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Animal Welfare is a Major Public Health Concern

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I. Introduction

The most common goal of public health is the promotion of the population's health.¹ In promoting the population's health, one of the major areas of concern is human consumption. There is a popular saying that, "we are what we eat." Some may argue that this saying does not hold true because we do not in fact resemble what we eat, *e.g.* people are not turning into hamburgers or vegetables. However, our homes are made from lumber without looking like trees, the same way our bodies are made from nutrients and whatever else is in our foods without resembling those foods.² The use of animals as sources of foods in human diets goes back at least 5 million years.³ Animal sources of food include meat, milk, eggs, cheese and yogurt, basically foods that come from animals.⁴ In 2015, Americans consumed 53.9 pounds of beef, 51.0 pounds of pork and 106.0 pounds of poultry per capita.⁵ As a result of American's high meat consumption, animals deserve an equally high level of importance for public health purposes.

¹ Christian Munthe, *Public Health Ethics*, 1 Oxford Journal 39, 40 (2008).

² Nancy Darche, *Mom Was Right: We are What We Eat*, NBCNews.com, http://www.nbcnews.com/id/35350889/ns/health-diet_and_nutrition/t/mom-was-right-you-are-what-you-eat/#.WFL9WFMrK70 (last visited December 11, 2016).

³ Clark Spencer Larsen, 133 *Animal Sources Foods to Improve Micronutrient Nutrition and Human Function in Developing Countries* 3893S, 3893S (2203).

⁴ Wikipedia, The Free Encyclopedia, Animal Source Foods, https://en.wikipedia.org/wiki/Animal_source_foods (last visited December 11, 2016).

⁵ Per Capita Consumption of Poultry and Livestock, 1965 to Estimated 2016, in Pounds, 2016, National Chicken Council (2016). <http://www.nationalchickencouncil.org/about-the-industry/statistics/per-capita-consumption-of-poultry-and-livestock-1965-to-estimated-2012-in-pounds/> (last visited December 13, 2016)

Imagine waiting in line, knowing that you are going to be killed. Imagine seeing your friends ahead of you in line, being killed right before your eyes. You feel your heartbeat running. You are sweating profusely and you cannot move. This may sound like a horror film, but it is the reality for millions of animals that are slaughtered for food on a daily basis around the world.⁶ These animals are the same animals we are consuming for survival. But why should we care about the way these animals are slaughtered? After all, these animals are being slaughtered for human sustainability and human life is far more precious than any animal, right? We should care because “we are what we eat.” We should care because we are filling our bodies with animals that provide not only nutrients but also other elements that may be damaging to our bodies. Whether you are an animal lover or not and whether you care for farming practices or not, the truth is that the way farm animals are being treated is vital to our existence.

This paper is about the connection between the treatment of animals and public health. Specifically, this paper focuses on the treatment of farm animals. The treatment of animals in general has long been a controversy. Animals have been worshipped as Gods, used as domestic pets, used for consumption, used for experiments, etc. Despite the controversy of how people view animals, animals are essential to our existence. Humans have been consuming animals for

⁶ The site “adapt.org” has statistics about animals that are killed worldwide by the meat, egg, and dairy industries. The statistics begin from updating from the moment you open the web page. The numbers do not include animals killed each year in vivisection laboratories. They do not include dogs and cats killed at shelters. They do not include animals who died while held at circuses, rodeos, zoos, and marine parks. They do not include animals killed in blood sports such as bullfighting, cockfighting, dogfighting and bear-baiting and they not include horses or greyhounds killed after they were no longer suitable for racing.

Adaptt, <http://www.adaptt.org/killcounter.html> (last visited October 1, 2016).

millions of years.⁷ A demand for meat and other animal source foods has led to the mass production of farm animals.⁸

Originally, farming was a family affair. There were many families who raised animals on their land for their own consumption. "...[A]nimals grazed on pasture, breathed fresh air, and felt sunshine on their backs."⁹ This is not the case anymore. Animals do not have access to pasture, or even the outdoors. Poor animal welfare is increasing as agricultural practices have changed to satisfy the demands of industrial farming. Animals are treated as products by industrialized facilities.¹⁰ In factory farms, animals are confined "in such tight quarters that they can barely move, let alone behave normally."¹¹ This is not only cruel to animals but also dangerous. Poor animal welfare has devastating consequences to humanity's existence.¹²

Currently there is a population of 7 billion people¹³ worldwide and that has led to a greater demand for the production of livestock. As a consequence, factory farming has increased. How can the world sustain the food production for 7 billion people? Today, U.S. livestock production relies heavily on antibiotics, hormones and poor animal welfare. Factory farming relies on hormones and antibiotics to make animals produce more food at a faster rate.¹⁴ Factory farming also relies on hormones and antibiotics to prevent illnesses caused by current farming

⁷ See Larsen, *supra* note 3.

⁸ *Id.*

⁹ Animal welfare Institute, <https://awionline.org> (last visited October 7, 2016).

¹⁰ *Id.*

¹¹ *Id.*

¹² Strategic Plan 2013-2017: For Kinder, Fairer Farming Worldwide, (2011). https://www.ciwf.org.uk/media/3640540/ciwf_strategic_plan_20132017.pdf

¹³ *Id.*

¹⁴ *Id.*

techniques.¹⁵ In order for factory farms to have the space to accommodate all of the animals that are producing more food, more frequently, they have no choice but to confine these animals in very small areas. This is the perfect environment for disease to spread.

