Animal Agriculture's Commitment to Public Health

The topic of public health as it relates to animal agriculture encompasses a broad list of topics including community/respiratory health, the environment, zoonotic diseases, and food safety. In each of these areas, animal agriculture has worked hard to implement measures to protect the health of the public, the food animals, and the people who care for those animals.

Modern agriculture operations are designed to maximize animal health and production while protecting public health. While specific interventions may vary by species, examples of common practices that modern agricultural facilities employ include biosecurity protocols, containment and land application of manure at rates that maximize the nutrient value to crops, and appropriate use of antibiotics.

Animal agriculture is often blamed for negatively impacting public health by polluting drinking water, causing respiratory illness in our communities, serving as a breeding ground for zoonotic agents and delivering a food product that is a cause of food-borne disease. Each of these concerns are addressed below.

Community/Respiratory Health

Respiratory health is a top priority for those involved in food animal production because they are the people who work with the animals and live in the farming communities. Studies show that the quantities of ammonia and hydrogen sulfide released from manure at concentrated animal feeding operations fall well below all relevant, scientifically-established human health standards.

Evaluation of community health impacts of air emissions from animal facilities is difficult. To date, there are have not been any U.S. studies published that include objective health measurements, such as spirometry to assess respiratory function, of the neighbors of concentrated animal feeding operations (CAFOs).

Several bodies of research on the subject of food animal production and community/respiratory health do not meet objective scientific measurements and are inconclusive.

- Many studies try to generalize the effects seen in CAFO workers to the neighbors of such facilities. This is not a valid comparison since exposures are significantly different.[i] The difficulty in making comparisons with study data on workers and/or those living on farms was noted by Dr. James Merchant (Professor of Occupational & Environmental Health and Dean of The University of Iowa College of Public Health) in a letter to the editor in the *Des Moines Register*, after the paper made such comparisons using one of his studies.
    - The headline of the *Register* article discussing Merchant's research stated, "Incidence of Asthma Higher Near Hog Farms, Study Finds."
    - Merchant responded to the article with several corrections to the story. Key takeaways of that letter include:
        - "This headline was misleading and inaccurate."
        - "While the Register headline asserts 'Incidence of Asthma Higher Near Hog Farms,' the U of I study reported childhood asthma

Key Points:

- It is a farmer's highest priority to raise animals in a way that is responsible to the animals, environment, and society

- Ag is often blamed for negatively impacting public health without conclusive research

-Many studies generalize the effects of confined animal feeding operations

- Modern production practices have virtually eliminated some former causes of human food-borne illness

- Producers live in the communities where they farm and have a deep-rooted interest in protecting natural resources

- A farmer's primary goal is to produce an abundant, safe, and wholesome supply of food for consumers

"The Register story also used inappropriate comparison data to make a point… that appeared much higher than either cited national or state figure"

prevalence (the proportion of individuals in a population having a disease), not incidence (the number of cases that come into being over a specific time period)."

- "The headline, story and photo of a rural youth with asthma strongly suggest that this study finds that children living near hog farms are indeed at increased risk to asthma, whereas this research does not address this question." This study "…addressed only children living on livestock farms and did not address whether asthma risk extends to children or others living in proximity to such farms…"
- "The Register story also used inappropriate comparison data to make the point that Keokuk County Rural Health Study asthma prevalence appeared to be much higher than either cited national or state figures."

- Additional concerns have been raised about the potential tie between CAFOs and asthma. Asthma is a multi-factorial disease, and rates of asthma in children have been rising in both urban and rural areas.
  - The largest study and thus the one most likely to demonstrate an association, was conducted by Mirabelli, et al.[ii] This study collected self-reported data on asthma symptoms for more than 58,000 school children. With this large study population, a statistically significant difference should have been present, if it existed. However, there was very little statistically significant data and none of the odds ratios approached two, which is considered an important odds ratio in an epidemiological study. In addition, some of their findings did not make biological sense, indicating that there was no clear-cut association between asthma and attending school in the proximity of a CAFO.
  - A study performed by the University of Georgia found very low concentrations of ammonia at various distances downwind from a CAFO. The study found that at downwind distances of 100 feet, 200 feet and 300 feet, ammonia concentrations were less than 1ppm, 65 percent, 85 percent and 95 percent of the time, respectively. The *Acute Exposure Guideline Level*, published by the EPA as emergency-planning guidelines for short-term exposure from 10 minutes to eight hours is 30 ppm. Furthermore, the study was performed from the fourth week to the eighth week of the grow-out cycle when ammonia levels are at their highest. [iii]
- A study from Germany uses objective health measures to determine the potential impact on health from animal production. [iv] The study tested neighbors of CAFOs. The findings call into question most of the other papers cited in this area stating that, "No associations were seen between self-reported odor annoyance and any of the clinical outcomes."

Environmental Impacts

Livestock and poultry producers live in the communities where they farm and have a deep-rooted interest in protecting natural resources.

