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## Avian Advice, Winter 2002

Dale Bumpers College of Agricultural, Food, and Life Sciences (University of Arkansas, Fayetteville). Center of Excellence for Poultry Science

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# AVIAN

# Advice



UNIVERSITY OF ARKANSAS  
DIVISION OF AGRICULTURE  
Cooperative Extension Service

## The Biosecurity Issue

by F.T. Jones, Extension Section Leader

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Biosecurity is a subject that many growers may feel has been discussed too much. However, the lack of Biosecurity can dramatically influence virtually everyone in Arkansas. How can this be? Read on.

This issue is devoted entirely to Biosecurity and is intended to clarify the following questions:

- Why such concern over diseases?
- What diseases concern the industry most?
- What would happen if we had a major disease outbreak?

- Why do veterinarians deal with diseases as they do?
- What are the economic consequences of a major disease outbreak?

We believe that Biosecurity is good citizenship. At first glance this statement may seem ridiculous. However, the economy of the state depends heavily on the poultry industry and any reduction in income from that industry could affect us all. Thus, I leave it to you, the reader, to decide. Is Biosecurity good citizenship?

## Economic Consequences of a Major Poultry Disease Break

by F.T. Jones, Extension Section Leader

### Exports and Industry Success

The poultry industry has experienced phenomenal growth over the past 40 years (Figure 1). Consumers have responded favorably to this growth and the industry has benefitted (Figure 2). The industry has increased exports of poultry meat dramatically over the past 20 years (Figure 3). While these exports have increased industry income, they have also made the industry vulnerable to losses associated with trade disputes and international politics.

The United States has been a member of the Office of International Epizootics (OIE) for decades. The OIE organization includes virtually every major U. S. trading partner. The purpose of the OIE is to prevent the spread

of major animal diseases (called List A diseases) through sharing of information. For poultry, there are only two List A diseases, which are Exotic Newcastle and highly pathogenic Avian Influenza. Although the prevention of the spread of major animal diseases is a noble goal, there is a downside relating to open trade.

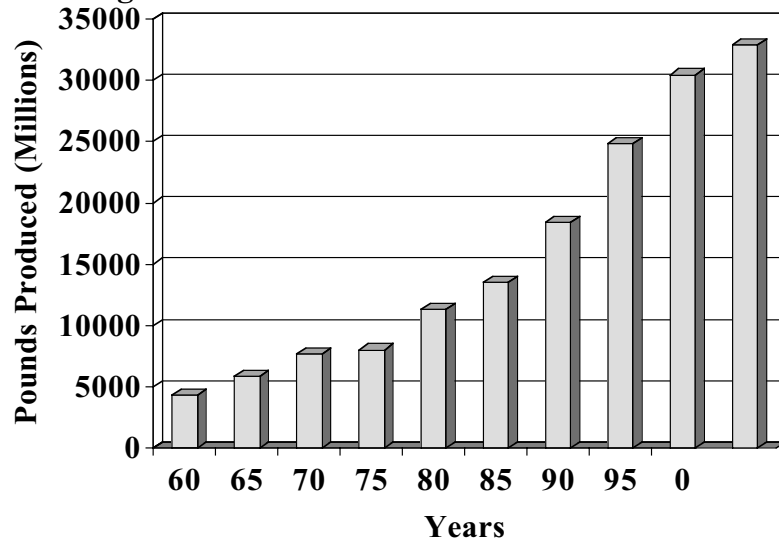
The procedures of the OIE dictate that when an A category disease is confirmed within a given country, member nations are not to trade with that country. This trade ban remains in effect for six months after the last positive has been detected. In other words, once the disease is totally cleaned up, the trade ban will remain for an additional six

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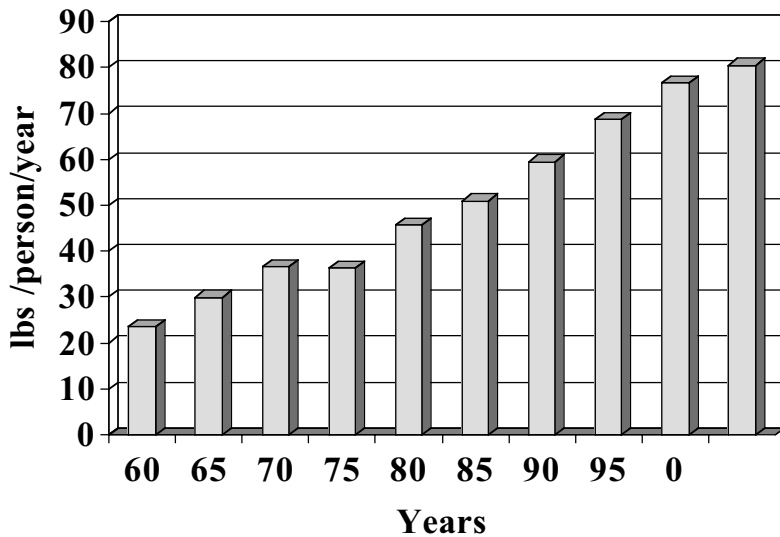


