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Got Milk?: Exploring the Truth Behind America's Drink and Nature's Perfect Food

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Got Milk?: Exploring the Truth Behind America's Drink and Nature's Perfect Food

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Senior Thesis

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Abstract

The product of milk is a staple to American culture and diet. Described as the “perfect food,” this notion has been ingrained through decades of misleading information as well as persuasive marketing and advertisement implemented by government officials and industry leaders. However as health risk rise, questions concerning the validity of milk calorie and nutritional value, the use of bovine growth hormone (rBGH) and subtherapeutic antibiotics rise as well. In my thesis paper, I will study the history of the dairy industry and how their agenda quickly transitioned from the benefit of the customer to the benefit of the industry. In other words I would like to discuss the industry’s use of highly controversial methods, including the use of injecting cows with powerful growth hormones rBGH (or rBST), that was manufactured by pharmaceutical and chemical moguls in order to force fewer cows to produce more milk. Although approved by the Food and Drug Administration (FDA), scientists and consumers remain troubled with the little to no information surrounding the drug’s safety for consumers who drink the altered milk as well as the animal. Furthermore, I will discuss the industry’s operation and treatment of the cows; this includes animal rights and welfare. While these cows are genetically manipulated, artificially inseminated, and often drugged, it is clear that the dairy industry does not follow any code of ethics. An industry study reports that by the time they are killed, nearly 40 percent of dairy cows are lame because of the intensive confinement, the filth, and the strain of being almost constantly pregnant and giving milk. Finally, I will propose and evaluate possible solutions and

alternatives in alleviating the harm and treatment towards cows and how these solutions also include a change in American diets.

Introduction

About twelve thousand years ago, a paramount change took place in human history. This change was marked when hunter-and-gatherers evolved as herdsmen. These herdsmen adopted agricultural practices of domesticating animals, as well as cultivating plants in order to sustain civilization and its growing population. What initiated as a vital response to survival thrived into a multi-billion dollar agricultural industry that American history and tradition regard with great pride. Specifically, the American dairy industry is a sprawling \$150 billion per year business, as a result from the glorification of milk. For over a century, American nutrition authorities have promoted milk as “nature’s perfect food,” as indispensable, and as the most complete food. This pro-milk ideology stems a long history, however as controversies over genetic manipulation, bio-technology, consumer rights, health risks, and animal treatment came into perspective, many started to question the food’s praise as pure and natural.

Defined as a major source of dietary energy, protein, and fat, milk has been praised for many generations as a wholly beneficial natural product for consumption. However, many consumers do not realize that the production and process of the renowned beverage has deviated from the traditional practices of the first American dairy farmers. Since milk’s mainstream assimilation to American culture as a nutritious beverage, milk prices have remained relatively stable at a low

cost. This provision however comes with an expense, one that compromises the environment, the health and rights of consumers, and most importantly the condition of cattle. At the turn of the century, industrialization in the American dairy industry exhibited a growing awareness in public health. This implemented many positive changes in the industry and for their consumers. However as demand increased, many tradition farmers resorted to new and alternative agriculture technology and soon towards vertical integration: a single corporation owning all stages of production and marketing. This course of action has ultimately lead to the downfall of the American dairy farm and the rise of power and influence of industry corporations that only concern profit and capital as their prime priority.

The dairy business is at the heart of the culture and economy of many American states.¹ As an extension of the meat industry, cattle, also colloquially referred as cows, are raised to produce one of the nation's top agricultural products for milk and other dairy products. Due to milk's ubiquity in American culture and diet, a significant amount of small-scale, pasture-grazing family farmers have diminished over the years into factory farms to provide maximal efficiency to meet demands and maintain favored low prices. Since the rise of factory farming, these operations pose a looming threat to the tradition family-owned diary farms, to humans, and the environment. The practice of factory farming has ultimately led to cruel and unfair treatment towards animals, which begins and ends with darkness, filth, and pestilence. In addition, the revolving door between private industries and government agencies, such as the Food and Drug Administration (FDA), have approved of a cocktail of drugs and hormones to be injected into cows, and

ultimately into America's drink. These circumstances have conditioned the connection between consumers and their food source into great proportions. Ultimately, it has enclosed a veil and blurred the lines of consumer rights and free choice of knowing where and how our food is produced.

After framing the problems surrounding the dairy industry. I will apply laws and politics, history, and ethics in discussing and examining the main issues. I will first look into the history of the dairy industry and how current methods came about, in addition to reviewing previous methods that were practical and efficient. I will then use law and politics of food and agriculture, and investigate how and why these issues came about in the industry. And lastly, I will investigate the ethics surrounding the issue at hand, which include the treatment of the animals in their lifespan.

Data on Problem

The 2007 Census of Agriculture survey counted, 2,204,792 farms in the United States. While these numbers indicate a 4% increase from 2002, the number of farms nationwide has been on a declining trend since WWII. Among these declining farms include dairy farms, which saw a decrease in numbers from 2002 to 2007. However, according to the USDA Census of Agriculture, the cattle and dairy industry remains the second largest category of production and sales. The problems in this industry indicate that numerous studies have raised milk's dubious health claims, yet why does it still remain as vital and imperative in our diets?

In 1944, the United States had 25.6 million dairy cows.² Today there are about 9 million.³ Those mid-century cows made a total of 120 billion pounds of milk per year, while the modern cow population produces a total of 190 billion pounds.⁴ In other words, the average number dairy cow produced a little less than two gallons of milk per day; in 2000 the average cow will produce over six gallons per day. Since 1900, Americans have increased annual per-cow milk yield from roughly 3,000 pounds to 20,000 pounds; this is a nearly sevenfold rise.⁵ At the same time, even though the U.S. population has increased significantly in the last sixty years, per capita milk consumption has declined; leading suspicions of why dairy companies continue to produce more yields.

Moreover, milk contains a beneficial sugar or carbohydrate called lactose; infants have a special enzyme called lactase that allows their stomach to digest normally.⁶ After an infant is weaned, the body will stop producing lactase because it is no longer required. Since the lactose cannot get processed in the stomach, it passes directly into the intestines. In the lower intestine, bacteria is aggravated from sugar fermentation, drawing water and gasses into the area, leading to diarrhea, flatulence, cramping, and bloating; this condition is known as lactose intolerance. Because the ability to stomach milk thrived from a genetic mutation that occurred in human history, it explains the prevalence of adults in present day suffering from lactase deficiency. According to a study published in the *Journal of American Dietetic Association*, it is estimated that 75% of adults worldwide show some decrease in lactase activity during adulthood.⁷ These statistics cause one to ponder the true oddness of being able to drink another species milk after infancy and into

adulthood, as well as government promotion and recommendation of consuming dairy products.