Over 99% of farm animals in the U.S. are raised in factory farms, which focus on profit and efficiency at the expense of animal welfare.¹⁶ The meat and poultry industry is the largest segment of U.S. agriculture.¹⁷ Total meat and poultry production in 2012 reached more than 93 billion pounds.¹⁸ There are 6,278 federally inspected meat and poultry slaughtering and processing plants in the U.S.¹⁹ In 2013, more than 482,100 workers were employed in the meat and poultry packing and processing industries. Their combined salaries total more than \$19 billion.²⁰ The consumption of meat and poultry generates \$2.4 billion in state sales taxes.²¹ In 2013, meat and poultry industry sales totaled \$198 billion. Companies involved in meat production, along with their suppliers, distributors, retailers and ancillary industries employ 6.2 million people in the U.S. with jobs that total \$200 billion in wages.²² Through direct taxes paid, these companies and their employees provide \$81.2 billion in revenues to federal, state and local governments.²³ These statistics demonstrate that power of the agricultural industry.

The massive industrialization of farming has lead to extreme cruelty to animals. Farm animals are “crammed by the thousands into filthy, windowless sheds and stuffed into wire

¹⁵ *Id.*

¹⁶ <http://www.asPCA.org/animal-cruelty/farm-animal-welfare>

¹⁷ North America Meat Institute, <https://www.meatinstitute.org/index.php?ht=d/sp/i/47465/pid/47465>

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ *Id.*

cages, metal crates, and other torturous devices.”²⁴ These animals will never raise their families, root around in the soil, build nests, or do anything that is natural and important to them.²⁵ Most won’t even “feel the warmth of the sun on their backs or breathe fresh air until the day they’re loaded onto trucks headed for slaughterhouses.”²⁶ This is an unfortunate reality that needs to be known by everyone around the world, specially meat and poultry consumers. Many people are not aware of these cruel practices. Once people become aware of these practices they will also inevitably become aware of the health consequences.

It is no secret that scientists and the public have been concerned about the problem of antibiotic resistance.²⁷ Through repeated exposure to antibiotics, strains of bacteria develop resistance or immunity to particular antibiotics.²⁸ Such resistance presents a serious threat to human health.²⁹ Infections in humans caused by antibiotic resistant bacteria result, on average, in longer hospital stays, worse side effects of treatment, and a greater likelihood of death.³⁰ In an effort to minimize the development of antibiotic resistant strains of bacteria, doctors limit themselves in prescribing antibiotics and are careful to direct patients to use antibiotics only as prescribed.³¹

²⁴ Factory Farming: Misery for Animals, <http://www.peta.org/issues/animals-used-for-food/factory-farming/> (last visited October 9, 2016).

²⁵ *Id.*

²⁶ *Id.*

²⁷ Natural Resources Defense Council, <https://www.nrdc.org> (last visited October 26, 2016).

²⁸ *Id.*

²⁹ Antibiotic/Antibiotic Resistance, CDC. <https://www.cdc.gov/drugresistance/> (last visited October 26, 2016)

³⁰ *Id.*

³¹ *Id.*

For each dose of antibiotics given to humans for medical purposes, four doses are given to livestock for non-medical reasons to encourage faster growth.³² Research shows that bacteria that develop resistance to antibiotics used in animal feed can transfer to human beings and pose a risk to human health.³³

In addition to antibiotic resistance, there are other issues connecting animal farming to public health. One is the issue of hormones administered to cows to increase milk production resulting in an increased use of antibiotics and thus anti-biotic resistance. Another issue is contamination in the transportation of animals to slaughterhouses, which leads to salmonella transmission to humans. This paper will shed some light on the Federal Regulations that cover farm animals and agricultural activities. It will then expose some of the practices used by factory farming and how they have a direct impact on public health. Finally it will provide some suggestions that should be considered to remediate the damage already done.

II Regulations

FDA and USDA

The Food and Drug administration (“FDA”) and the United States Department of Agriculture (“USDA”) are the primary authorities that oversee the United States food supply.

³² Natural Resources Defense Council v. FDA, 710 F.3d 71 (2d Cir.2013).

³³ *Id.*

The FDA oversees more than eighty percent of the American food supply³⁴by regulating food, except for meat, poultry and eggs. The USDA regulates meat, poultry, and eggs.

The USDA has 29 agencies and several offices within its department.³⁵ Among those agencies is the Food Safety and Inspection Service (“FSIS”), which is the agency responsible for ensuring the safety of the nation’s commercial supply of meat, poultry, and egg products.³⁶ FSIS specifically ensures that the commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled as required by the Federal Meat Inspection Act (“FMIA”), the Poultry Products Inspection Act (“PPIA”), and the Egg Products Inspection Act (“EPIA”).³⁷

The Humane Methods of Slaughtering Act

The Humane Methods of Slaughtering Act (“HMSA”) only regulates slaughter practices.³⁸ HMSA does not protect poultry, which represents “90% of animals killed for food.”³⁹ As a result, our federal laws provide no protections against animal cruelty on the factory farm, even though “farmed animals represent a staggering 98% of domesticated animals in the country.”⁴⁰

³⁴ Lincoln Cohoon, *New Food Regulations: Safer Products or More Red Tape?*, 6 J. Health & Biomed. L. 343, 347

³⁵ United States Department of Agriculture, USDA (2016). (http://www.usda.gov/wps/portal/usda/usdahome?navid=ABOUT_USDA (last visited December 15, 2016).