The poultry industry has experienced phenomenal growth over the past 40 years (Figure 1). Consumers have responded favorably to this growth and the industry has benefitted (Figure 2). The industry has increased exports of poultry meat dramatically over the past 20 years (Figure 3). While these exports have increased industry income, they have also made the industry vulnerable to losses associated with trade disputes and international politics.

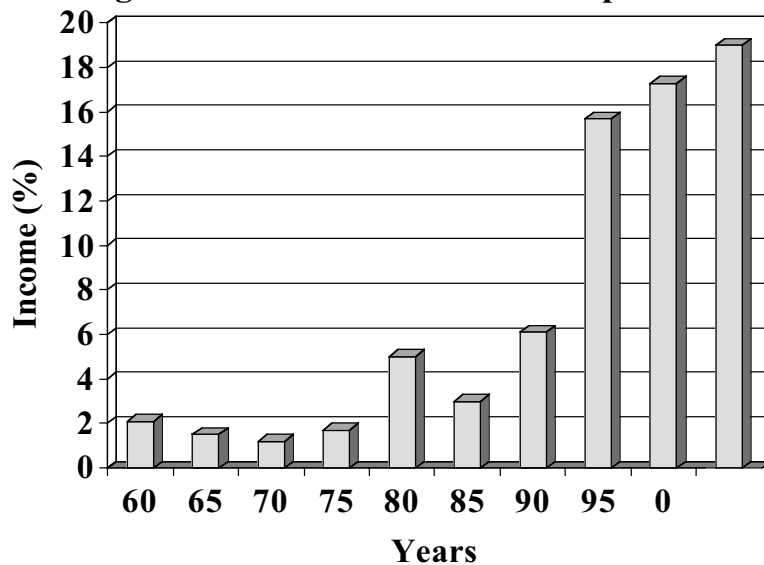
**Figure 1. United States Broiler Production**



**Figure 2. Per Capital Consumption of Poultry Meat in the United States**

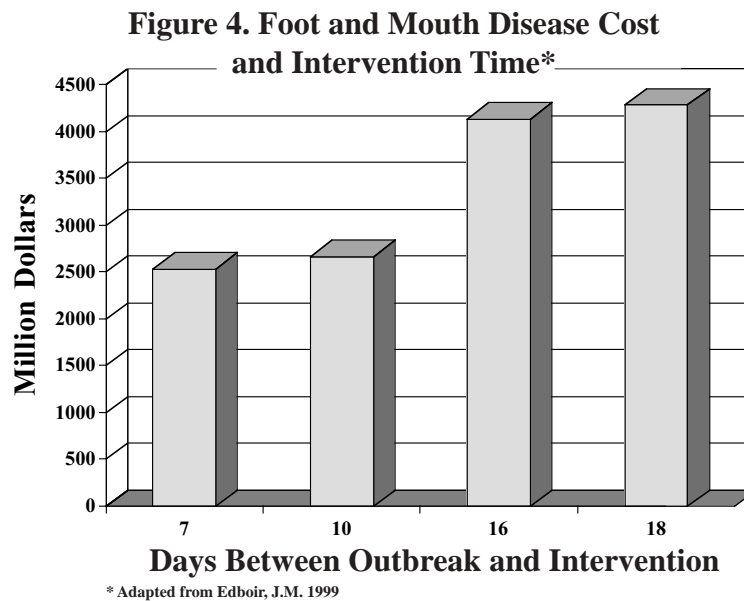


**Figure 3. United States Broiler Exports**



months. In addition, the United States standard protocol when an A category disease is found is to close the borders of (or quarantine) the state where the disease has been found so no live birds or products can be moved in or out until the disease has been cleaned up. This means (obviously) that the state where the outbreak occurred would likely be stuck with those birds for an extended period of time. Holding birds for extended periods would particularly difficult in major poultry production states. In Arkansas, for example, there are slightly over 92 broilers per human at any given time, holding birds for extended periods could be difficult. Furthermore, because the majority of farm income in Arkansas is tied to poultry production, a quarantine could have major economic consequences for the state.

