipogenesis in females at weaning. Adult body weight is thought to be programmed during early life. Although further studies are necessary, there is no question that the BPA affected the metabolisms and adipose tissue storage in the rats.**

- **Web site #3 Name: Endocrinology**
- **Web address:** <http://endo.endojournals.org/cgi/reprint/147/6/s50>
- **Summary of the research:**
 - **This study was also conducted by Bruce Blumberg along with Felix Grun. This study was done to see how environmental obesogens have a role in obesity and obesity related diseases such as type II diabetes and cardiovascular disease. This study observed the affects and roles of TBT, a common obesogen, in obesity and those related diseases. Random samples of human serums were taken and the amount of TBT in each was recorded. The amount of TBT averaged was found to be outstanding and also affecting the obesity rate of these samples. It was determined that further research is needed to expose these affects but it is determined that the amount of TBT found was concerning and affecting these people.**

Section 3: Statistics

- **Web site #1 Name: Obesogens, stem cells, and the maternal programming of obesity**
- **Web address:** <http://blumberg-serv.bio.uci.edu/reprints/blumberg-2011.pdf>
- **Summary of the statistics:**

- According to this article, about 34% of United States adults are clinically obese. This is about double the worldwide average. The WHO estimates that about 700 million adults will be obese by the year 2015. That is about 10% of the world's population. The article blames not only the usual obesogenic behavior of people for these numbers but also the amount of obesogens that people are consuming and being exposed to for the growth of these numbers. Obesity is affecting the entire nation more so than the world and numbers are growing quickly making this issue worse. Obesogens are becoming more and more linked to the rise in obesity.
- **Web site #2 Name: Obesogens, the Exposome, and ES&T**
- **Web address:** <http://0-pubs.acs.org.www.consults.org/doi/full/10.1021/es200688s>
- **Summary of the statistics:**
 - In this article, it is stated that Obesity has increased from 12% of the population in 1990 to 25% of the population today in the United States alone. This is a major increase and they are attributing it to the obesogens that are being used in many products used or even consumed by the public. The article goes on to say that there are ten times more cells in and on us from associated microbiota than our own human cells. In Europe, 3.3 million microbial genes were found in the guts of 124 individuals. This is an outstanding amount of foreign entities. This shows how much we consume is foreign and they tie these foreign components to those rises in obesity.
- **Web site #3: Environmental Health News**
- **Web address:** <http://www.environmentalhealthnews.org/newscience/2008/2008-0822sminketal.html>
- **Summary of the statistics:**
 - This article discusses the statistics of how the obesogen hexachlorobenzene (HCB) affected childhood obesity. HCB is a common obesogen that is found in pesticides. According to the CDC, obesity in children age 6-11 increased from 4% in the 1970's to 19% by 2003 and has not stopped increasing since. Along with this, the use of pesticides and other chemicals containing obesogens has increased. There were 405 children studied and all of them had been prenatally exposed to HCB. In their cord blood, every single one had organochlorine contaminants. The children were divided into four groups based on their HCB levels. It was found that children with the highest rate of HCB had a 1.7% higher risk of being overweight and a 2% higher risk of being obese.

Section 4: Consumer Information

- **Web site #1 Name: Health Psychology Home Page**
- **Web address:** <http://healthpsych.psy.vanderbilt.edu/2009/Obesogens.htm>
- **Summary of the information:**
 - In this paper, the items in which we may discover obesogens are very concerning. Insecticides, herbicides, fumigants, and fungicides are common

obesogen contributors. These are found in pesticides, paints, plastics and other places in the environment. People may gain exposure to these harmful chemicals by ingesting contaminated water, food, or even air. The most common obesogens are phthalates which are used in plastics, lubricants, and solvents. Phthalates are used in children's toys, medical equipment, medications, food packaging, and water bottles. Many of these chemicals are considered harmful to our bodies' metabolisms and therefore are obesogenic.