³⁶ *Id.*

³⁷ *Id.*

³⁸ Tara Heinzen and Abel Russ, *Using Emerging Pollution Tracking Methods to Address the Downstream Impacts of Factory Farm Animal Welfare Abuse*, 31 Pace L. Rev. 475, 475-476 (2014).

³⁹ Dena Jones, *Poultry Industry Misleads the Public About the Humaneness of Slaughter*, (2015). (<http://www.foodsafetynews.com/2015/04/poultry-industry-misleads-the-public-about-the-humaneness-of-slaughter/#.WFNoWM4irzI> (last visited October 28, 2016).

⁴⁰ *See* Heinzen, *supra* note 38.

HMSA was originally passed in 1978 with the intention of preventing animal cruelty.⁴¹ Today, the statute specifically requires that animals be rendered unconscious prior to slaughter.⁴² The statute states “in the case of cattle, calves, horses, mules, sheep, swine, and other livestock, all animals are rendered insensible to pain by a single blow or gunshot or an electrical, chemical, or other means that is rapid and effective, before being shackled, hoisted, thrown, cast, or cut.”⁴³ Not on this list are chickens, turkeys, rabbits, fish, and bison “all animals which are raised and slaughtered for food in the U.S.”⁴⁴ The Poultry Production Inspection Act (“PPIA”) pertains to the slaughter and inspection of poultry, but it states nothing about a humane slaughter.⁴⁵ It is clear that HMSA as it stands today, lacks authority as it cannot protect Poultry even though, chickens and turkeys represent 99% of animals slaughtered for food in the United States.⁴⁶

Stress before slaughter affects the microbiological contamination in live animals by influencing the meat quality, which may result in a more contaminated cadaver.⁴⁷ Pigs should be properly prepared before slaughter and that includes withholding feed for 16 to 24 hours before slaughter. Withholding the feed usually results in less contamination of the body with Salmonella.”⁴⁸ In comparison to pigs not subject to transport, “an increase of Salmonella Typhimurium DT-104 shedding rate was observed when pigs were transported; shedding of the

⁴¹ Humane Methods of Slaughter Act of 1978, 7 U.S.C. § 1901 *et seq.* (1978).

⁴² *Id.*

⁴³ 7 U.S.C. § 1902(a).

⁴⁴ *Id.*

⁴⁵ Poultry Products Inspection Act, 21 U.S.C. § 451 *et seq.* (1957).

⁴⁶ Note: The organization Free from Harm is a 501c3 non profit dedicated to farmed animal education and advocacy. Freefromharm.org. (last visited on November 4, 2016).

⁴⁷ Gary C. Smith, *Effect of Transport on Meat Quality and Animal Welfare of Cattle, Pigs, Sheep, Horses, Deer, and Poultry*, (2004). <http://www.grandin.com/behaviour/effect.of.transport.html> (Last visited November 29, 2016).

⁴⁸ *Id.*

organism was observed in 92% of the transported, and 58% of the untransported, pigs.”⁴⁹ In addition to the increased shedding, animals subject to transportation had increased diarrhea and developed an agitated general demeanor.⁵⁰

Salmonellosis is an infection that occurs when a susceptible animal ingests the bacteria.⁵¹ When dairy cattle ingest feed or water that has been contaminated with feces from animals shedding the organism they very likely become infected with salmonella.⁵² Salmonellosis has a wide spectrum of manifestations in cattle. Asymptomatic, mild clinical or fulminant bacteremia/septicemia and endotoxemic infections can occur.⁵³ The manifestations vary with “virulence of the strain, infectious dose, and immunity of the host.”⁵⁴ For many animals, salmonellosis is an opportunistic infection.⁵⁵ Since *Salmonella* can cross from one species to another, other potential animal sources include dogs, birds, cats, people and pigs.⁵⁶

The Twenty-Eight Hour Law

The Federal government regulates the feeding, watering, and resting of stock in interstate transportation through its Twenty Eight-Hour Law (“28-hour Law”). The 28-hour Law first appeared in 1873.⁵⁷ The Act was seen as “an advancement in the development of human

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Salmonellosis*, The Center for Food Security and Public Health, http://www.cfsph.iastate.edu/FastFacts/pdfs/nontyphoidal_salmonellosis_F.pdf. (last visited Nov. 25, 2016).

⁵² Sheila M. McGuirk and Simon Peek, *Salmonellosis in Cattle*, (2003). <https://www.vetmed.wisc.edu/dms/fapm/fapmtools/7health/Salmorev.pdf> (last visited on December 1, 2016).

⁵³ *Id.*

⁵⁴ *See* Smith, *supra* Note 47.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Legal Protections for Farm Animals*, Animal Welfare Institute (2016). (last visited December 1, 2016).

standards for the transportation of cattle, sheep and swine.”⁵⁸ The present 28-hour law was enacted in 1906 and states that,

A carrier, or an owner or master of a vessel transporting animals from a place in a state, the District of Columbia, or a territory or possession of the United States to another state, the District of Columbia, or a territory or possession may not confine animals in a vehicle or vessel for more than twenty-eight consecutive hours without unloading the animals for feeding, water, and rest.”⁵⁹

This means that the Act only concerns interstate commerce and does not concern animals transported within state.⁶⁰

The 28-hour law also specifies that animals being transported “must be unloaded in a humane way into pens equipped for feeding, water, and rest for at least five consecutive hours.”⁶¹ Nonetheless, the 28 hour period is subject to several exceptions. For example, allowing extra confinement for sheep and extra confinement for other animals “if the animals cannot be loaded because of accidental or unavoidable causes that could not have been anticipated or avoided when being careful.”⁶² Additionally, an owner or “person having custody of the animals”⁶³ may request an extension to thirty six hours.