How much would such a disease break cost the state? It is difficult, if not impossible to provide a definite answer to that question. However, estimates of the cost of a foot and mouth disease outbreak in California amount to about \$3.7 billion. California researchers also found that the longer the time between the outbreak and intervention to control the disease, the greater the cost (Figure 4).



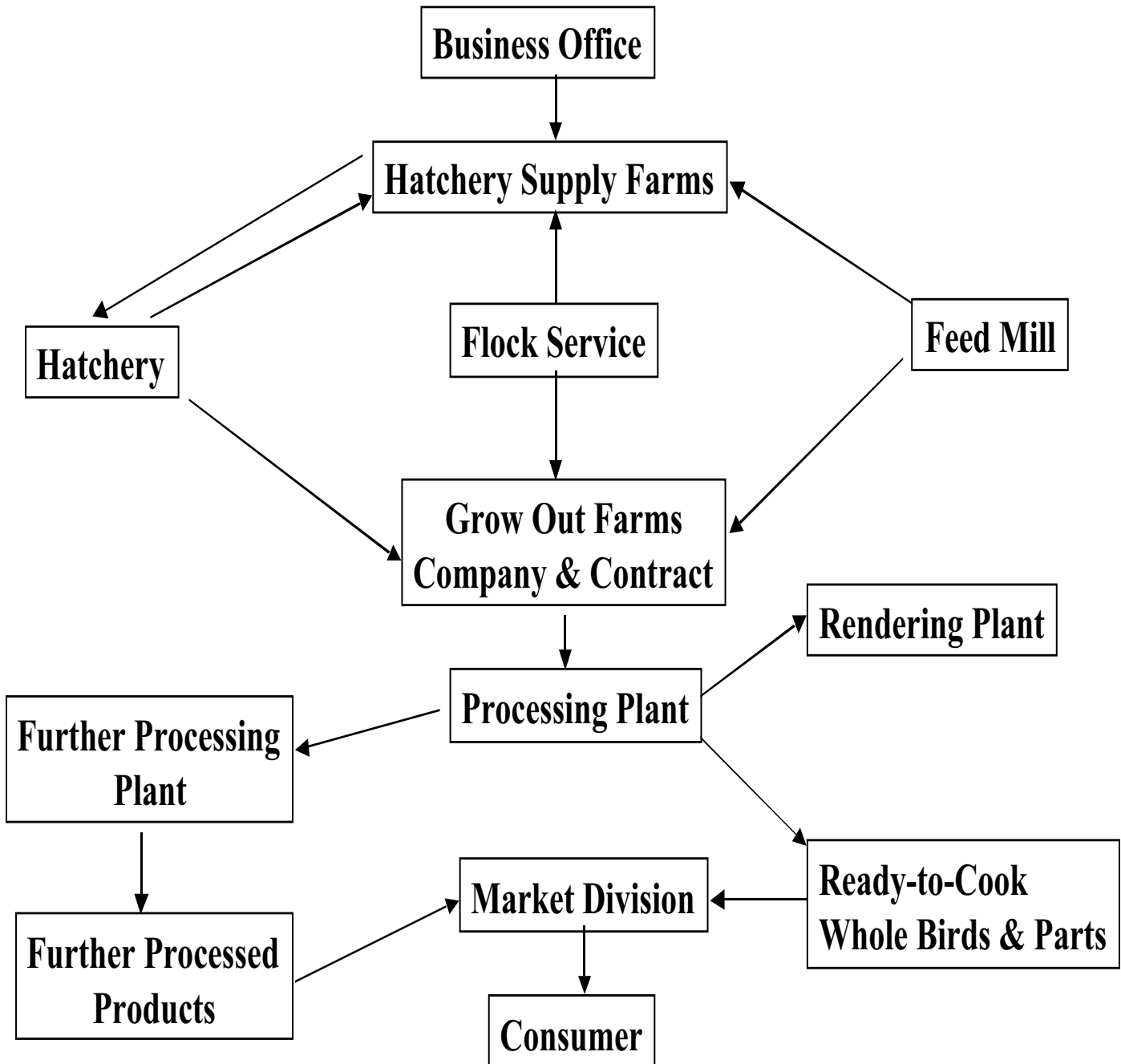
Recent estimates show that in Arkansas, livestock enterprises accounted for 118,641 jobs in 1999 and workers received \$3 billion in wages. Livestock producers added \$4.1 billion in value to the state’s economy. Poultry accounts for 86% of the value added livestock products produced in Arkansas. These data clearly indicate that what affects poultry production and processing will have a major effect on the economy of Arkansas. However, it is necessary to provide some background information to understand the true impact.

