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Food, Health & Environment

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"Melts in Your Mouth, Not in Your Hands"

I submitted this paper for IIENST110: Food, Health and the Environment. This paper is an analysis of advertising techniques, along with health and environmental impacts of the product's ingredients.

The product being advertised is M&M's Original candies. The advertising strategies of this candy are used to make the viewers think that if they buy/eat the candy, they will become sexy, desirable, and everyone will want them. The advertisers of M&M's use their product and turn them into characters, giving all of them different personalities and attributes. There is a sexy, a clueless, a know-it-all, a "too good for you", a cocky/confident, and an anxious M&M's character. They made a character to appeal to all different kinds of people. Many of the advertisements have something to do with people wanting the characters because of how sexy and attractive they are, relaying to people that if they buy the M&M's then people would think the same about them.

In the one specific advertisement being talked about, the advertisers used the green character. In this advertisement, the green character is laying in a red, sexy, silky bed with high heels on. The voice talking about the candy is sexy and sultry, which helps to set the mood of the scene. The green character is eating the Premium Almond Raspberry M&M's in a sexy way, slowly taking M&M's out of the bowl and placing them on her tongue, slowly chewing and gazing at the camera. At one point, she tosses the candies in the air and sits there as they fall in

slow motion on top of her. The advertisement is set up as a commercial being filmed, and at the end when they say “cut,” the ad shows the other M&M’s who were filming the scene with their jaws dropped and they were melting.

The main ingredient in the original candies is milk chocolate. The ingredients of milk chocolate are given in parenthesis, which are sugar, chocolate, skim milk, cocoa butter, lactose, milk fat, soy lecithin, salt, artificial flavor. Not only is sugar a main ingredient in the milk chocolate, but then the ingredient list goes on and the second ingredient is sugar, followed by corn starch. The next ingredients are all less than 1% and they include: corn syrup, dextrin, coloring (Blue 1 Lake, Yellow 6, Red 40, Yellow 5, Blue 1, Red 40 Lake, Blue 2 Lake, Yellow 6 Lake, Blue 2), gum acacia. The final thing said on the ingredient list is that it contains milk and soy, and may contain peanuts.

The three main ingredients in M&M’s are three ingredients that are causing harm in this world, to the environment and to the people living in it. M&M’s are chocolate candies, and chocolate candies have chocolate in them. However, if not labeled “fair-trade” chocolate, then they are using chocolate that is most likely farmed by child slaves. Ivory Coast is a West African country with many cocoa plantations. 42% of the worlds cocoa production is from Ivory Coast. What many people may not know is that the delicious chocolate they indulge in, was actually harvested by child slaves. Children of the ages 12-15 will leave their homes and meet up with a driver, if he can take them to the border than he will. They leave home to provide money for their family, some of their parents will not accept them unless they are making money. Only sometimes do the children go to these plantations willingly, for their families. More often than not, these children are victims of trafficking. The plantation owners will go to the village market and take the children, without notifying the parents. Plantation owners will pay traffickers to take

the kids. When the kids get off of the buses, the traffickers will chase them and surround them, eventually taking them and transporting them across the border. A child slave can be bought for 230 Euros, which includes transportation and indefinite use of the child. Some of the children are as young as 10 years old when they begin working. If they refuse to work or they work too slowly, they will get beaten. These children work every single day for long hours, but will never receive pay. These children do not go to school and they cannot speak the language of the area. The plantation owners will deny that there are children working on their plantations, they say it is illegal and that they do not allow children to work on their plantation. Clearly, this is not true.

Cocoa farming contributes to rainforest and old growth forest deforestation. The lands that are cleared for the plantations disrupt the biodiversity and organisms that naturally live in the area. The soil is ruined by their farming habits and then they expand onto newer soil, causing more destruction. "Ivorian officials say 99 percent of the park's 34,000 hectares have been destroyed by cocoa farmers taking advantage of the chaos wrought by a decade-long political crisis in the West African nation" (Aboa). Not only do the plantations take up thousands and thousands of acres of land, but the processing of chocolate is bad for the environment, too. An article posted to *Frontiers in Immunology* states the processing of chocolate consists of "…a multistep process which, starting from cocoa beans, involves fermentation, drying, roasting, nib grinding and refining, conching, and tempering. During cocoa processing, the naturally occurring antioxidants (flavonoids) are lost, while others, such as Maillard reaction products, are formed." All of these steps require fuel and energy to be used to make the machines run, and then to have the chocolate transported from Africa or Mexico to the United States results in an even larger carbon footprint. The environmental impact of the shipment of chocolate to the US is damaging, especially after all of the prior damage that was done to get it ready for shipment.