History

The long and complex history of dairy and its' products provide an insight of how cow's milk became a near universal consumer product. In this discipline, we examine the importance of milk, and how earlier use of liquid raw milk was mostly made into fermented drinks and concentrated products like cheese and butter, while drinking fresh milk was mostly confined to children, milkmaids and farmers. I will examine the social and political factors in American history that was responsible for the shift in consumer taste towards this beverage and its' highly praised image. Furthermore the history of milk sheds light on the American food industry and reveals the industry's development of new technology, such as pasteurization, and reasons why action took course.

According to many historical accounts of dairy food habits in the United States, fresh milk was considered a perilous product. However due to cultural, political, and social influences, the production and distribution of milk became a universal consumer product that illustrated purity. Reformation in the Progressive Era and the postwar landscaped mass production; the history of milk involves a look into the complexity and challenges of humanity's dependence on the product that the bovine species produced.

Historians note that no state of civilization has ever arisen without the subjugation of animals and subsequent use of their milk; from the infancy of human

society, the bovine species has taken its place as the aristocrat of grazing animals.⁸ Raw milk and the products made from it have even claimed to shape the cultures that founded western civilization.⁹ Where people have gone, the cow has followed. Whether indigenous or naturalized, bovines grace the pasturelands of every country. In most, their milk has at one time or another served as an essential article of human sustenance.

However, humans did not always possess the ability and genetics to drink fluid milk. According to historians, the genetic mutation that allows lactase to persist into adulthood existed in a small percentage of the first farmers.¹⁰ It appears that the initial genetic selection for lactase persistence occurred at the same time that farming and agricultural practices began in Europe and around the time of a large migration of farmers to Europe from the Middle East.¹¹ About 5500 BC, farmers from the near east started to migrate North and West into Europe. While migrating through Europe, the group of farmers came across a group of indigenous people around Lake Balaton in modern day Hungary.¹² A high percentage of these natives had the genetic mutation that allowed them to drink raw milk. As the indigenous and nomadic people intermarried, they also exchanged their knowledge on dairy and its' practices, and most importantly the genetic adaption of lactose tolerance.

In the homeland of the nomadic people, the warm and sunny climate conditions made growing grains and using dairy animals to produce yogurt and cheese easy, while milk spoiled quickly. As these nomadic people moved north, the climate became colder, wetter, and less sunny, making crops less predictable.¹³

Fortunately, the terrain held more grass, giving cows a nutritious and grazing opportunity. Dairying therefore became more central to the culture's survival. In addition, as human history saw the use of urban land use, such as cultivating land for food, it enabled dense human settlements possible. Making people move into cities, a trend that began around 1300 AD, while farmers operated around the edges to provide dairy goods into the city. This pattern would continue for hundreds of years in Europe, and soon across the ocean with the first settlers of the New World.¹⁴

Milk in the Progressive Era

The Progressive Era in the United States exhibited various social activism and political reform from the late 1800s to the early 1920s. Among the issues that centered in the lives of American society were concerns of public health and safety. In this time of American history, citizens came to understand consumer protection as a fundamental responsibility of the state. In addition, women began to extend their roles as food providers and caretakers of children, which brought food purity and health into sphere. Specifically, in the process of making milk safe, not only did it require the food itself to be altered, but also the dairy farms from which it come from to be transformed.¹⁵

When families moved from rural regions to settle into cities, the growing population and density also imposed the conditions of poor sanitation, poverty, and inadequate nutrition; malnutrition among children was common. In addition, urbanization and industrialization allowed milk to travel longer distances between

farm and markets, which also intensified the problems of tainted milk. These plights and ideas about the city and industry rendered more women unable to breast-feed successfully. By the turn of the century, fewer women breastfed infants than ever before, and those who did nurse weaned them more quickly, usually at or before three months.¹⁶ Women shifted from breast milk to bottle-feeding because they worried that they had inadequate breast milk to feed their babies.¹⁷ Such anxieties derived from women's adjustment to an urban and industrial lifestyle of motherhood, which ultimately undermined their capacity to create milk. While some mothers adopted a strict feeding schedule in hope of optimizing efficiency and teaching children self-control, their efforts diminished while food manufacturers casted suspicion on the nutritional adequacy of breast milk by arguing that formulas and cow milk provided babies with scientifically tested sustenance. By 1910, many believed that civilized women were physically incapable of providing adequate milk, which characterized breastfeeding as a savage act and de-stigmatized bottle-feeding.¹⁸ These notions alluded to the perception that as women became more civilized; their capacity to breastfeed would dwindle. Therefore many mothers were convinced that the best care for their infants were to feed them by bottle and not by breast. However as more mothers shifted from breast to bottle for infant feed, more babies came in contact with the potentially harmful food.

The rise of urbanization in cities has also been noted to contribute to the magnification of milk perils. As food traveled greater distance from country to city, the chances of milk becoming tainted from poor refrigeration, increased as well. Many historians account the lack of adequate cooling practices with ice or

refrigeration as the cause of a surge in milk-borne diseases. The troubling bacteria from the city-swill dairies were riddled with troubling bacteria, which many milk drinkers risked contracting a host of diseases. Especially in summertime heat waves, spoiled milk killed thousands of children, so many fatalities that some public health officials viewed the season of infant deaths as a normal occurrence.¹⁹

At this period of time, children mortality rate in American cities were rising to the point that over half of all deaths in New York City and Philadelphia were children under five years of age.²⁰ In addition, these cities were the earliest to experience the food supply problems of modern cities, due to rapid increases in urban population density. As a result of inadequate food supply, cities made an active pursuit for solutions. These solutions proceeded to the presence of swill milk stables, which provided the city with most of its' milk. Evidence correlates the excessive infant mortality rate in American cities with the rise of the swill milk stables. By the mid-19th century, swill milk stables, which harbored as many as 2,000 cows, were attached to numerous in-city breweries and distilleries. The cows ate the brewers' grain mush that remained after distillation and fermentation.²¹ While this solution facilitated an efficient waste-recycling scheme, the final product reduced the quality of the milk into a thin, blue-tainted fluid, and bacteria ridden liquid. Accounts of the swill milk stables almost emulated and foreshadowed the conditions of contemporary factory farming such as Otto Geier, MD, at the First Annual Session of the American Association of Medicinal Milk Commissions:

“The cow is made into a mere milking machine. The distilleries, in their long filthy pens, will furnish to any one desiring to entire the dairy

business board and lodging for cows at ten cents a day. Here enters the large milk dealer of the city, who buys any kind of milk wherever he can.

