

Farmville Future? CAFOs and Contamination

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Research 1 General

Abstract

The topic of this case study is CAFOs and contamination. The purpose of this case study is for students to analyze the effects of large on the environment. Many farmers in Farmville County have sold their farms to CAFOs, concentrated animal feeding operations. Opponents to CAFOs argue that any potential economic gains come at too great a cost when measured against the likely increase in environmental contamination. Board members have prepared to vote for or against CAFO expansion. The local farmers also held a town hall meeting to discuss the expansion (Luster-Teasley and Ives, 2013). Many residents reported that they experienced health issues after the CAFO factories were constructed. Mrs. Turebule's son's asthma worsened since the factory was made. Hank started to get heart attacks and Mr. Sykes' family has had multiple stomach ailments. Mr. James brought up the point that the quality and quantity of wildlife and water supplies had also decreased since the factories were introduced. Lynn Hennings and her husband conducted tests to detect bacteria in the water (Luster-Teasley and Ives, 2013). Hattie Kohl also collected samples in which she found dangerously high amounts of *E. coli* in the recreational and drinking water. It exceeds the EPA recommendation for safe recreational use. Also, there isn't even supposed to be any trace of *E. coli* on drinking water. The farmers decided to work together and be present at the board meeting to express their concerns about CAFO expansion. They are also going to help Hattie with her research and present their evidence to the EPA (Luster-Teasley and Ives, 2013).

Keywords: CAFO, E. coli, bacteria, contaminants

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Research Question

What are the effects of CAFOs?

Case Study Questions Part 1

1. What is a CAFO and how is it different from traditional farming?

A CAFO, concentrated animal feeding operation, is a facility that raise large numbers of farm animals in a confined area for the majority or entirety of the animal's life (Luster-Teasley and Ives, 2013). CAFO is different from traditional farming because the animals are often kept in structures that look like warehouses with animals packed side-by-side, rather than being kept in an open pasture in traditional farming. Birds are also confined in small cages that are stacked like miniature apartments, or in large warehouses where the floor is completely covered with roaming birds, waste, and feathers in CAFOs (Luster-Teasley and Ives, 2013). Traditional farming usually keep birds in a hen house.

2. What types of CAFOs are in Farmville? How many animals are housed in each CAFO?

There is one poultry and three swine CAFOs in farmville. The McGill Poultry houses 80,000 laying hens, and the Honeyhill Farms and Eastville Swinery houses between 5,000 to 8,500 pigs. The pattengill Enterprises houses over 75,000 swine under 55 pounds (Luster-Teasley and Ives, 2013).

3. Based upon what you currently know about CAFOs, what can you infer are some of the issues for each side of the CAFO controversy? What are some of the viewpoints that proponents and opponents may state for and against CAFOs?

The researcher can infer that if CAFO expansion is approved it would bring in more local revenue for the country through taxes. On the other hand, if the plan is approved then it would likely increase environmental contamination (Luster-Teasley and Ives, 2013). Proponents for CAFOs may state that a larger swine facility would bring more jobs to the community, and several local businesses would benefit from a "trickle-down-effect" by providing more goods and services to the CAFO business. The meat packaging facility in the neighboring county could also increase production and hire more workers

(Luster-Teasley and Ives, 2013). Opponents against CAFOs could state that CAFOs increase environmental contamination, and waste from CAFOs can get into the water supply and cause serious health issues towards humans.

Case Study Questions Part 2

1. What did you learn about CAFOs?

The researchers learned that the quantity of urine and feces from the smallest CAFOs is equivalent to the urine and feces produced by 16,000 humans, and that a CAFO can house anywhere from hundreds to millions of animals. CAFO animals are confined at least 45 days or more per year in an area without vegetation. The researchers also found out that dairy and hog CAFOs often use clean water to wash animal wastes and contaminants from the buildings into waste-storage structures, or lagoons. However, poultry CAFOs use dry-waste systems, in which the waste falls from animal cages to the floor, where it is scraped out of the building periodically or collected on conveyer belts and moved to composting or storage sites ("Facts about cafos," 2013).

2. What are or might be some of the negative concerns with CAFOs?

Some of the negative concerns with CAFOs are that manure and wastewater from CAFOs have the potential to contribute pollutants such as nitrogen, phosphorus, organic matter, sediments, pathogens, heavy metals, hormones, antibiotics, and ammonia to the environment ("Animal feeding operations," 2013). Excess nutrients in water can result in or contribute to low levels of dissolved oxygen, eutrophication, and toxic algal blooms. These conditions may be harmful to human health and, in combination with other circumstances, have been associated with outbreaks of microbes such as *Pfiesteria piscicida*. Decomposing organic matter can reduce oxygen levels, and kill fish. Also, pathogens, such as *Cryptosporidium*, have been linked to impairments in drinking water supplies and threats to human health ("Animal feeding operations," 2013).

3. During your review of the reference material, which references are biased and which are unbiased? How can you tell?

All of the researchers reference material are unbiased. The researchers can tell if some information are biased by seeing the author's opinions in the article. Also, the websites in which the researchers found their reference material provided statistics and facts to support their ideas. The information the researchers gained to answer question 2 came from a website created by the U.S. Environmental Protection Agency.