By using milk chocolate, the first ingredient on the list, MARS is supporting all of the damage that is being caused by cattle and livestock. The milk they use is not stated to be organic, and since they use skim milk in their product, it is even more processed. Dairy is not sustainable. Cows produce 150 billion gallons of methane per day, and methane is 25-100 times more destructive than carbon dioxide in a twenty-year time frame. It is commonly known that all forms of transportation are bad for the environment because of the greenhouse emissions they are responsible for from the exhaust. However, animal agriculture is responsible for 51% of all greenhouse emissions. It is the number one contributor to human caused climate change. Without oil, gas, and fuel, we would still exceed our maximum carbon equivalent greenhouse gas emissions of 565 gigatons by 2030, all due to raising and eating livestock. Not only are the emissions bad for the environment, but the amount of waste produced by livestock in the United States every second, 11,600 pounds, is enough to cover every single square foot of San Francisco, New York City, Tokyo, Paris, New Delhi, Berlin, Hong Kong, London, Rio de Janeiro, Delaware, Bali, Costa Rica, and Denmark combined.

The livestock operations are responsible for many environmental disasters. Some of which include creating more than 500 nitrogen-flooded dead zones, deforestation, water scarcity, communities not being established, mass extinction, and world hunger. To feed the cows, the natural grass diet is not what is used. Instead, 20 tons of water intensive grain is used to feed 200 cows per week. Each dairy cow requires 140-150 pounds of feed and 30-40 gallons of water per day. The grains that they eat are mostly corn that would kill the cattle within 6 months. To produce just one gallon of milk, 1000 gallons of water are used. All of the 1.5 billion cows in the world drink 45 billion gallons of water and eat 135 billion pounds of food, whereas the 7 billion people of the world drink only 5.2 billion gallons of water and eat 21 billion pounds of food. The

milk that is produced is basically just the growth fluid of the baby calves. There is absolutely nothing in it that people need in order to survive. Although milk is said to be good for growing strong bones, it actually does the opposite. Drinking cows' milk could result in broken bones, prostate cancer, lactose intolerance, acne, ovarian cancer, decreased effectiveness of antibiotics, weight gain, bone loss, and more. When we are born, we breast feed from our mothers, and then consumption of milk is no longer needed. Cows' milk is suited for calves, not humans.

Sugar is another main ingredient used in making M&M's candies. Sugar is listed in the ingredients for milk chocolate, but it is also the second ingredient on the list for the whole candy. The ingredient list also states that lactose, corn syrup, and dextrin are in the candy, which are sugars as well. By using refined/processed sugar in their candies, MARS is also supporting modern day slavery. In the Dominican Republic, men, and sometimes women, of all ages work in the field for 15-18 hours a day chopping, loading, carrying, and reloading large amounts of raw sugar cane. The sugar they slave over gets shipped to the United States. In just one year 185,000 tons of Dominican sugar was shipped to the US, worth $74 million. Even though that much money is made, little actually goes to these men in the fields. These men are in the sun all day for 18 hours a day, but will only make three dollars. The workers have to provide their own gloves, which they need in the fields, and live in shacks with no running water. They have little to no medical care, so if any injuries or sicknesses occur while in the fields, there is no help for them and they often just have to work through it. These men work in these fields all day for decades, some have never seen a doctor, not even once. The families in the area are treated terribly, as if they are dead weight. By using the sugar that is shipped into the United States, MARS is supporting this modern day slavery that is happening in the Dominican.

Also, sugar is extremely bad for the health of the consumers. Sugar can lead to diabetes, cavities, rotting teeth, heart diseases, obesity, and more. Not only is sugar bad for your health, but it also results in a lot of land use. Since a lot of land is used for sugar cane fields, an estimated 15,000,000 acres, it results in deforestation, just like cocoa and corn and many other crops. It is estimated that 13-49 tons of soil per acre per year is lost due to wind erosion. The sugar cane fields often are set on fire before harvesting to burn all of the dry leaves and kill/scare all of the snakes in the area, but the fire will not harm the stalks and roots of the sugar cane. When the sugar cane is burned, thousands of tons of hazardous pollutants are released into the air. The sugar cane fields are sprayed by large amounts of pesticides, even while the workers are in the field. The workers develop deadly diseases, like cancer, because of these pesticides. Not only are the pesticides harmful to the people in the fields, but when it rains, the runoff of the chemicals gets into things like drinking water and rivers and harms even more people/organisms. According to the article *Sugar and the Environment,* "Agriculture is by far the biggest user of water worldwide. Seventy percent of global freshwater withdrawals are for irrigation, rising to more than 90 percent in some arid countries." Not only is water used to irrigate the sugar fields, but a large amount of water is used when processing the sugar cane into sugar crystals.