**Industry Structure and Economic Impact**

I am sure we all realize that vertically integrated companies produce broilers. The general structure of a vertically integrated broiler production complex is shown in Figure 5. It has been estimated that the initial investment to start an “average” one million bird complex is about \$80 million. Most of this \$80 million endeavor is invested in the area immediately surrounding the complex in the buildings, equipment and supplies. This capital flows through the local economy, producing a “ripple effect” so that those not connected with poultry production or processing see positive economic effects. These positive effects include the creation of new jobs. In fact, it has been recently estimated that when a new complex moves into an area there are 3.4 jobs created for each job within the complex.

After the complex is established the company continues to pump cash through the local economy. On average, each year the company spends more to operate than was required to set up the complex. An estimated annual budget for an “average” broiler complex is shown in Table 1. In addition, companies have a good deal invested in the production of pullets, hatching eggs and broilers.

# Figure 5. Vertical Integration in the Broiler Industry

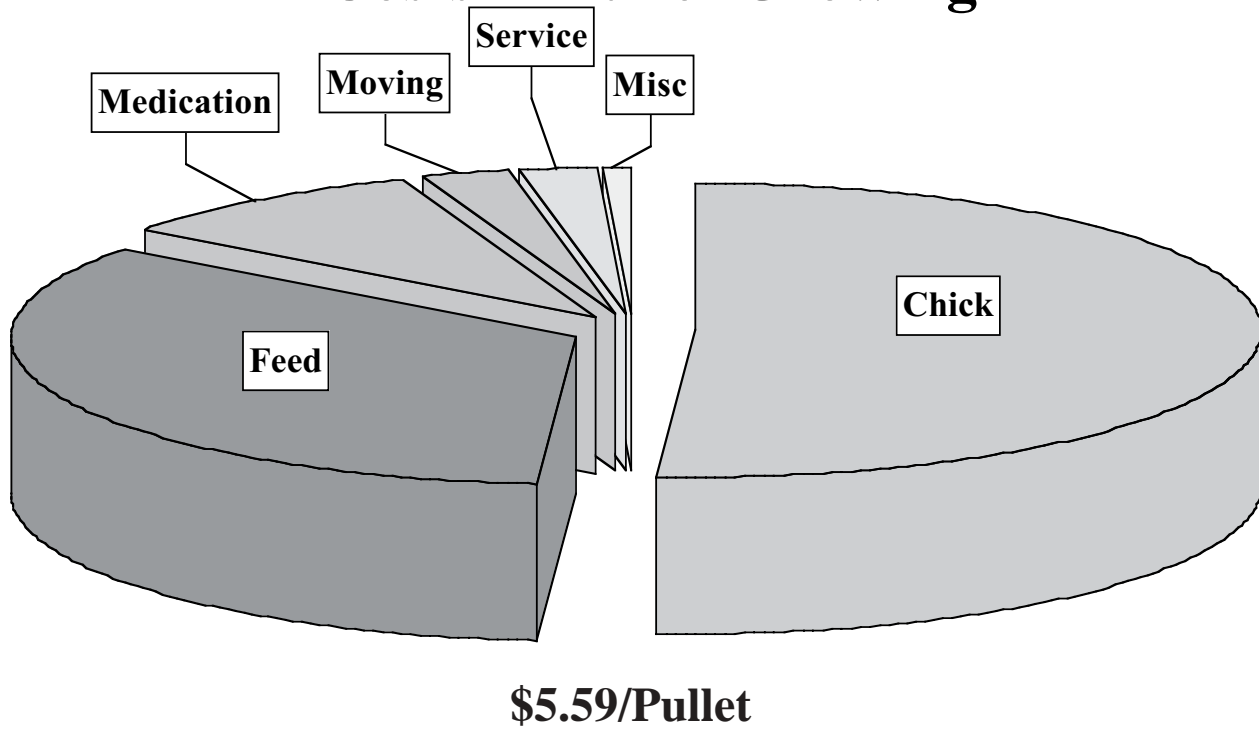


**Table 1. Estimated Annual Budget for a Million bird per week complex**

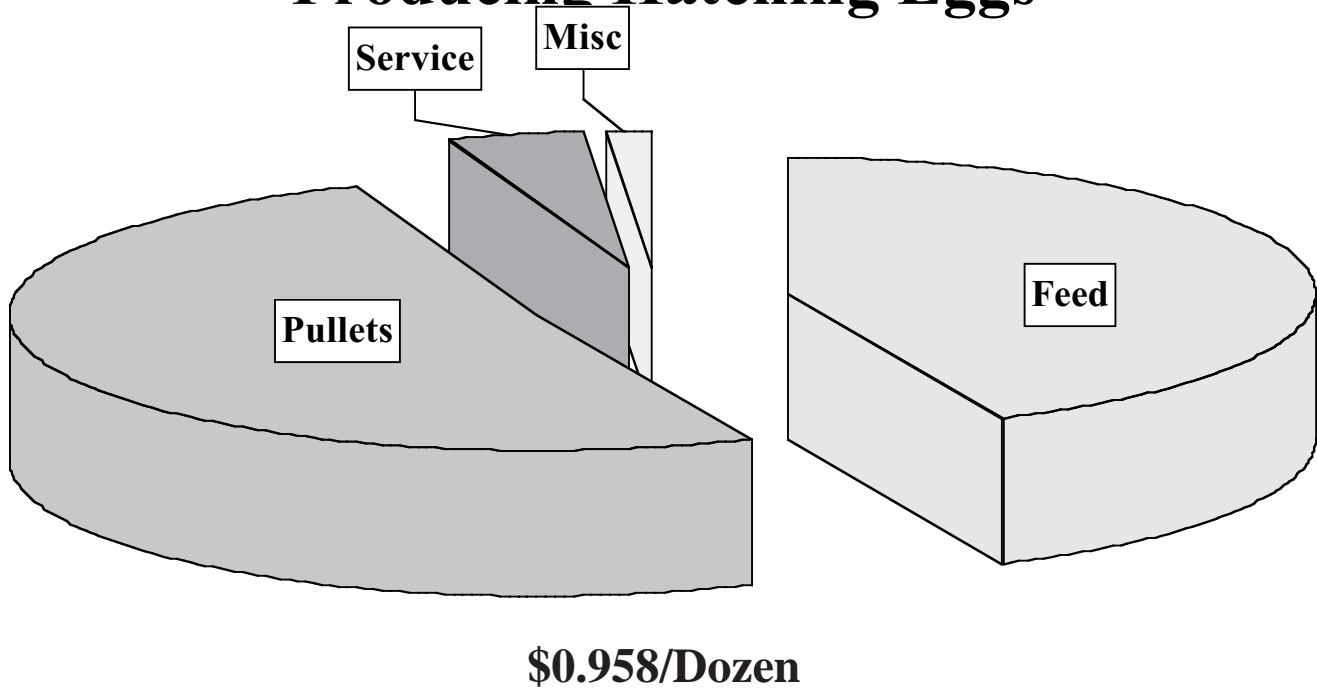