Competition forces others to haul slop to their dairies. These compete with decent dairies for business, with the natural result that the better farms have gradually dropped the production of milk. Bacterial counts made by the city chemist last summer ranged from two to fifteen millions per c.c. The milk cans were exposed to street dust stirred up by vehicles and street sweepers. The filling of bottles on streets presented another feature of contamination, Lack of ice regulations, another."²²

These unsanitary conditions that resulted to the fatality of many children and even adults, led many physicians and mothers to urgently seek the fundamental answers of how to secure clean milk for the public. Soon, milk from urban stables suffered a poor reputation and the presence of cows in American cities was steadily diminishing, largely due to high property taxes and lack of pasturage that discouraged dairying in urban districts.²³ The first move in health reform to tackle impure milk problems began with dairy farm inspection in the 1880s, as cities started to require farms to acquire a license to sell milk. To obtain a license, farm owners had to allow health officers to evaluate the working conditions of their farm and provide samples of their product.²⁴ Health officials started using a dairy scorecard, which were made public, to ensure fair and thorough farm investigations that would educate dairy farmers about how to produce cleaner milk.²⁵ Scorecards focused on: farm ventilation, waste management, water supply, and presence of disease carriers. With higher scores, dairies had approval to advertise their milk as

“certified milk” and sell it at a higher price. In addition, health and veterinary experts made initiatives to curb diseases that milk carried such as fatal bovine tuberculosis, typhoid, and scarlet fever by testing the cows to determine if they were sick. Like farmers, dairy inspectors were thoroughly committed to improving the milk supply and protecting milk consumers from disease, but they also sought to create standards for milk purity that were economically practicable.

Practicality commissioned the popularization of pasteurization in the late 1800s and the early 1900s. While many recognized the fact that certified raw milk was safe and healthy with the new reinforced regulatory safe and sanitation conditions of a dairy farm, it was also expensive to produce.²⁶ Pasteurization is a heat treatment aimed at reducing the number of any pathogenic microorganisms in milk.²⁷ Conditions were designed to effectively destroy the *Myco-bacterium tuberculosis* and *Coxiella burnettii* organisms by heating every particle of milk to 72°C for fifteen seconds. Particularly with the discovery of diseases, pasteurization promised a quick, technological fix that would make milk safe to drink. With the increased use of pasteurized milk, the death rate among infants and young children dropped dramatically, circumstantial evidence that milk contamination was indeed the cause of illnesses.²⁸

Rather being viewed as fatal and dangerous, the American Progressive Era drove a transformation and reformation of cow’s milk, leading to pasteurization and farm inspections that seemed to guarantee the health of the beverage. World War I publicized milk’s nutritive value to consumers, as Americans exported dairy products to allies. In addition, the National Dairy Council, founded in 1915, brought

further acclaim to dairy. By the 1920s, milk became popularly known by a new title: nature's "perfect" food.²⁹ Scientists and nutritionists attested that milk provided consumers a more balanced mix of nutrients than any other food. While dairy publicists introduced this new image of milk, agricultural and public health reform pushed farms to change the practice of dairy farming, which ultimately indoctrinated this idea. Milk codes, campaigns to eradicate animal diseases, and pasteurization ordinances reconfigured the nature of dairy landscapes and milk itself.³⁰ Only once milk inspectors renewed dairy farms and their functions to rid milk of bacterial pathogens that causes diseases, would experts and industry leaders call milk not just a healthy food, but also a perfect one.

Milk in the Post-Progressive Era

However, the Great Depression was also a catalyst for change. Within two years after the stock market crashed, the country was so poor that milk became a luxury. Demand dropped due to rise in prices and many dairy farms suffered. Thus leading to the Agricultural Adjustment Act, a farm-relief bill that would subsidize producers of basic commodities to eliminate surplus. While it brought some stability by helping farmers in the market, the Supreme Court ruled the act unconstitutional in 1936. A year later the Agricultural Marketing Agreement Act of 1937 took action, which is the basis of the federal milk marketing order today. Marketing order, regulated by the Agricultural Marketing Service of the United States Department of Agriculture (USDA) was designed to "ensure consumers an adequate supply wholesome milk for drinking and an adequate price for produces a little stability."³¹

In addition, the order set minimum prices for milk, prices that processors must pay to dairy farmers.

When the United States declared war on Japan, entering World War II in 1941, the dairy industry exhibited an enormous revival in demand for milk and dairy products. This resulted in wartime employment with higher incomes and increased consumption of military purchases of large orders of cheese, butter, canned milk, and dried milk. The government also guaranteed higher wages to farmers, and wartime price controls kept prices down for consumers, with processors receiving subsidies to compensate the difference.³² In addition, farm credit was now easily accessible, as loans were essentially guaranteed by the government price support and the creation of Commodity Credit Corporation (CCC) in 1933. This government-owned financing institution was created to “stabilize, support, and protect farm income and prices.”³³ In other words, the CCC was authorized to buy, sell, lend, make payments, and engage in any activity that facilitated an efficient market of agricultural commodities. The easy money enabled more expensive farm equipment, which allowed farmers to manage larger herds. These new technological innovations included bulk tanks, which eradicated the 40-gallon tin cans, and vacuum-powered milk pumps that deposited the milk into giant refrigerated tanks, where milk could stay for an extended amount of time. By the mid-1940s, many farmers switched to commercial farming due to the new technology and practices, and improved mechanization.

Among these new capital-intensive practices were providing roughage for cattle by cutting and hauling grass to cows that remained in barnyards. While grass

feeding was not yet abandoned for corn, farmers used mechanical choppers in the field to provide chopped grass to cows with self-feeding bunks.³⁴ Farmers also began to preserve silage by storing mixed alfalfa, clover and brome grass in silos. Farmers adopted techniques like artificial insemination and devised new feeding practices of feeding lots because they believed that high-producing cows would yield more money. This was only the anticipation of what we regard as commercial, factory farming.

Milk in the Post-War Era

In the post war era, the accustomed favored depiction of the popular milk beverage took a shift change on account of rising numbers of deaths from coronary heart diseases. The once popular imagination of a healthy and natural produce soon came into question with new research about heart disease. Researchers deemed the American diet, which was rich fat and cholesterol as a key factor for the deadly condition.³⁵ Investigators also interpreted the presence of cholesterol in arteries, as an indication that dietary cholesterol, found only in animal foods, was the cause of heart disease and emerged as a risk factor for heart attack. For the first time, Americans questioned milk's healthfulness because of its' chemical makeup seemed detrimental to human health, a concern that threatened the dairy industry. By the late 1950s, scientists linked saturated fats to higher blood cholesterol; milk's richness seemed a liability.³⁶ As a defense to oppose the decline in the industry from physicians advising dietary changes to reduce cholesterol, Secretary of Agriculture, Orville Freeman dismissed studies about cholesterol as "a scare." However these

implications were increasingly difficult to sustain due to newer evidence and studies that revealed a clearer link between blood cholesterol levels and heart disease.³⁷ By the early 1960s, research linking dietary fats to heart disease, supported by the American Heart Association and the American Medical Association, were just one of the challenges facing the dairy industry.