Using manure as fertilizer is a practice as old as agriculture itself. Today's farmers develop nutrient management plans in order to responsibly utilize manure generated by farm animals while protecting water sources. These plans ensure that the amount of nutrients applied to the land is balanced with the amount required to support crop growth while enhancing the soil's ability to support plant growth.

PATHOGENS AND/OR CHEMICALS IN WATER

- Concerns about manure are appropriate. All animal feces, whether from pets, livestock or humans, may contain pathogens. That is why the goal of manure containment facilities, either in the form of pits or lagoons, is to hold the manure prior to land application and prevent its entry into sources of drinking water.

- Manure is a valuable resource for environmental sustainability in livestock and poultry production. Farmers carefully develop nutrient management plans in order to utilize the manure generated by their animals while protecting water sources. These plans ensure that the amount of nutrients in the manure applied to the land is balanced with the amount of nutrients required to support plant growth.

- Proper land application of manure provides a valuable nutrient source for crops, decreases the need for petroleum-based chemical fertilizers, ensures runoff does not occur and contributes to the sustainability of the entire production system.

- Manure management in CAFOs is regulated by the Environmental Protection Agency and, unlike municipal wastewater treatment facilities, direct discharge of manure into waterways is forbidden.

- Farmers enlist several practices to minimize any risks to surface and ground water:
  - They store or compost manure before it is applied to fields as a fertilizer, which decreases the presence of pathogens. [v]
  - Farmers apply manure to the land so microbes in the soil can destroy most pathogens. Bacteria and viruses are exposed to sunlight during this process and are killed over time as they dry out. [vi]

ANTIBIOTIC RESISTANT GENES/PATHOGENS IN THE ENVIRONMENT

- Farmers, ranchers and veterinarians take concerns about antibiotic resistant elements moving from manure handling structures into water sources very seriously. This is why those involved in animal agriculture have developed responsible use programs specific to each poultry and livestock species that give veterinarians, farmers and ranchers specific guidelines to safely and properly use antibiotics in their health management systems.
- Although most scientists agree that improper use of antibiotics in human medicine is the greatest contributing factor in the formation of resistant bacteria affecting humans, the government, animal health industry, farmers and ranchers have together implemented steps to ensure antibiotic use in food producing animals does not affect human health.
- As research is available, farmers continuously make updates to production practices and facilities to ensure their production systems are as safe as possible.
  - A recent University of Illinois study[vii] demonstrated that, even in conditions where an old and poorly constructed manure holding structure was used, resistance genes moved only a short distance (<90 meters) and were found only at shallow depths (<5 meters). There was not an increase in resistance genes near the well-constructed manure storage structure or in areas where manure was land applied. This study demonstrates how modern production systems have been developed to effectively protect the environment.

Infectious Disease/Zoonotic Disease

Zoonotic diseases are those transmitted between animals and humans. The agriculture community understands the concerns related to this subject. However, when one considers the number of interactions between animals and man on a daily basis, instances of zoonotic disease are rare.

There are several specific zoonotic diseases of particular interest, including avian influenza, Bovine Spongiform Encephalopathy (BSE), and Methicillin-Resistant Staph Aureus (MRSA). It is important to note that none of these diseases is unique to CAFOs and many of the production practices implemented by modern animal agriculture serve to protect against transmission of these diseases.

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AVIAN INFLUENZA

Avian influenza is also known as Asian bird flu or H5N1 influenza. This is a highly pathogenic avian influenza -- a serious disease of birds that is threatening poultry flocks worldwide. As of April 2008, Asian bird flu has never occurred in the United States.

The U.S. chicken industry is working with partners in government to guard commercial poultry flocks. Through an array of biosecurity measures and the industry's 100 percent flock testing program, they aim to keep it out of U.S. flocks, eradicate it if it occurs, and assure the safety of the food supply.

At this time, Asian bird flu is **not** easily caught or transmitted by humans. No one knows if it will ever become a "human-to-human" disease or trigger a pandemic of influenza. By keeping Asian bird flu out of flocks and eradicating it if it occurs, chances are limited that it may become more dangerous to humans.

Asian bird flu could most likely spread to commercial flocks through contact with infected wild birds. Therefore, the top priority is to prevent such contact. Commercial poultry producers have put numerous barriers in place to accomplish this, including:

- *Sheltered production conditions:* In the U.S., nearly all commercial chickens are grown in enclosed housing with restricted access to the outdoors. The chickens are raised in the same building from shortly after they hatch until they are taken to the processing plant. Wild birds are not allowed into the buildings.
- *Biosecurity on the farm:* Poultry farmers and the companies with whom they work are keenly aware of the need for biosecurity – that is, the prevention of infection by physical barriers. Access to farms is strictly limited, plastic boot covers and disinfectant footbaths are encouraged and growers are allowed to raise only one type of poultry on their farms, among other precautions.
- *Flock testing:* The National Chicken Council sponsors a program to ensure that flocks of chickens that will enter the food supply are free of Asian bird flu and other hazardous types of avian influenza. Participating companies test each flock while still on the farm. Any flock testing positive for the H5 or H7 types of avian influenza, regardless of pathogenicity, is euthanized on the farm, ensuring that none of the birds enter the food supply. All major chicken companies are participating in the program.