Expense	Amount
Feed Ingredients	\$33,120,000
Labor/Benefits	16,640,000
Grower Payments	15,602,500
Depreciation	8,000,000
Interest	6,400,000
Breeder Chicks	1,200,000
Electricity	1,200,000
Water/Sewer	1,000,000
Misc.	1,000,000
Vehicle Operating Costs	645,600
<hr/>	
<b>TOTAL</b>	<b>\$84,808,100</b>

The information in Figures 6 – 8 was developed from data collected by Agri Stats. By the time pullets are moved to the laying house, the average broiler company has \$5.59 invested per pullet (Figure 6). Over the life of a breeder flock, the company invests on the average \$0.958 per dozen eggs produced (Figure 7). When broilers are ready for catching and transport the company has invested an average of \$0.917 per bird. The costs shown in Figures 6 – 8 do NOT include payments to growers. If grower payments are included in these estimates, companies on the average pay \$7.22 per pullet, \$1.34 per dozen hatching eggs and \$1.15 per broiler. If this investment stopped or was seriously reduced, many local economies would find themselves in very difficult circumstances. Yet the company (obviously) must be able to ship and sell products for capital to continue to flow through local economies. Clearly, a major disease outbreak would threaten the company’s ability to conduct business and, in turn, negatively impact local economies.