Troubling new evidence exposed the substances found in our milk, which were created by modern society. While Americans worried about milk-borne disease, in the heat of the Cold War and Green Revolution, farmers and consumers began to understand other potential food adulterants. In the start of the late 1950s, antibiotics were used to treat cows for veterinary diseases, such as mastitis, a disease that painfully inflames the cow's udder. The spread of mastitis, not only altered the taste of the milk, but also affected their yield, and even caused septic sore throat or food poisoning.³⁸ The spread of mastitis was facilitated by the use of milking machines that were left unclean, which made unsanitary conditions for bacterial communities possible. Many farmers were forced to use antibiotics because milk from mastitis-afflicted cows was prohibited from sale. It received more attention when evidence indicated that antibiotics persisted in milk, also triggered allergic reactions in those who drank it. The growing evidence suggested that even low levels of antibiotics in milk, especially penicillin, heightened allergic sensitivities.³⁹ As the evidence reflected in dairy sales, dairy manufacturers launched programs to educate farmers about the effects of antibiotics. In addition, in 1951 the FDA issues its first explicit regulation on antibiotics in milk, requiring that antibiotics manufacturers advise users not to market milk from an antibiotic-

treated quarter of the udder for seventy-two hours.⁴⁰The new findings on the potential health effects also prompted the FDA to tighten restrictions on veterinary drugs. By 1957, the FDA established a maximum dosage for penicillin at 100,000 Oxford units, a significant reduction compared to the 1.5 million units per dosage used in some antibiotic preparations.⁴¹ The FDA also launched programs to inspect milk shipments to test for antibiotics and to train local and state milk inspectors to utilize quicker methods for residues. By the late 1960s, many farmers quickly became familiar with the perils of technological adulterant.⁴² Thus, many farmers accepted the FDA policy on antibiotic use because they could control its presence in milk by restructuring actions on the farm.

In the Cold War, concerns about radioactive contaminants in milk originated with consumers and critics of the nation's nuclear policy. Significance in this era lied in the groundwork for environmentalism and consumer protection. In the late 1950s, consumers and antinuclear organizations publicized scientific findings about the dispersion of fallout and its accumulation in human tissues. Particularly, isotope strontium-90 and iodine-131 were tainting our nation's milk with radioactive contaminants.⁴³ As public concern deepened, dairy companies looked for ways to mend milk's reputation with technological fixes. In addition, environmentalists and consumers pressured government agencies to alleviate the problem, including changing the country's nuclear testing policy. However, the nation's security strategy was unwilling, considering the growing tension and insecurity with Russia. Lawmakers realized the acute impact of radioactive fallout fears on dairy farmers, impelling President Kennedy in January 1962 to hold several press conferences to

convince Americans that milk was a healthful, and non-hazardous drink. In the end, the intense concerns about fallout-contaminated milk came to a near halt when the Partial Test Ban Treaty of September 1963 sent nuclear testing underground.⁴⁴

Another technological adulterant that consumers grew increasingly aware and worrisome was the use of pesticides as early as the 1940s. Pesticides were a technology that farmers used on their farm to curb pesky insects. Further, pesticides such as DDT and methoxychlor, were noted as a “miracle” for the dairy farmer’s fly problem that carried diseases. The presence of pesticides drifted onto a dairy farm from a neighboring property and introduced to a dairy herd through feeds that were purchased for the dairy farm. Dairying publications began to publish the harmful effects and long-lasting toxicity on human beings, plants, livestock, other animals, and wildlife. By 1949, regulators restricted DDT’s use on the dairy farm.⁴⁵ USDA and FDA officials issued a zero tolerance for DDT in milk, preventing dairy farmers from using DDT as fly spray or to treat their barns.⁴⁶ The primary focus of FDA set tolerances on DDT and methoxychlor was to protect milk consumers from ingesting pesticide residues.

Boosted by industry leaders and the government officials, milk plays unique role in the American diet. Particularly with the weak, sick, young and aged; this message of milk’s significance, established citizen organizations and consumers with the urgency for policymakers to uphold tough standards for milk safety.⁴⁷ America’s purest beverage was tested on many fronts that occurred since the start of its’ popularity from the progressive era to post-war times. When rising concerns about technological adulteration materialized, including new feeding methods,

artificial insemination, radioactive fallouts, pesticides, and antibiotics, pressures from consumers and market values expedited environmental and government action. From the history of milk and the dairy industry, it is evident that government agencies that implemented federal milk standards have fundamentally altered the way in which consumers understand milk. Dairy farms and consumers felt the impact of federal policies developed to uphold milk's purity.⁴⁸ Consumers consequently interpreted milk as much through federal standards as with their taste buds or through visual cues. Standards of milk purity may have been codified in federal law, but the question of what constitutes pure milk remained. In the ensuing years, as the trends of concentration and consolidation in the dairy industry expanded, these doubts led some Americans to envision a dairying economy that provided a greater role to consumers and farmer families in defining and producing pure milk.

Food Politics in the Dairy Industry

Many people do not realize that the food industry influences what we eat, and consequently our health as well. The food industry has given consumers a food supply so plentiful, varied, inexpensive, and so devoid of geography or season that all but the very poorest of Americans can obtain enough energy and nutrients to meet biological needs.⁴⁹ As a result of an overly abundant food supply, the ability to afford and buy more food than needed has set the stage for competition among food companies. Therefore, the food industry must compete fiercely to capitalize, leading companies to spend extraordinary resources to develop and market their products.

Companies have masterminded their tactics with advertising and public relation, but more importantly through working incessantly to persuade government officials, nutrition professionals, and the media that their products promote health, or at least do no harm.