Case Study Questions Part 3

1. What concerns and medical conditions have you heard the residents express?

Mrs. Tuberule's son's asthma is triggered after going outside the farm. The manure odor from the Pattengill CAFO lingers in the air, making it hard to breathe. When Pattengill CAFO sprays their fields, her family gets constant headaches. Mr. Sykes' family had suffers from repeated stomach ailments, including upset stomachs, nausea, and diarrhea. Hank had a heart attack after the CAFOs were built. CAFOs pollute the air and it can lead to strain on heart and lung function (Luster-Teasley and Ives, 2013).

2. What do they believe is the source of their illnesses?

All of the victims believe the the CAFOs are the source of their illnesses. They also provided evidence to support their claims. They even stated that these conditions only began to occur after the CAFO factories were created in the area (Luster-Teasley and Ives, 2013).

3. Should you consider their experiences with the CAFO for your vote?

Yes, the researchers should consider the people's experiences with the CAFO for their vote. All the people's experiences seem to deal with their health. For example, the manure odor from the Pattengill CAFO makes it hard for people to breathe, and it gives them headaches. Also, the CAFOs has affected people's drinking water, and causing them upset stomachs, nausea, and diarrhea (Luster-Teasley and Ives, 2013). The board members have to take into consideration if expanding the Eastville Swine CAFO will have negative health effects on the people.

4. Using the facts you have learned from your independent research and the concerns you have heard from the residents, what is your current position concerning the proposed CAFO expansion?

Based on the information gained from the independent research and the concerns from the residents, the researcher's position concerning the proposed CAFO expansion is against it. There are too many health concerns that comes with expanding the Eastville Swine CAFO, and the researcher's must place the resident's health as first priority before making any decisions that can have any possible negative impacts on them. If the board members were to expand the Eastville Swine CAFO, then it would double the negative impacts it has on the people's health.

Case Study Questions Part 4

1. What are some of the types of microorganisms identified in Hattie's water samples?

Hattie identified indicator bacteria. She found E. coli and total coliform, which are bacteria found in fecal matter. These indicator bacteria can be signs that there is fecal contamination and that there is potential for the water to contain more harmful pathogens such as Cryptosporidium or Giardia, which are microorganisms called protists (Luster-Teasley and Ives, 2013).

2. What are the levels of E. coli in water that the EPA consider safe for recreational use?

What are the levels for drinking water?

The EPA considers 133 E. coli colonies/100ml safe for recreational use. The state recommends no physical contact with water having over 1,000 colonies. There is no E. coli allowed in drinking water (Luster-Teasley and Ives, 2013).

3. What are some of the bacteria levels detected in Hattie's samples?

Some of Hattie's samples have E. Coli levels that exceed the EPA's standards. One of the samples had over 1 million E. coli colonies in as little as ½ cup of water, or 100 ml (Luster-Teasley and Ives, 2013).

4. What is the proposed plan the farmers are considering to help their cause against the CAFO expansion?

The farmers will attend the board meeting to express their concerns about CAFO expansion. They plan to contact Hattie and assist her with her research. They will collect water samples from their farms and nearby bodies of water. If they also find high bacteria levels in their water, they will take the evidence to the EPA (Luster-Teasley and Ives, 2013).

5. If you were one of the farmers, would you participate in the board meeting and/or help collect samples?

If the researchers were farmers, they would participate in the board meeting and help to collect samples. The researchers also believe that the CAFOs are unsafe. They pollute water supplies and negatively impact the health of humans and wildlife. The CAFOs use unsafe practices and contaminate water with a harmful bacteria called E. coli. Hattie's samples show the the amount of bacteria for recreational use and drinking water exceeds the EPA recommendations. Her husband's aerial photos show evidence of poor disposal practices. The animals also live in sloppy, disgusting conditions (Luster-Teasley and Ives, 2013).

Conclusion

The scientific concepts that the researchers learned are concentrated animal feeding operations (CAFOs), *E. coli*, and contaminants. CAFOs are facilities that raise large numbers of farm animals in a confined area for the majority or entirety of the animal's life (Luster-Teasley and Ives, 2013). CAFOs are different from traditional farming because the animals are often kept in structures that look like warehouses with animals packed side-by-side, rather than being kept in an open pasture in traditional farming. *E. coli* is a type of bacteria found in fecal matter (Luster-Teasley and Ives, 2013). A contaminant is something that makes a place or a substance, such as water, air, or food, no longer suitable ("Contaminant," 2014). The researchers also learned that some of the negative concerns with CAFOs are that manure and wastewater from CAFOs have the potential to contribute pollutants to the environment ("Animal feeding operations," 2013). Excess nutrients in water can result in or contribute to low levels of dissolved oxygen, eutrophication, and toxic algal blooms. These conditions may be harmful to human health and, in combination with other circumstances, have been associated with outbreaks of microbes such as *Pfiesteria piscicida*. Decomposing organic matter can reduce oxygen levels, and kill fish. Also, pathogens, such as *Cryptosporidium*, have been linked to impairments in drinking water supplies and threats to human health ("Animal feeding operations," 2013). A suggestion when doing this case study is to do more research on CAFOs to gain further knowledge about them.

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