In the summertime, when it’s 90, 95 degrees, they’re transporting cattle from 1,200 to 1,500 miles away on a trailer, 40 to 45 head crammed in there [In the winter],

⁵⁸ *Id.*

⁵⁹ 49 USC, Section 80502 (a) (1).

⁶⁰ *Id.*

⁶¹ 49 USC, Section 80502 (b).

⁶² *Id.*

⁶³ *Id.*

can you imagine if you were in the back of a trailer that's open and the wind-chill factor is minus 50 degrees, and that trailer is going 50 to 60 miles an hour? The animals are urinating and defecating right in the trailers, and after a while, it's going to freeze, and their hooves are right in it. If they go down—well, you can imagine lying in there for 10 hours on a trip.

—Former U.S. Department of Agriculture (USDA) veterinary inspector Dr. Lester Friedlander⁶⁴

According to the Food and Agricultural Organization (“FAO”), the transportation of livestock is “the most stressful and injurious stage in the chain of operations between farm and slaughterhouse.”⁶⁵ The stress of prolonged transport increases a healthy animal’s susceptibility to infection.⁶⁶ If animals develop infections during the period of transport, they will be slaughtered for consumption without treatment. This could lead to an infection, such as salmonella, being passed on from the animal to humans.

The 28-hour law is very limited. It only places a time limit within which livestock must be watered, fed, and rested and it does not apply to instate transport. The statute also does not apply when animals are transported in a vehicle or vessel in which the animals have food, water, space, and an opportunity for rest.⁶⁷ This allows many farmers to transport animals for many hours, without allowing the animal to truly rest. It also allows for many animals to go without food and water for extended periods of time, as for example, a farmer may place food and water

⁶⁴ Cow Transport and Slaughter (2016) <http://www.peta.org/issues/animals-used-for-food/factory-farming/cows/cow-transport-slaughter/> (last visited on December 1, 2016).

⁶⁵ Michael Greger, *The Long Haul: Risks Associated with Livestock Transport*. (2007) <http://www.hsi.org/assets/pdfs/the-long-haul.pdf> (last visited on December 1, 2016).

⁶⁶ *Id.*

⁶⁷ *Id.*

at the beginning of a trip and then travel for many hours without checking to see if the food and water have run out. The object of the statute is to prohibit the confinement of animals longer than the time specified but there is no real proof that the law is being enforced or that farmers are actually complying with the rule.

Although the statute does provide for penalties for violations, these penalties are barely enforced.⁶⁸ “A knowing and willful failure to comply with these statutory mandates subjects the carrier to a civil penalty.”⁶⁹ In 2005, animal advocacy groups investigated the 28-hour law, specifically the cases and situations where penalties and enforcement was necessary.⁷⁰ “The group found no reported USDA administrative decision involving the twenty-eight hour law from 1997 onward, and no reported federal cases involving the enforcement of the law going back forty years (between 1960 and 2005).”⁷¹ This finding is evidence that the 28-hour law is rarely enforced.

III Hormones

Recombinant Growth Hormone

According to the American Cancer Society, recombinant Bovine Growth Hormone (rBGH) is a “synthetic (man-made) hormone that is marketed to dairy farmers to increase milk

⁶⁸ *Supra* note 57.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

production in cows.⁷² It has been used in the United States since it was approved by the Food and Drug Administration (FDA) in 1993⁷³, “but its use is not permitted in the European Union, Canada, Australia, Japan, New Zealand and Israel.”⁷⁴

Since rBGH was approved, farmers have used it to increase milk production in dairy cows. When a cow is administered rBGH, their milk production is stimulated by “increasing levels of another hormone known as insulin-like growth factor (IGF-1).”⁷⁵ Several studies have found that an increase of IGF-1 levels “may influence the development of certain tumors.”⁷⁶ Other studies found a relationship between blood levels of IGF-1 and the development of “prostate, breast, colorectal, and other cancers.”⁷⁷ The American Cancer Society acknowledges these concerns and potential links to cancer, but fails to give a conclusive answer. “At this time, it is not clear that drinking milk, produced with or without rBGH treatment, increases blood IGF-1 levels into a range that might be of concern regarding cancer risk or other health effects.”⁷⁸

⁷² Recombinant bovine growth hormone (rBGH) is bovine growth hormone that is made in a lab using genetic technology. rBGH is given to cattle. Bovine growth hormone (BGH) is the natural form of this hormone found in cattle. The human form of growth hormone is called somatotropin.

American Cancer Society,

<http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/recombinant-bovine-growth-hormone>

⁷³ *Id.*

⁷⁴ Food Safety: From the Farm to the Fork. Report on Public Health Aspects of the Use of Bovine Somatotrophin – (2007).

https://www.foodandwaterwatch.org/sites/default/files/rbgh_what_research_shows_fs_aug_2007.pdf (last visited November 20, 2016)

⁷⁵ Recombinant Bovine Growth Hormone, American Cancer Society (2014)

<http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/recombinant-bovine-growth-hormone>. (last visited on November 1, 2016).