Among the industry's strategy is to sway nutritionists, who are involved in writing academic journals and government policy. Nutrition and dietetics are among the key players shaping the creation of government nutrition policy. These policies are reflected in publications, including the Federal Register notices, Congressional hearing reports, Acts of Congress, General Accounting Office reports, agency advisory notices and government agency Internet postings.⁵⁰ The media issue reports on these published policies, while the food industry uses them to primarily sell products. Because academic nutritionists play a central role in policymaking, many food companies have sponsored speeches, received funding for research, and accepted travel funds for conferences. For example at the conferences, nutritionists will read journals subsidized by food companies, such as the *Journal of the American Society of Clinical Nutrition*, which receives funding from General Foods and Best Foods. It is also of the norm that nutritionists will speak on panels together with food company representatives, receive grants from food companies and consult for them as well.⁵¹ In addition, corporate money, including drug companies, helps pay for the cost of publishing notable nutrition journals, such as the *Journal of Nutrition Education*, the *Journal of Nutrition* and the *American Journal of Clinical Nutrition*. These understandings makes it clear that food companies have applied a certain

strategy to engage nutritionists as allies in various ways in order to leverage policies to their advantage.

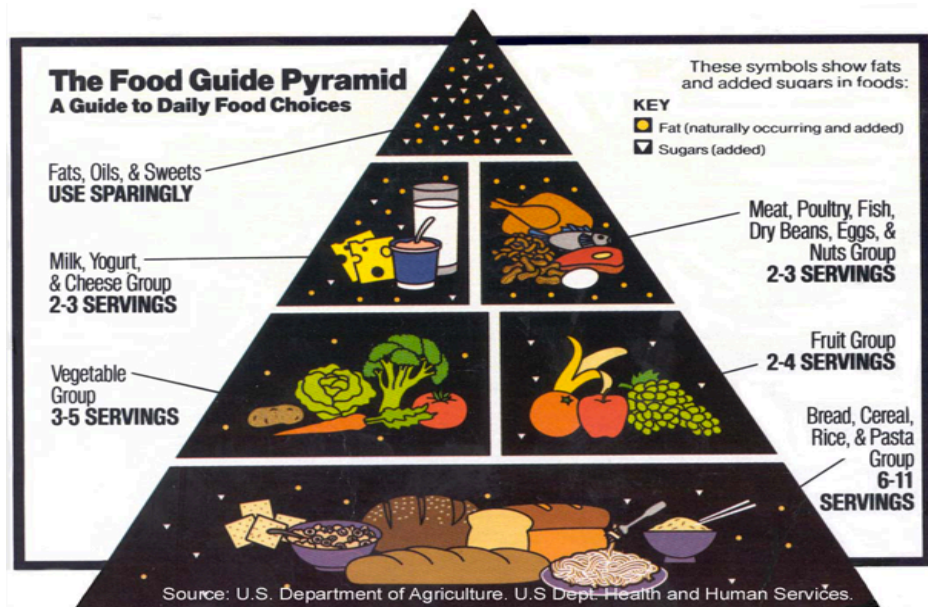
A major element to the food industry bringing pressure in our capital is the tremendous resources to lobbying Congress and federal agencies. Lobbyists are paid advocates for private entities, who promote their client companies' interest.⁵²

Lobbyist activities include the provision of expertise about proposed policies or laws; legislators claim that these services provide valuable insight and bristle at suggestions that such activities should be curtailed.⁵³ Through meetings and social events, lobbyists often develop personal relationships with legislators and their staff member. In addition, they stage media events and public demonstrations, harass critics, encourage lawsuits and arrange campaign contributions.⁵⁴ The lobbying business is a large industry. According to a 2005 *Washington Post* article titled "The Road to Riches is Called K Street," there are 34,750 registered lobbyists in Washington.⁵⁵ These lobbyists spend about one and one-half billion dollars a year on behalf of their clients.

Congress created the USDA in 1862 to ensure an adequate food supply and to educate people about agriculture. The USDA and the Department of Health and Human Services have instituted the "Dietary Guidelines for Americans." The first was published in 1980. In 2000, the Guideline advised consumer to include two to three servings of dairy foods daily, preferably to "choose fat-free or low-fat dairy products" as a way to reduce saturated fat intake.⁵⁶ One may ask why the dairy industry would favor such advice. The answer lies in the dairy industry making far more profit by putting butterfat into other dairy products such as ice cream, which

history indicate resilience because of consumers' favorability with indulgence in the treat, rather than leaving it in milk. As it turns out, nutritionists have collaborated with dairy lobbies to promote the nutritional value of dairy products since the start of the 20th century.

Since the 1900s, dairy lobbyists have influenced many nutritionists to promote dairy products. As a result of nutrient deficiencies, nutritionists considered milk an especially wholesome food, and many embraced that view. This perception was also supported by the National Dairy Council campaign of the *Basic Four*.⁵⁷ Widely available in schools, the council positioned the food groups vertically into the food pyramid and placed the dairy group at the top, implying its' significance in diets. While giving prominence to the dairy group, it recommended two to three servings per day, and made no distinction between full-fat and low-fat products.⁵⁸



The education and research activities of the National Dairy Council, as well as the promotional activities were funded through “check-off” programs run by the

USDA. Congress has passed various laws requiring producers of certain commodities, including milk, to deduct a fee, from sales in order to support generic, industry-wide advertising and promotions.⁵⁹ The check-off fund for the dairy industry is the largest of any industry to reverse a decline in milk consumption.⁶⁰ In 1993, the USDA marketing campaign funded the promotional activities of the \$130 million “milk mustache” celebrity promotion. The campaign embarked a “Got Milk?” logo, and “Where’s *your* mustache?” slogan that celebrities endorsed in print and television ads. According to the campaign website, it received over 90% awareness, giving it a successful eleven year run. Despite studies and research concerning the apprehensions of dairy and its’ products in health and disease, the government have supported advertising that are influenced by industry lobbyists.

Another common affair which politics and private businesses reconcile is the “revolving door.” This occurs when lobbyists are appointed government officials and vice versa. It is estimated that there are about five hundred agency heads and staff members appointed into the USDA.⁶¹ The FDA experiences the revolving door frequently; an example in particular is the agency’s ultimate approval of genetically engineered growth hormone in dairy cows, known as rBGH.

In the 1980s, researchers developed a way to artificially manufacture bovine somatotropin, a genetically engineered artificial growth hormone that occurs naturally in a cow’s pituitary gland. Scientists identified the gene that coded for the hormone’s production, isolated and incorporated it into bacteria to be reproduced.⁶² The synthetically produced hormone was then injected into cows in order to lengthen cows’ lactation periods and increase the amount of milk up to 30%. Trails

of manufactured BST, also known as rBGH, began in the late 1970s. Testing conducted by Monsanto was only held on a 90-day feeding trail; their results showed “no toxicological significant changes.” On the contrary, considerable evidence indicated that rBGH treated cows stimulated the productions of an insulin-like growth factor (IGF-1), a hormone already present in blood that causes cells to divide.⁶³ The hormone also showed increased incidence of mastitis, which led to higher levels of white blood cells (pus) in their milk. Further research revealed that consuming products rBST treated milk will result in higher levels of IGF-1 as well, which has been further associated with relative risks for common cancers, such as breast, colon, and prostate cancer. While this genetically engineered drug has been banned in numerous countries including Canada, Australia, and in the European Union, the FDA approved Monsanto permission to commercially market rBST as Prosilac in 1993. Many attest this approval to be the result of a revolving door.