BOVINE SPONGIFORM ENCEPHALOPATHY (BSE)

The first known incidence of BSE, also known as "mad cow" disease, in the U.S. was in 2003 and there have been two additional cases in the U.S. since that time. BSE is thought to be caused by an infectious particle known as a prion. The main route of transmission of BSE is believed to be through feeding practices that expose ruminant animals, such as cattle or sheep, to the prion through the recycling of ruminant meat and bone meal. The U.S. Food and Drug Administration (FDA) banned the feeding of ruminant meat and bone meal to ruminant animals in 1997 and conducts inspections of feed manufacturers to ensure compliance.

METHICILLIN RESISTANT STAPH AUREUS (MRSA)

Staphylococcus aureus (or Staph aureus) is a bacteria commonly found in nasal passages and on the skin of humans and many animals. Methicillin-resistant *Staphylococcus aureus* (MRSA) is resistant to the antibiotic methicillin and in some cases to other antibiotics. MRSA has been recovered from animals including horses, dogs, cats, cows, sheep, goats, pigs, marine mammals, rabbits, turtles and others. Some of these animals have not been exposed to antibiotic therapy, and in several, MRSA appears to result from human-to-animal transfer.

Recent reports demonstrate that a unique strain of MRSA has been isolated from pigs in Europe, Canada and the United States. There is no indication that the strain of MRSA identified in pigs is contributing to MRSA in humans in the U.S., according to a memo from Dr. Julie Gerberding[viii], Director of the Centers for Disease Control and Prevention. Research on pigs in Canada and Europe identified MRSA on farms that were smaller than what would be considered a CAFO and on farms that did not use any antibiotics.

Food Safety

The primary goal of farmers, ranchers and veterinarians involved in food animal production is to provide an abundant, safe, and wholesome food supply to consumers. Modern production systems are designed to help farmers and ranchers accomplish that goal.

Commodity organizations have worked with farmers and ranchers to implement Quality Assurance programs that educate producers about how to maximize the safety of the food supply through best practices.

Modern production practices have virtually eliminated some former causes of human food-borne illness. Pathogens such as *Trichinella spiralis*, formerly one of the most prominent pathogens associated with pork, has largely disappeared with the movement of pigs to indoor production.[ix]

Cases of human food-borne illness have generally been on the decline. Evidence that CAFOs in some way contribute to an increased burden of human food-borne illness is lacking. Bacterial contamination of pork carcasses in packing plants is consistently lowest in large packing plants, which, due to the large volume of production, are most likely to acquire animals from large producers, refuting the claim that CAFOs contribute to food-borne illness (USDA 2006).[x]

BOVINE SOMOTOTROPIN (BST)

Bovine somatotropin (bST) is a naturally occurring protein hormone in cows that helps young cattle grow and adult cows produce milk. A small amount of this hormone is naturally present in all milk, including organic products. When milk is consumed, bST is completely broken down by digestion like any other protein.

Some dairy farmers choose to supplement their cows with a synthetic version of bST (known as rbST) to increase milk production – it is not added to the milk itself. This use of supplemental bST was approved by the U.S. Food and Drug Administration (FDA) in 1993 after extensive review; the safety of milk from rbST-supplemented cows has been affirmed over the past 20 years. [xi]

"bST is naturally occurring protein hormone"

"The safety of milk from rbST-supplemented cows has been affirmed for 20 years"

"There is no difference between milk from cows given rbST and those that are not"

"rbST has no effect on hormone levels in the milk itself"

Studies have concluded that there is no difference between milk from cows that are given rbST and milk from cows that are not. Regulatory agencies in 50 countries, including Canada and the European Union, have also affirmed the safety of milk and meat from cows supplemented with rbST, and that there is no difference in the milk. Separate reviews of the data, with the same safety conclusions, have been conducted by the National Institutes of Health (NIH), the World Health Organization, the Office of the Inspector General of the Department of Health and Human Services, *Journal of the American Medical Association*, *Pediatrics* and the *Journal of the American Dietetic Association.*

It is important to note that giving cows rbST has no effect on hormone levels in the milk itself. A National Institutes of Health (NIH) expert panel, among others, has made this conclusion. [xii]

Animal Agriculture Alliance Coalition Members

American Farm Bureau Federation
Animal Agriculture Alliance
Animal Health Institute
American Meat Institute
National Chicken Council
National Milk Producers Federation
National Pork Board
National Pork Producers Council
National Turkey Federation
United Egg Producers
U.S. Poultry & Egg Association
United Soybean Board

Sources

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