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

Another concern about rBGH is that cows that are given the hormone are more likely to develop mastitis, which is “an inflammation and infection of mammary tissue.”⁷⁹ This seems logical considering the increase in the production of milk. Mastitis is painful to cows. “Cows with mild or moderate mastitis cases had significant larger hock to hock distances during walking⁸⁰ compared to cows that were healthy. Other results showed “moderate clinical mastitis cases had significant higher heart rates, rectal temperatures and respiratory rates when compared to other normal cows.”⁸¹ Cows suffering from mastitis will require antibiotic treatment.

To put things into perspective, consider the following statistics. The “percentage of cows receiving bST increased from 9.4% in 1996 to 15.2% in 2002... Percentage of cows treated with bST also increased from 10.1% in 1996 to 22.3% in 2002.”⁸² “The FDA notes that the number of cows afflicted increased between 2002 and 2007, even though the number of cows that were administered rBST decreased in that time.”⁸³ Relying on this data, the FDA concluded that the mastitis was likely not caused by rBGH, and that “[a] more likely relationship might be found

⁷⁹ 8 Shocking Facts about Bovine Growth Hormone, GHC (2016) <http://www.globalhealingcenter.com/natural-health/8-shocking-facts-bovine-growth-hormone/#4> (last visited on November 15, 2016).

⁸⁰ Ken Leslie, Camilla Kielland, Suzanne Millman and Julie Baillargeon. *Research Scientists Have Learned How Cows React to pain Caused by Mastitis Infections and Why We Need New Treatment Protocols*, (2010). http://www.medvet.umontreal.ca/rcrmb/dynamiques/PDF_AN/Mastitis_Column/PainRelief102010.pdf. (last visited on November 8, 2016).

⁸¹ *Id.*

⁸² Note that Bovine Somatotropine (bST) is a formulation of recombinant bovine growth hormone also known as rBGH. For consistency, this paper uses rBGH, but when citing Sechen et al, it is referred to as (bST).

Suzanne J. Sechen et al., *Bovine Somatotropin (bST)-- Possible Increased Use of Antibiotics to Treat Mastitis in Cows*, 1 (2013). <http://www.fda.gov/downloads/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/UCM383073.pdf>. (last visited on December 15, 2016).

⁸³ Note that rBST is also known as rBGH. Christine Donovan, *If FDA Does Not Regulate Food, Who Will?* 23 American Journal of Law and Medicine, 25-28 (2014).

with the increased annual yield of milk per cow each year.”⁸⁴ Despite this conclusion by the FDA, the hormone “may still be indirectly responsible for the affliction, by spurring an increase in milk production.”⁸⁵

Although The American Cancer Society makes clear that the consequences of rBGH use in cows are inconclusive we cannot ignore the consequences of the use of antibiotics. “When a cow develops mastitis, she will likely be treated with antibiotics.”⁸⁶ About 90% of cows afflicted with clinical mastitis were treated with antibiotics in 2002 and 2007.⁸⁷ In its summary of rBGH article, the American Cancer Society states the following, “[t]he increased use of antibiotics to treat rBGH-induced mastitis does promote the development of antibiotic-resistant bacteria, but the extent to which these are transmitted to humans is unclear.”⁸⁸

IV Antibiotics

Antibiotics are used in farming for several reasons. The number one reason given by the farming industry is to prevent disease contamination from meat and poultry to humans.⁸⁹ The Animal Health Institute states on their website that “animal antibiotics make our food supply safer and healthier.”⁹⁰ The Animal Health Institute further states that antibiotics “reduce the chance of bacteria transmission from animals to humans.”⁹¹ With this being said, there are other reasons behind antibiotic use. Farmers discovered many decades ago that feeding antibiotics to

⁸⁴ See Sechen, *supra* note 82.

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *supra* notes 75.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

animals would make these animals gain as much as 3 percent more weight than they would without antibiotics.⁹²

CAFOs and AFOS

Another reason why antibiotics are given to farm animals is that the increase in industrialized farming has made antibiotics necessary. Industrialized farming uses Animal Feeding Operations (AFOs) and Confined Animal Feeding Operations (CAFOs). The U.S. Environmental Protection Agency (EPA) defines AFO as “agricultural enterprises where animals are kept and raised in confined situations. AFOs congregate animals, feed, manure and urine, dead animals, and production operations on a small land area. Feed is brought to the animals rather than the animals grazing or otherwise seeking feed in pastures, fields, or on rangeland.”⁹³ The EPA defines CAFO as “an AFO with more than 1000 animal units confined on site for more than 45 days during the year. Any size AFO that discharges manure or wastewater into a natural or man-made ditch, stream or other waterway is defined as a CAFO, regardless of size.”⁹⁴ CAFOs are regulated by EPA under the Clean Water Act in both the 2003 and 2008 versions of

⁹² Antibiotic Debate Overview, PBS.
<http://www.pbs.org/wgbh/pages/frontline/shows/meat/safe/overview.html> (last visited November 20, 2016).

⁹³ Animal Feeding Operations, USDA (2016).
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/livestock/afo/> (last visited November 5, 2016).