Monsanto is a huge agricultural and biotechnology company with deep roots and influences in government agencies (*see figure down below*). In the case of Monsanto’s bovine growth hormone, we will take a closer look into the involvement of the process that ensued. After serving as counsel to the FDA, attorney Michael R. Taylor became a partner in a law firm that represented Monsanto called King & Spaulding. Taylor returned to the FDA as Depute Commissioner for Policy in 1991 to become part of the team that approved the use of Monsanto’s bovine growth hormone and issued the agency’s favorable policy on food biotechnology.⁶⁴ While conflict-of-interest speculations led to an investigation by the federal General Accounting Office, all charges were eventually cleared. Taylor then returned back to

Monsanto in 1998 as Vice President for Public Policy, where he remained until 1999.⁶⁵

Moreover in the height of the drug approval, dairies grew concerned of milk's image because it challenged the perception of milk as a quintessential "natural" food. This led dairies to put 'rBST-free' labels on their milk. In Monsanto's retaliation towards this kind of labeling, the company used legal action, arguing there was no difference between the two types of milk and such statement would constitute false labeling. The notion of a revolving door was observed again when Michael R. Taylor signed a Federal Register notice in 1994, as Commissioner for Policy, warning grocery stores not to label 'rBST-free' on their dairy products.⁶⁶ Instead dairies had to resort to labeling products with 'there are no significant difference between rBST treated cows and non-rBST treated cow.' Despite considerable resistance from experts, dairy farmers, and concerned consumers, Monsanto continued to promote its' genetically engineered products relentlessly and aggressively. As a result of the company's infiltration in the government, Monsanto and many other private companies have constructed an environment in their favor for the past decades.

MONSANTO POSITION		FEDERAL POSITION
Head of Government Affairs for Genetech, (Now Monsanto)	David Beier	Chief Domestic Policy Advisor to Vice President Gore
Worked for Monsanto's Legal Team	William Conlon	Department of Justice
Worked for Monsanto's Legal Team	Sam Skinner	Department of Justice
Executive Vice President and Chief Technology Officer	Robert Fraley	Serves as advisor in public agencies, including the USDA, among others
Senior Vice President for Clinical Affairs at G.D. Searle & Co (Merged with Monsanto)	Michael A. Friedman	Acting Commissioner of the FDA
Director of International Government Affairs	Marcia Hale	Assistant to President Clinton and Director of Governmental Affairs
Consultant to Searle's (Merged with Monsanto) Public Relations Firm	Arthur Hull Hayes	Previously was FDA Commissioner
Director of ESH Quality & Compliance	John L. Henshaw	Senior Advisor to U.S. Secretary of Labor
Vice President of Product and Technology Cooperation	Rob Horsch	Advisor to the National Science Foundation and the Department of Energy
Board of Directors, also represented Monsanto as a lawyer	Michael Kantor	U.S. Secretary of Commerce
Monsanto Board Member	Gwendolyn S. King	Commissioner of SSA 1989-1992
CEO of Monsanto for 14 years	Richard J. Mahoney	Served as Director of U.S. Soviet, Japanese and Korean Trade Councils, a Member of the U.S. Government Trade Policy Committee.
Oversaw the Approval of rBGH, was a top Monsanto scientist	Margaret Miller	In 1991, Margaret was appointed Deputy Director of the FDA
Sits on Monsanto's Board of Directors, previously a Monsanto Animal Specialist	George Poste	In 2002, Poste was appointed head of Bioterrorism division of Homeland Security
Member of the Monsanto Board of Directors	William D. Ruckelshaus	In 1970, he was the first Chief Administrator for the EPA, later the acting director of the FBI, then Deputy U.S. Attorney General
Previous CEO of Searle (Merged with Monsanto), he successfully had aspartame legalized while in that position	Donald Rumsfeld	Appointed to Secretary of Defense in 1975, then appointed to Secretary of Defense again in 2000
Worked on Monsanto-funded rBGH in connection with her graduate work at Cornell University	Suzanne Sechen	FDA Reviewer on Scientific Data
Previously the President and COO of Monsanto, Chairman and CEO of Nutrasweet, and Chairman and CEO of Monsanto.	Robert B. Shapiro	Previously Served as President's Advisory Committee on Trade Policy and on the White House Domestic Policy Review of Industrial In
Former Vice President of CropLife America, which represented Monsanto	Islam Siddiqui	Chief Agricultural Negotiator for the Office of the U.S. Trade Representative
Former Attorney for Monsanto for Seven Years, previous head of the Monsanto Washington D.C. Office	Michael Taylor	Former FDA Deputy Commission for Policy. In 2010, appointed by the FDA as a senior advisor to the FDA Commissioner
Previous Monsanto Researcher in charge of the Manhattan Project, creating the atomic bomb. Later, became Monsanto's Chairman of the Board	Dr. Charles Thomas	Previously Served as a consultant to the National Security Council and as a U.S. Representative to the United Nations' Atomic Energy Commission
Former lawyer for Monsanto, a notorious chemical polluter. Thomas would later cast the decisive vote in 200 on the Supreme Court, ratifying the stolen election that put George W. Bush Jr. into office	Clarence Thomas	In 1991, was appointed to the U.S. Supreme Court
Previously served on the Board of Directors of Calgene, a Monsanto Biotech subsidiary	Anne Vaneman	In 2001, was appointed head of the USDA
Former Staff Lawyer with Monsanto in Washington D.C.	Jack Watson	Chief of Staff to President Jimmy Carter
Hired by Monsanto to prosecute two Farmers who fought against Monsanto's Seed Policies in 2002	Seth Waxman	Former U.S. Solicitor General
Retired Senior Vice President for Public Policy at Monsanto	Dr. Virginia Weldon	Previously was a member of the FDA's Metabolism & Endocrine Advisory Committee
Former Chief Counsel at Monsanto	Rufus Yerxa	In 1993, was nominated as U.S. Deputy to the World Trade Organization

In addition to lobbying, large corporation also have other tactics they use as weapons against the public with lawsuits. A lawsuit brought by a giant corporation against a private citizen, that has posed a threat, foments an intimidating proposition that creates tremendous financial and personal costs.⁶⁷ Companies resort to this legal ploy as a way to silence critics. Between 1991 and 1997, thirteen states passed “veggie-libel” laws, which prohibited private citizens from giving out negative information about a food unless the charge is supported by standards defined by the law.⁶⁸ Monsanto is quite familiar with this tactic, such as previous

pursuit of legal action if dairy retailers mislabeled their products with 'false labeling.'