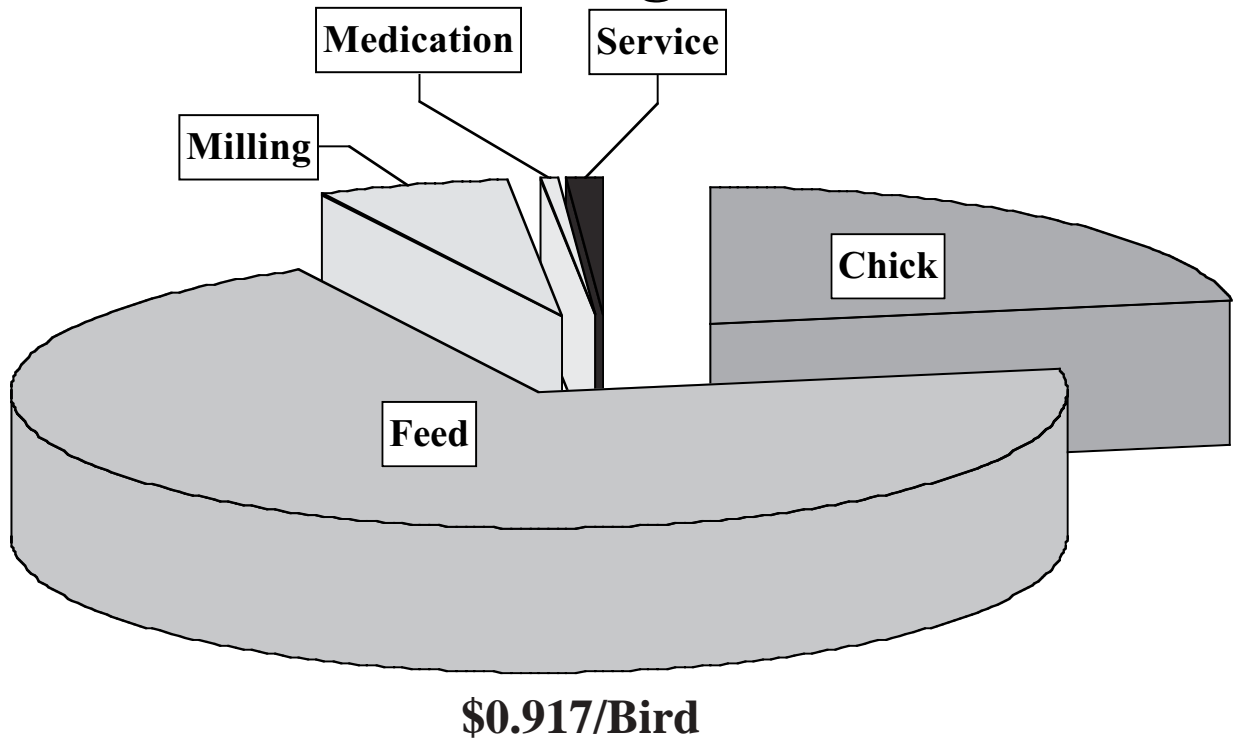
### Figure 6. Average Company Costs in Pullet Growing



### Figure 7. Average Company Cost in Producing Hatching Eggs



## Figure 8. Average Company Costs in Producing Broilers



### Unknowns in a Major Disease Outbreak

There would (without a doubt) be many unknowns if a major disease outbreak occurred. Some of these unknowns could have a lasting effect on both local and national economies.

How would a major disease outbreak affect prices for poultry products? This question is not easily answered. However, since there is often an oversupply of poultry products, a major disease outbreak could reduce the supply of products, causing prices to rise. **HOWEVER**, the price of birds within the area affected by the outbreak would be 0, since birds from that area would be destroyed. Thus, while poultry companies in other areas could benefit from the misfortune of others, companies dealing with the outbreak would take a major economic hit.

How would a major disease outbreak affect consumer confidence in poultry products? If consumers believe that the disease outbreak would endanger their health, they would lose confidence in poultry products and buy products other than poultry. While consumers have not reacted in this manner in past outbreaks, there is no guarantee about their future behavior.

Perhaps the most troubling unknown about the consequences of a major disease outbreak involves retaining export markets. If such an outbreak occurred and export markets were lost even temporarily, we would have to win those

markets back once the export ban was lifted. Given the fact that some other countries now have lower production costs than the United States, winning markets back could be an uphill battle. Furthermore, the loss of major export markets would limit industry profitability.