⁹⁴ *Id.*

the "CAFO" rule."⁹⁵ Up to ninety-nine point nine percent of the chicken and seventy-eight percent of the beef Americans consume comes from CAFOs.⁹⁶

The main concern regarding antibiotic use in farming is that it facilitates antibiotic resistance.⁹⁷ Antibiotics are given to farmed animals through their food and water on a regular basis.⁹⁸ Public health organizations around the world consider antibiotic-resistant bacteria a major threat to public health.⁹⁹ The World Health Organization (WHO) states that antibiotics are “critically important for the treatment of serious human infections.”¹⁰⁰ “Because some of the antibiotics used to treat human infections are the same as those used to treat disease in animals, if antibiotics cease to treat a disease in animals, they may fail to treat the disease in humans as well.”¹⁰¹

When an animal is treated with an antibiotic for an extended period of time, eventually it develops bacteria that becomes immune to that antibiotic.¹⁰² If, for example a consumer “ingests the resistant bacteria through improperly cooked meat and becomes ill, the person may not

⁹⁵ Note that “(an animal unit is defined as an animal equivalent of 1000 pounds live weight and equates to 1000 head of beef cattle, 700 dairy cows, 2500 swine weighing more than 55 lbs, 125 thousand broiler chickens, or 82 thousand laying hens or pullets)” *Id.*

⁹⁶ Food & Water Watch, *Factory Farm Nation: How America Turned Its Livestock Farms into Factories* (2010), <http://www.factoryfarmmap.org/wp-content/uploads/2010/11/FactoryFarmNation-web.pdf>. (last visited on November 25, 2016).

⁹⁷ *Id.*

⁹⁸ U.S. Food & Drug Admin., *Phasing out Certain Antibiotic Use in Farm Animals 1* (2013), available at <http://www.fda.gov/downloads/ForConsumers/ConsumerUpdates/UCM378197.pdf>.

⁹⁹ Press Release, European Food Safety Auth., *Antimicrobial Resistance Remains Commonly Detected in Bacteria in Humans, Animals and Food: ESFA -ECDC Report* (Mar. 25, 2014) (on file with author), available at <http://www.efsa.europa.eu/en/press/news/140325.htm>.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *supra note 92.*

respond to antibiotic treatment.¹⁰³ When antibiotics do not work the consequences can be devastating including “longer illness; more complicated illnesses; more doctor visits; the use of stronger and more expensive drugs; and death.”¹⁰⁴

Just like studies related to rBGH, studies directly linking antibiotic used in farm animals and antibiotic resistance in humans have not been conclusive.¹⁰⁵ The New England Journal of Medicine reported finding “links that strongly suggested that the people who developed Cipro-resistant bacteria had acquired them by eating pork that were contaminated with salmonella. The report concluded that salmonella resistant to the antibiotic flouroquine can be spread from swine to humans, and, therefore, the use of flouroquinolones in food animals should be prohibited.”¹⁰⁶

Another New England Journal of Medicine from 2001 found antibiotic resistant agents in meat. This study was conducted by buying two hundred samples of ground meat from different supermarkets. “...51 samples of chicken, 50 of beef, 50 of turkey, and 49 of pork were purchased at three retail stores representing three supermarket chains in the greater Washington, D.C., area between June and September 1998.”¹⁰⁷ The study found that “eighty-four percent of isolates (38 of 45) displayed resistance to at least one antibiotic, and 53 percent (24 of 45) displayed

¹⁰³ *Id.*

¹⁰⁴ Combating Antibiotic Resistance, USDA (2016).

<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm092810.htm#public>. (last visited on November 20, 2016).

¹⁰⁵ *Id.*

¹⁰⁶ *supra* note 92.

¹⁰⁷ *Id.*

resistance to at least three antibiotics. Among multidrug-resistant isolates, resistance to streptomycin, sulfamethoxazole, and tetracycline was most often observed.”¹⁰⁸

The United States Centers for Disease Control and Prevention (CDC) states each year in the United States, “at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 die each year as a direct result of these infections.”¹⁰⁹ The awareness of the danger of antibiotic misuse has led many organizations to work together to address the problem. In 2014 the FDA began working with USDA and CDC to explore mechanisms for gathering representative antibiotic use information for food producing animals.¹¹⁰

In 2015, the FDA issued the Veterinary Feed Directive (“VFD”) final rule.¹¹¹ The VFD lays out what veterinarians must do when authorizing the use of these products in feed to protect the animals they serve. This is another element to FDA’s overall judicious use strategy, one that recognizes the important role that veterinarians fulfill as guardians of animal health and preservers of judicious use of medically important antimicrobials.¹¹²

¹⁰⁸ David G. White, Ph.D., et al., *The Isolation of Antibiotic-Resistant Salmonella from Retail Ground Meats*. N Engl J Med 2001; 345:1147-1154 (2011).

¹⁰⁹ <http://www.cdc.gov/drugresistance/index.html>

¹¹⁰ Timeline of FDA Action on Antimicrobial Resistance, FDA (2016). <http://www.fda.gov/AnimalVeterinary/SafetyHealth/AntimicrobialResistance/ucm438426.htm>. (last visited on December 15, 2016).