To make sugar crystals from sugar cane, first the sugar cane is brought to the mill yards. The cane is cleaned with warm water, and then is ready for juice extraction. The juice extraction process can be done by 3 different methods, or all three methods. There is one method that crushes the cane and extracts the juice, another method that shreds the cane without extracting the juice, and a third method that involves revolving knives that cut the stalks. As the cane gets crushed, hot water is sprayed onto it to dilute it. Then the stalks are finely shredded and dissolved in hot water. The juice is a dark green color when extracted, and lime and heat are used

to clarify the juice. Then, crystallization takes place in a vacuum pan. The syrup is evaporated until it is saturated with sugar. Small grains of sugar are then added to serve as nuclei for the formation of sugar crystals. Additional syrup is added and evaporated to allow the sugar crystals to grow. Once the pan is full, and the sucrose concentration reaches the desired level, the mixture of syrup and sugar crystals is placed into large containers, which are called crystallizers. The mixture flows into baskets that revolve at speeds from 1,000 to 1,800 RPM, where the syrup is separated from the raw sugar by force. As it spins, the perforated lining retains the sugar crystals. These baskets are called centrifugals, and once the sugar is centrifuged, it is "cut down" and moved to a granulator where it is dried. The damp sugar crystals are dried by being tossed around in heated air by granulators. The dried sugar crystals are separated by size and packaged. Although there is no water in the final product, it takes 88 gallons of water to produce a 5-pound bag of sugar. All of the machines used in the harvesting, farming, processing, and transportation require fossil fuels, resulting in air pollutants, harming the environment even more.

Corn starch is the third ingredient on the list. Corn starch is derived from the corn grain. When corn arrives at the processing plant, the kernels are removed from the crop and washed. The kernels are soaked for 20-48 hours in large tanks of hot water mixed with acid and sulfur dioxide as preservatives. As they steep, this causes fermentation and the kernels soften. Milling is used to crush the grain, making a paste. The hulls and endosperm are heavier than the corn germ, so the germ floats to the top and gets scraped off. The paste then flows through a screen that removes the hulls, leaving just the endosperm. Just like with sugar, fast spinning centrifuges remove the lighter protein from the starch, leaving behind only the starch. The pure starch is then washed and dried in many different steps. The dried starch is crushed into a powder, and then sometimes modified before packaging. Not only is a lot of water involved in this process like it is

with sugar, but the fossil fuels from the plant are also in large amounts, producing harmful air pollutants into the environment.

Corn is a commodity crop, which means that it is traded and easy to store, and it is uniform. However, the corn that is grown is inedible. It needs to be processed for it to taste how Americans like it. 31,000 corn plants can be planted in under 20 minutes due to the new machinery. It is a monocrop that takes up hundreds of thousands of acres of land, and is in just about everything. Monocropping corn results in the use of harmful pesticides that runoff into bodies of water and pollute them. Also, commercial fertilizer is extracted from the ground when monocropping, this is bad for the environment because of the amount of fuel that is used. Soy lecithin is also on the ingredient list. This helps give the candies a smooth, uniform appearance.

GMO corn and soy are the top two crops grown in the United States, as of today. They cover nearly half of the nation's farmlands. About 88% of corn and 93% of soy are genetically modified, meaning they are monocrops and are genetically identical. This is terrible for the soil they are grown on because there is no variety of nutrients for the soil, the same crop is grown year after year. Monoculture is harming the environment. It results in a depletion of nutrients in the soil, it destroys biodiversity, it creates a cycle of dependency on fertilizers, antibiotics, and chemicals. The machinery that is used to speed up production use excessive amounts of fossil fuels, and the crops that are genetically identical are more susceptible to insects and parasites, resulting in more chemicals being used. GMOs also have a negative impact on species like birds and bees, which are crucial to our environment and our daily life.

There are a lot of colorings used in M&M's, some of which are carcinogenic. A few of the colorings that are used in M&M's, like Yellow 5, Yellow 6, and Red 40, contain compounds, including benzidine and 4-aminobiphenyl, which have been linked to cancer. Also, a 2007

British study found that children who consumed a mixture of these dyes displayed hyperactive behavior within an hour of consuming them. Gum acacia is the last thing listed on the ingredients list, meaning that there are very small amounts of it in the product. Gum acacia is a natural gum made from hardened sap of the acacia tree. There are really no health risks to this, unless it is an allergy.

I love M&M's. However, I do not consume them on the daily. The health effects of them are not worth the consumption, in my opinion. When I eat them, I do not think about the environmental destruction and slavery that goes into making these candies. Now that I have done my research on the matter, I will no longer indulge in these candies. I do not want to support the issues that MARS does. I do believe there are better chocolates out there that are made organically with no harmful ingredients. After doing the research, it would not be right eating M&M's knowing that children and men of all ages slaved over this product, earning basically no money for their work. Even though I am only one person, I hope no longer buying MARS products makes enough of a difference. These sugary candies are not only harmful to my health, but also to those who produce the product and the environment as well. Although the product itself is not ideal, I do appreciate their marketing strategies. The commercials make me laugh, even though I do not think that was the goal of the marketing team. I appreciate the fact that they make characters out of the product in order to sell them. When I watch the commercials I think about the marketing team sitting around a table thinking about how to make M&M's "sexy." They used to make me laugh, but I most likely will no longer be laughing knowing what the result of the production is.

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