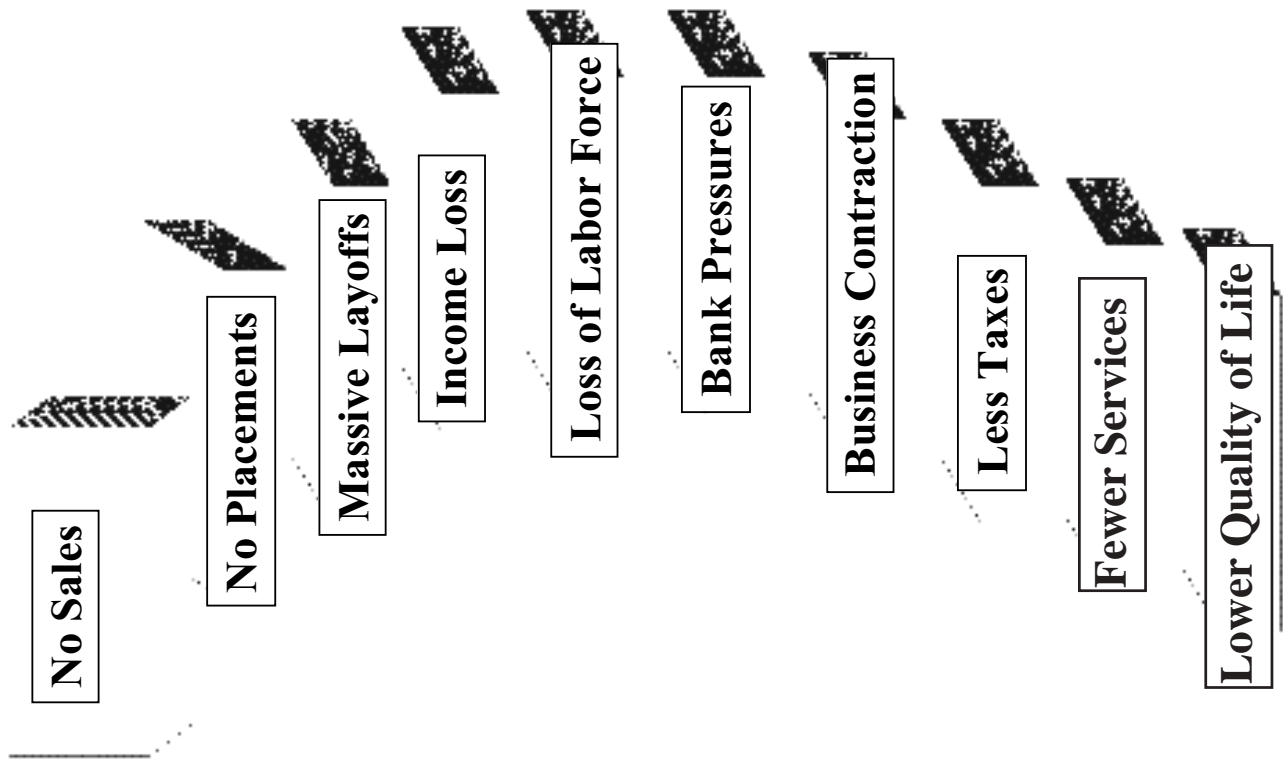
### A Worst Case Scenario

Just how bad could conditions get? Although there are some unknowns, the illustration in Figure 9 provides some possible consequences. If the complex is not able to sell product, it would not need to make any further bird placements. This lack of bird placements means that workers in the processing plant, the hatchery, the feed mill and several other company units would not be needed so this could result in massive layoffs. Obviously, these layoffs would mean loss of income for workers, growers and all those who provide goods and services for all involved. If these layoffs occur, would workers who form the labor force to staff plants, hatcheries and feed mills stay around? Probably not, if they have no source of income. This situation would force many people to default on farm, home and business loans or mortgages, which, would mean, consequently, that banks and lending institutions would face the same economic pressures every other institution has faced and financing for nearly everything could become scarce. This lack of financing combined with

CONSEQUENCES - continued on page 8



## Figure 9. Possible Economic Domino Effect with a Major Disease Outbreak



the economic situation, would mean that many businesses would fail and that those surviving businesses would have to drastically reduce the number of workers employed. Layoffs, exodus of people, business failures and bank pressures would clearly mean that fewer taxes would be collected. The collection of fewer taxes would mean that law enforcement; fire fighters, health departments, municipal services (e.g. sewage treatment, water distribution, garbage pick-up, and the like) and schools would face a funding crisis forcing them to reduce both staff and services. Plainly, the entire situation would mean that the quality of life would be drastically reduced for those who remain.