- **Web site #2 Name: Baby Bites**
- **Web address:** <http://www.babybites.info/2010/09/23/calories-obesogens/>
- **Summary of the information:**
 - This article addresses the three main food groups that are high in obesogens and that people regularly consume. The first is high fructose corn syrup. High fructose corn syrup is addressed as most definitely being an obesogen as well as one of the most commonly found ingredients in processed foods. The next is conventionally raised animals and farm raised fish. They have obesogens stored in their fat. This is because farm raised fish are treated with more pesticides. Also, conventionally raised animals have been treated with hormones and consume genetically modified corn giving them a high amount of obesogens. The next is oddly enough water. Spring and filtered water is fine it is tap water that contains the obesogens. Tap water is commonly drunk by children but it also has traces of pesticides in it. According to this site, you can avoid obesogens by doing the following:
Not using plastic food containers for your leftovers.
Don't purchase food in cans with BPA.
Use a water filter.
Ask your butcher to wrap your meat in paper, rather than plastic or Styrofoam.
Don't use plastic ware (cups, utensils, etc.)
Avoid drinking water from plastic bottles.
Don't use air fresheners, open the window instead.
Never use non-stick pans.
Buy grass-fed beef.
Eat more organic produce.
Cook at home, you have no control of food purchased out.
- **Web site #3 Name: The Dr. Oz Show**
- **Web address:** <http://www.doctoroz.com/videos/understanding-obesogens>
- **Summary of the information:**
 - Here, Dr. Oz explains just how obesogens work and how they attribute to obesity in people. Obesogens will work either by mimicking the actions of our bodies naturally occurring hormones or they will prevent the hormones we produce from acting correctly. They do this first by encouraging our bodies to store fat and re-program cells to become fat cells. They also prompt the liver to become insulin resistant then prompting the pancreas to put out more insulin which turns energy into fat all over the body. They also prevent

the appetite reducing hormone leptin from being released from your body's fat cells and therefore you do not feel full.

Section 5: Solutions to the Problem (or Issue)

- **Web site #1 Name: Safer Chemicals Healthy Families Take Action**
- **Web address: <http://www.saferchemicals.org/about/want.html> , <http://www.saferchemicals.org/about/who.html>**
- **Summary of the information:**
 - **This is coalition representing more than 11 million individuals. They are working towards getting Congress to pass a strong Safe Chemicals Act. They share the common concern of how every day toxins and chemicals in our homes affect our bodies and health. They want to update the TSCA to protect public health and environment while restoring the safety to United States goods.**

- **Web site #2 Name: The Obesity Society**
- **Web address: http://www.obesity.org/images/pdf/stratplan_final.pdf**
- **Summary of the information:**
 - **The Obesity Society is a council whose mission is to through research, education, and advocacy prevent, better understand and treat obesity. They strive to advance science-based research and understanding of the causes, consequences, preventions and treatment of obesity. The common goal of this organization is to improve the lives of those affected by obesity by creating the leading professional society in the field of obesity.**

- **Web site #3 Name: Let's Move!**
- **Web address: <http://www.letsmove.gov/about>**
- **Summary of the information:**
 - **“Let's Move!” Is a government initiative launched by the first lady, Michelle Obama. It is dedicated to solving the problem of childhood obesity so that today's generation can stop the obesity cycle and grow up healthier and more active. This organization believes in partnering comprehensive strategies with common sense to put children on a healthy path in their adolescence. They strive to educate, empower, and support children by providing the means to become healthier and active.**

Conclusions

From creating this fact sheet on Obesogens, Obesogenic, and Obesity, I have learned a lot about weight gain and the amount of obesity in the United States. Before doing this sheet I did not even know what obesogens and the term obesogenic were and had not even heard of them before. I never knew that obesogens were chemicals found every day in our environment that can actually harm us and even attribute to weight gain. I also was unaware of how much of an issue obesity is becoming in the United States. It is shocking to think that almost 10% of the world's population is expected to become obese by 2015.

With my new knowledge of obesogens and obesity in the Unites States, I feel more driven to become even healthier. I already tend to eat healthy and stay active however now I know what foods and materials contain obesogens and should be avoided. I also am surprised that obesogens are just being discovered and researched. There are very few movements out there for acts against these obesogens being put into our goods and I feel more people should be educated about them so that more can be done. I also feel that there should be more organizations from the government to fight the growing rates of obesity in the United States and funding for the research on obesogens. It helps explain why some people no matter what they try just can't seem to lose weight.

Back to Betty C. Jung's Web site	http://www.bettycjung.net
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