A notable case in point is the story of whistle-blowers' Jane Akre and Steve Wilson, a respected and award-winning reporting team at WTTV, a Fox Network station in Tampa, Florida. Their investigation into Monsanto's bovine growth hormone and its' involvement with dairy farms in Florida ultimately led to their termination at the news station. The network initially praised Akre and Wilson's investigation into Monsanto and the affects of the drug hormone, as they anticipated the story to be a success. However, the preceding days before the airing date, Monsanto's lawyer notified Roger Ailes, the head of Fox News in New York, claiming that the series was biased and unscientific.⁶⁹ Threatened by Monsanto's advertising investment for the Florida station, as well as the entirety of Fox network, and Murdoch's Actmedia, a major advertising agency used by Monsanto, the story had to be pulled and revised. According to Wilson, the two reporters were offered hush money in return that they never reveal any details regarding their investigation of Monsanto and rBST. The reporters respectfully declined and rather offered to rewrite the script to make it more palatable. Over the next seven months, the reporters rewrote the script 83 times and were repeatedly instructed to include unverified and even falsified statements.⁷⁰ Akre and Wilson were ultimately posed to broadcast what they knew and documented as false and distorted information. Fox New's lawyer stressed that these were the only conditions that the story would be aired because the station would be threated by legal action from Monsanto, in

addition to losses in advertising. Due to the journalists' ethical obligations, they refused release of the dishonest information and the journalists were terminated.

Akre and Wilson filed a suit against Fox executives and the jury awarded Akre \$425,000, agreeing that her dismissal was retaliation for her threat to tell the Federal Communications Commission (FCC) about the station's plan to report false information on television. However, Fox appealed and the case was overturned. According to Fox lawyers, the FCC's policy against news distortion, lying on television, is a policy, not a law nor regulation. Therefore the Florida whistle-blower law did not protect the journalists, and the court ruled that they have to pay nearly \$200,000 of Fox's legal fees.⁷¹ Although the reporters have received critical acclaim and praise, including numerous awards for ethics and abrasive action against such large corporations, the legal and political system essentially failed to uphold justice. These laws and policies were enacted to protect the rights of the country's citizens, however the story of Akre and Wilson is a clear example of how industry money and influence can certainly corrupt the system.

Food companies use political processes, which are entirely conventional and mostly legal, to obtain government and professional support for the sale of their products. In this political system, the actions of food companies, as well as other interested industries, influence health experts, federal agencies, and Congress.⁷² The overriding reason government officials give for the myriad of regulations concerning the production and sale of milk and milk products is public safety.⁷³ Therefore, it explains these notions of companies that demonstrate their primary agenda to sell products. With access to enormous resources, including financial, it is

evident that companies can manipulate politics and law to their advantage. While the purpose of these government agencies and policies were arranged to protect the rights and safety of Americans, it seems somewhere in the past few decades, certain members of the government have drifted from their obligations to 'protect and serve.' These influenced government policies, regulation, laws and controls on milk have ultimately reduced the number of dairy farms in American from almost four million in 1950 to just over 100,00 in the year 2000.

Moral & Ethical Aspects

How a person thinks the world functions and what they believe their personal role in the world is defined by an environmental worldview. Part of this determines what an individual believes to be right or wrong. Experiences enables the individual to develop crucial principles and values that will condition their understand and judgment of their purpose and impact to all aspects of life. In this view, individuals must develop some sense of environmental ethics in order to sustain the lifestyle that many are familiar with. Environmental ethics is a discipline that studies the moral relationship of human beings to, and also the value and moral status of, the environment and its non-human content.⁷⁴ The problem with environmental ethics is that anthropocentrism, having human concerns as central and significant, has been deeply embedded in our ethical frame.

The persistence of anthropocentrism in part stems from the fact that many Americans have no idea where they food comes from or how it is made, and many have no desire to find out. However, animal treatment and conditions in

commercial, factory farming has been managed with complete carelessness. At the expense of the animal's vitality and well-being, consumers are able to receive an abundance of inexpensive food. The way milk is produced, distributed, and sold has undergone vast changes during the last one hundred years. Those changes have profound effects on not only farmers and consumers, but also the species that our health and economy depend on.

The grass-fed pasture practice of dairying has become a minor practice. Within the past few decades, factors such as technological innovations, government, and economic pressure have forced the once, common method of grass-fed cow, to remote parts of the country. Reasons for this is because industrial agriculture and dairy farming have employed unethical and improper treatment of animals, in addition to its extremely displeasing sight. Thus creating a bigger disconnect between consumer and their dairy.

Technological innovations are one of the major driving forces to industrial changes in farming.⁷⁵ New machinery, equipment, and innovations have replaced traditional manual labor and made for greater efficiency in all aspects of milk production. Typically dairy cows are raised in confinement facilities, which houses hundreds of standard stanchion stalls, a pair of upright metal bars that run up each side of the animal's head in the neck area to keep the cow in place.⁷⁶ It measures



approximately four feet by six feet, a stall that is barely bigger than its body. The confinement facilities are usually laid with concrete slab, which cow hooves cannot stand on, and therefore have trouble walking. However that is lesser a problem than their blacked and rotted hooves from standing in their own filth and excrements. Cows are not biologically built to live indoors, they get sick and depressed. However producers insist that farm animals are better off confined than set loose on pastureland.

Artificial insemination and selective breeding, which science and research have discovered the difference in semen is also a common practice in commercial farming. Cows are more than often impregnated every year. Their calves are generally taken from their mothers within a day of being born. A calf separated from their mother at an early age does not receive any immunities through her mother's milk, and is therefore vulnerable to disease- a 10% mortality rate is common.⁷⁷ Male calves are doomed for veal crates or barren lots where they will be fattened for beef, and females are sentenced to the same fate as their mothers.⁷⁸ After their calves are taken away, the mother cows are hooked up, several times a day, to milking machines.