¹¹¹ *Id.*

¹¹² *Id.*

The VFD rule above has made the use of antibiotics in farm animals strictly under veterinary supervision. The purpose is to control the use of antibiotics and for antibiotics to be used “only when necessary to assure animal health.”¹¹³ Many believe this is a step in the right direction, and it is a good effort to address antibiotic resistance, but lack of antibiotic use on farm animals is going to lead to other diseases.¹¹⁴ Animals are confined in very small spaces and thus subject to contamination; animals will need antibiotics to treat illnesses.¹¹⁵

The Animal Health Institute (“AHI”) publicly supports the use of antibiotics by the farming industry. In fact, AHI stands by the theory that banning the use of antibiotics in food animals will not make humans safer and healthier.¹¹⁶ To support the theory, AHI explains that this theory was tested in Denmark and an actual ban on antibiotics used in feed in 1999 resulted in an “increase in sick and dead animals that caused antibiotics to treat the outbreak.”¹¹⁷

There is progress being made in regards to the awareness of the issue of antibiotics in farm animals, such that farmers have started reducing the quantities of antibiotics given to animals.¹¹⁸ However, at this point, it is becoming clear that antibiotics are not the problem. Antibiotics seem to be more the response or a way to treat the problem. The problem lies in the

¹¹³ *Id.*

¹¹⁴ C. Lee Ventola, *The Antibiotic Resistance Crisis: Causes and Threats*, 40 *Pharmacy and Therapeutics* 277, 283 (2015).

¹¹⁵ *Id.*

¹¹⁶ *Animal Antibiotics: Keeping Animals Healthy and our Food Safe*, Animal Health Institute, (2016). <http://www.ahi.org/Files/Resources/AHI%20Antibiotics%20Brochure%20FINAL.pdf>. (last visited on December 15, 2016).

¹¹⁷ *Id.*

¹¹⁸ David Kesmodel et al., *Meat Companies Go Antibiotics-Free as More Consumers Demand It*, *Wall St. J.* (Nov. 3, 2014), <http://online.wsj.com/articles/meat-companies-go-antibiotics-free-as-more-consumers-demandit-1415071802>. (last visited on December 1, 2016).

horrible conditions factory farming is subjecting animals to. It is those horrible conditions that are causing the contamination, the illness and the need for antibiotics.

V USDA and FDA Involvement in Hormones and Antibiotics

In the last decade, the FDA has been phasing in limits on the use of antibiotics in feed given to animals raised for human consumption. This affects only the kinds of antibiotics that are also used to treat humans. On Jan. 1, six classes of drugs will be restricted to veterinarian oversight. The rule affects feed and over-the-counter antibiotics for cattle, swine, poultry, goats and sheep.¹¹⁹

The authority between the FDA and USDA has caused confusion. USDA regulates meat and eggs, while FDA regulates most other foods. “Such division in authority creates confusion over the responsibility to regulate and monitor conditions vital to human safety.”¹²⁰ The following example illustrates the regulatory structure: “[t]he USDA ... oversees production of hot dogs in pastry dough; the FDA regulates hot dogs in rolls. The USDA regulates corn dogs; the FDA regulates bagel dogs.”¹²¹ Additionally, labeling has caused confusion and misunderstanding among the public. The USDA’s FSIS is the agency responsible for ensuring the truthfulness and accuracy in labeling meat and poultry.¹²² The Food Safety and Inspection Service (“FSIS”) has the following labels:

¹¹⁹ Lisa Scheid, *New FDA Rules will restrict access to animal feeds that contain antibiotics after Jan 1*, (November 30, 2016). <http://www.readingeagle.com/berks-country/article/new-fda-rules-will-restrict-access-to-animal-feeds-that-contain-antibiotics-after-jan-1> (last visited December 1, 2016).

¹²⁰ Marion Nestle, *Safe Food: The Politics of Food Safety* (2010). <http://www.foodpolitics.com/publications/>. (last visited on December 1, 2016).

¹²¹ *Id.*

¹²² Meat and Poultry Labeling Terms, USDA (2016). <http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/food-labeling/meat-and-poultry-labeling-terms/meat-and-poultry-labeling-terms>. (last visited on December 1, 2016).

NO HORMONES (pork or poultry):

Hormones are not allowed in raising hogs or poultry. Therefore, the claim "no hormones added" cannot be used on the labels of pork or poultry unless it is followed by a statement that says "Federal regulations prohibit the use of hormones."

NO HORMONES (beef):

The term "no hormones administered" may be approved for use on the label of beef products if sufficient documentation is provided to the Agency by the producer showing no hormones have been used in raising the animals.

NO ANTIBIOTICS (red meat and poultry):

The terms "no antibiotics added" may be used on labels for meat or poultry products if sufficient documentation is provided by the producer to the Agency demonstrating that the animals were raised without antibiotics.¹²³

The "no hormones" label means different things for different kinds of meat. The "no antibiotics" label is ambiguous as it states "...if sufficient documentation is provided by the producer..."

The FDA is responsible for approving the antibiotics and hormones used in "beef, cattle and sheep."¹²⁴ The FDA claims it approves the drugs "only after information and/or studies have

¹²³ *Id.*

¹²⁴ Steroid Hormone Implants Used for Growth in Food-Producing Animals, FDA (2016).<http://www.fda.gov/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/ucm055436.htm>. (last visited on December 1, 2016).

shown that the food from the treated animals is safe for people to eat, and the drugs do not harm the treated animal or the environment.”¹²⁵ The question is, why is the FDA approving these drugs and hormones when there is evidence linking hormone and antibiotic use to humane, animal and environmental problems?

VI The Environment

Factory farming, as illustrated above, results in animal welfare abuse and a high possibility of life threatening effects to human health through hormones and antibiotics. Another consequence of animal farming is the impact to the environment. Livestock activities have significant impact on nearly all aspects of the environment, including “air and climate change, land and soil, water and biodiversity.”¹²⁶ The only way the farm industry is able to sustain high profits and high demand for production is by having CAFOs.

CAFOs produce many toxic pollutants, including “pharmaceuticals, hormones, heavy metals, and pathogens that compromise animal welfare.”¹²⁷ In addition, the stressful and crowded confinement conditions foster disease, requiring the prophylactic use of antibiotics. The U.S. Environmental Protection Agency (EPA) estimates that animals raised in confinement in the United States produce three times the waste humans do.¹²⁸ As industrialized farming as emerged so has the waste. “Factory farm waste streams are a toxic brew of manure pollutants such as

¹²⁵ *Id.*

¹²⁶ Food and Agriculture Organization of the United Nations (2016). <http://www.fao.org/home/en/>. (last visited December 5, 2016).

¹²⁷ Tarah Heinzen, Abel Russ, *Using Emerging Pollution Tracking Methods to Address the Downstream Impacts of Factory Farm Animal Welfare*, 68 *Pace Environmental Law Review* 334, 335-338, 2014.

¹²⁸ National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65,431, 65,433 (Oct. 21, 2011)

nitrogen, phosphorus, and bacteria, as well as antibiotics and other pharmaceuticals, pathogens resistant to antibiotics, hormones, and toxic metals.”¹²⁹

Nearly 65 billion animals, including cows, chickens and pigs, are crammed into CAFO, worldwide. ¹³⁰ “When taking into consideration the scientific evidence of greenhouse gas (GHG), carbon dioxide (CO2) and also methane and nitrous oxide...by doing the accounting of the fossil fuel consumption and emissions of the entire industrial food and farming cycle...you come to the conclusion that contemporary farming is burning up our planet.”¹³¹

Globally, 14.5% of all greenhouse gas pollution can be attributed to livestock, according to the U.N. Food and Agriculture Organization, the most reputable authority on this topic.¹³² And a huge hunk of the livestock industry's role -- 65% -- comes from raising beef and dairy cattle.¹³³ Beef generates six times more greenhouse gas emissions per unit of protein than pork, chicken, and egg production.¹³⁴ A threat to the environment is a direct threat to public health.

VII Recommendations

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

¹³³ John Sutter, *Why Beef is the new SUV*, CNN (2015) <http://www.cnn.com/2015/09/29/opinions/sutter-beef-suv-climate-two-degrees/> (last visited on December 6, 2016).

¹³⁴ *Id.*

Alternatives to the Current System of Sustainability

This is probably the most important recommendation that may be provided. The world, (not just Americans) needs an alternative method of sustainability besides animal farming. As previously stated, there is a population of 7 billion people and it is expected to increase to over 9 Billion by 2050.¹³⁵ A large population composed of meat and poultry consumers demands many more resources than a population composed of consumers with a different demand. There needs to be an alternative to meat and poultry. Perhaps a plant-based diet is humanity's only hope. Industrialized farming is abusing animals, making humans sick and using up the planet's resources. Our planet and the world population demand is too high for the resources we currently have.

Make People More aware of Cruelty in Animal Farming

In a recent poll, 94% of Americans agreed that animals raised for food deserve to live free from abuse and cruelty.¹³⁶ Yet the majority of the nearly 10 billion farm animals raised each year in the U.S. suffer in conditions that consumers would not accept if they could see them.¹³⁷ The recommendation is to expose farming practices such as CAFOS. If people are aware of CAFOS and the cruelty animals are subject to while in CAFOS, they will also become aware of the contamination and overuse of antibiotics. People would then begin to ask questions about how, when and where animals are slaughtered. This will expose the lack of regulations and the

¹³⁵ World Population Projected to Reach 9.7 Billion by 2050, UN (2015).

<http://www.un.org/en/development/desa/news/population/2015-report.html> (last visited December 14, 2016).

¹³⁶ *supra* note 24.

¹³⁷ Farm Animal Welfare, ASPCS (2016). <http://www.aspc.org/animal-cruelty/farm-animal-welfare> (last visited December 13, 2016).

weakness in the current regulations in place. Ultimately, by exposing the current industrialized farming practices, people will become aware of its link to public health.

Conclusion

As a nation, America has acknowledged that the treatment of animals is important and deserves some level of focus. This is evident through the laws that are currently in place. The problem is that these laws are too narrow, that is, they do not address certain category of animals like the HMSL or they just do not provide any protection to animals in the most crucial stages of being raised.

Animal Welfare is a vital concern to humanity's existence as it has a direct impact on public health. Whether you look at it from the perspective of animal cruelty, human health concern or the consequences to the environment, you will come to the same conclusion that the way we are treating our animals has to change. At this point we can only attempt to minimize the destruction that has already occurred in the environment. More precise and clear regulation is needed regarding the welfare of animals in the agricultural business. CAFOs should be illegal and antibiotic use should be strictly supervised and regulated.

The change in animal welfare will bring about a change in the agricultural business and that will force the world to address another major concern which is sustainable food. With a population of 9 billion and a significant estimated increase in the future, we must be cognizant of our resources and arrange a plan for sustainability.