Since the transition to commercial dairy farming, high production of milk has become the utmost importance. As mentioned earlier, farmers have resorted to using bovine growth hormones, also known as Posilac, its' commercial product name. The growth hormone is injected into the cow to not just increase daily production, but to prolong the life of milk-producing cells during the lactation period, about 300 days after the cow gives birth. Usually milk production peaks and

then declines before the cow “dries up,” however the hormone prevents that drop, boosting total yields of 10-15 percent during lactation.⁷⁹ Using this controversial practice has contributed to injury and illnesses in the dairy cattle herds. Treated cows are apparently not as healthy as untreated cows. A 1998 survey by Family Farm Defenders showed that mega-dairies that used rBGH had an annual cow mortality rate of 40%.⁸⁰ Scientists have linked rBGH as the agent of the increased risk of mastitis and their brittle bones. With abnormally large udders, it produces problems walking, spreading their legs further apart and distorting their normal pelvis and spine alignment. In revealing documentaries that expose the inhumane treatment of animals in dairy farms, such as *Earthlings*, footage expose workers beating the animals with metal rods and sticks to get them to move. These instances of animal treatment are far from unusual in commercial dairy farming. Therefore it is absolutely imperative that consumers, farmers, and policymakers apply ethics to prevent the inhumane treatment of these animals.

It is evident that humans perceive non-human animals as almost either a source of nutritional food, entertainment, and of other means, which often leads to the mistreatment of non-human animals. Because the attitude towards other animals is so deeply rooted in civilization culture and history, individuals have accustomed to distinguishing other animals as a mere source to our disposal. In the scope of animal rights, we review the meaning of moral standing, which is the interest or well-being of certain things or beings.⁸¹ Stakeholders must positively weigh in deciding what is permissible to do on a moral extension to non-human animals, which are both indirect and direct towards animals. In applying a moral

extension, the notions of animal welfare and animal rights can lead to practical and progressive results, however due to *homo sapiens* dominance and power complex of wanting dominion, this often leads to controversy and debate.

Moreover, humans dominate the earth and treat others as mere objects, with only interest for themselves. This is known as speciesism, a prejudice and bias assumption for human species to dominate others. Because animals embody the mysteries, which their psychological centers uniquely stand on their own, humans who have power have exploited and mistreated them.⁸² The strong has therefore exploited the weak, meaning humans decide when, how, and where non-human animals will succumb to their death.

To acknowledge humans' handle that inflict so much pain and misery on the innocent and helpless cows without any hesitation is very disturbing. Non-human animals do not need human interaction in order to survive, however it seems that humans rely heavily on animals to function, and to please their needs and desires. In this reliance, humans have gained all power and have thus resulted to severe treatment, which cows in the dairy farm are bred for the sole purpose to be used and killed. While they do not have a spoken language that we can understand, non-human animals are not too different from animals.⁸³ Non-human animals are living beings with a beating heart and self-aware conscious, they live in the same ecosystems, and more importantly, they have feelings and thoughts. Therefore it is only right that we extend a moral standing to non-human animals, and that all those involved in the dairy industry have a duty to the welfare of them.

In dealing with moral and ethics, we will explore the animal ethics of Donald VanDeVeer, an American philosopher. VanDeVeer argues that humans are moral agents that have a duty not to cause suffering to those animals that can suffer, and a duty not to cause animals to die.⁸⁴ In VanDeVeer's animal rights ethic, he suggests that in dealing with an ethical conflict, both interest of sentient being and degree of sentience must be foremost considered. He then provides several rules and policy reforms to obtain the upmost attitude of non-human animals and in handling with conflicts. In his suggestion, he does not call for an extreme abolishment of certain practices but rather a reform.⁸⁵ Rather, his approach allows for critical analysis in finding a solution without completely oppressing the interests of both non-human animals and humans. Rather than eliminating animals in commercial agriculture, VanDeVeer suggest to reform farming of animals away from factory farming to traditional small-scale organic, humane farming. VanDeVeer's animal ethic is an example of the dairy business can still persist without compromising.

Conclusion & Policy Proposal

Since the 1970s, efforts to modernize the dairy farm with technological innovations have proceeded at a rapid pace. Dairy farmers manipulate the bodies of dairy cows and the farm landscape in evermore complex ways.⁸⁶ The technology seeks to eliminate the inefficiencies in an effort to increase the quantity of milk produced. In that context, quality has taken a backseat and so has the health of the cows. However, milk maintained its status in the popular image as an essential "natural" and "perfect" food. By the 1980s, American consumers were accustomed

to eating a host of foods bearing long ingredient labels, enticing individuals to pursue other alternatives for food including dairy.⁸⁷

In proposing a policy, I would suggest that food and agricultural politics should exhibit more transparency. Meaning, industry leaders should not be able to influence our foods. It is evident that many companies are motivated by their own agenda and capital investment, in many cases this is done unethically and without regard of safety and health of their consumers. These conventions explain the plethora of highly processed foods, teemed with sugar, fats, and oils. Therefore, the process of what and how our food is produced, processed, and distributed should exemplify what is truly pure and natural for our bodies.

The presence of dairy and its' nutritional value is supported by government claims in the daily recommendations in a healthy diet, in addition to approval of controversial and conflicting methods of production. In the modern day of milk processing, pasteurization, sterilization, and ultra-high temperature treatment of milk have all been made common and a legal obligation to ensure public safety of consumption. However, these effects of heat treatment are known to degrade nutritional significance, compared to the once ubiquitous form of raw milk. The form of raw milk itself, which is milk not treated and processed with heat contains all the minerals for optimal health, as well as enzymes. Enzymes are compounds essential to life and play numerous roles including protection from pathogen, support of the immune system, easy digestion and enhanced nutrient assimilation.⁸⁸ Enzymes are vital and are destroyed by heat.⁸⁹ As a result of the common

occurrence of individual's unable to ingest treated and processed milk, there has been a growing trend in consuming raw milk.

While government officials have painted raw milk as a dangerous product of pathogenic bacteria, great deal of evidence reveal the beneficial bacteria in raw milk for our digestive tracts. However, raw milk sector has faced many obstacles from the government because of its' investment in the dairy industry that includes, production, processing, and retail. As a policy proposal, consumers should be able to constitute what they believe to be healthy, and that includes raw milk. Moreover, government officials should not harass producers of raw milk that practice traditional grass-fed tactics.

Lastly, I propose that commercial factory farming should be abolished, including the controversial practices of using bovine growth hormones, pesticides, and antibiotics. Dairies should reverted back to the traditional practices of small-scale, natural dairy farming. In doing so, it would eliminate the cruel and inhumane treatment and conditions of cows. Furthermore rather than penalizing the small-scale dairy farms, government authorities should punish the large commercial dairy farmers that exercise these highly controversial methods.

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