### What's the point?

Why bring up all this information? Why think about all these dooms day scenarios? Before beginning that discussion, please allow me to pose another question. If we had such an outbreak, where would it begin? It would likely begin on one or more farms. How would it get on those farms? It could begin because someone was not paying attention to biosecurity on their farm as they should. It would spread because others were not paying attention to biosecurity on their farm.

Now that you know the consequences of such an outbreak, wouldn't it be nice to prevent one? If we cannot prevent it, wouldn't it be nice to limit the spread of disease so that the impact on the industry and the economy was minimized? This is the point: the local economy and the health of the industry could depend on the biosecurity practices on your farm. Are the biosecurity practices on your farm what they should be? Completing the checklist below should provide help you assess where you are with respect to basic Biosecurity practices

CONSEQUENCES- continued on next page

YES ✓

NO ✓

QUESTION

Do you limit the access of visitors to your poultry houses?

When authorized visitors enter your poultry houses are they required to wear disposable boots?

Do you visit the poultry houses of other growers while they have birds?

Do you share or borrow equipment from other growers?

Are vehicles that have visited other farms allowed to park near your poultry houses?

Do you bring litter or dead birds from other poultry farms to your farm?

Have you limited the access of wild animals (particularly wild birds) to your houses?

Do you spread your litter near other poultry houses?

Are pets allowed access to your poultry houses?

Are wild animals allowed access to dead birds from your farm?

Is untreated ground water used to water your birds?

## BIOSECURITY CHECKLIST

An honest answer of “no” to each of these questions indicates that you have taken some steps to prevent a Biosecurity incident on your farm. However, even if you can honestly answer “no” to each of these questions, please do not think you are safe. You have only begun to establish an effective Biosecurity program on your farm. Since each farm represents a unique set of circumstances, you will undoubtedly face circumstances that no other farm faces. It is crucial for the survival of your farm as well as the local economy and, indeed, the health of the industry, that you be as effective as possible with your Biosecurity program. How can disease organisms gain access to the birds in my poultry houses? This is the tough question that each poultry grower must address.

### Summary

Exports are vital to the health of the poultry industry. Yet we could lose those exports with one major disease outbreak. Losing exports would hurt both growers and companies since both have much invested in poultry production. However, loss of exports would also hurt the local and (depending on the severity) the national economy. By practicing sound on-farm Biosecurity principles, growers protect not only their own economic interests, but those of the local economy and the national industry. ■



# Foreign Animal Diseases and the Poultry Industry

## Introduction

There has been tremendous news coverage of the outbreaks of Foot and Mouth Disease (FMD) in the United Kingdom recently. In addition to the outbreaks in the United Kingdom, there have been FMD outbreaks in Argentina, Uruguay, Kuwait, Saudi Arabia, and the Netherlands.

While FMD does not affect poultry, an outbreak in the United States would affect the poultry industry because it would restrict movement of animals, supplies, and people in and out of quarantined areas. These movement restrictions are designed to prevent spread of the disease so it can be more easily contained and eliminated. FMD is one of the diseases that is considered a Foreign Animal Disease (FAD). Foreign Animal Diseases (FADs) are those diseases which have either never occurred in the United States or have been eradicated from the United States. Examples of some FADs are: Hog Cholera, African Swine Fever, Dourine, Glanders, African Horse Sickness, Heartwater Disease, Screwworms, Rinderpest, Avian Influenza, and Exotic Newcastle Disease (END). There is continued surveillance and vigilance by the United States Department of Agriculture / Animal and Plant Health Inspection Service (USDA / APHIS), private veterinary practitioners, and Foreign Animal Disease Diagnosticians (FADDs) to prevent these diseases from entering or re-entering the United States.

## Exotic Newcastle Disease

Exotic Newcastle Disease (END) is an FAD that can cause devastating losses in the poultry industry. Exotic Newcastle Disease (END) can affect many species of domesticated, wild, and exotic birds and was first seen in 1926 in Great Britain, Java, and Korea. The name Newcastle comes from the location where the disease occurred in Great Britain (Newcastle-upon-Tyne). The disease is present endemically in many countries.

The disease was first reported in the United States in 1944 with other outbreaks reported in 1946 and 1951. However, END was quickly eradicated from the United States. The most serious recent outbreak in the United States occurred in southern California in 1971 and cost almost 56 million dollars to eradicate.

The causative agent of END is a Rubulavirus in the family Paramyxoviridae. The virus can persist in feces for long periods of time and some bird species (parrots and some wild birds) may be carriers of the virus. Outbreaks of the disease can cause severe losses in a short period of time. The incubation period for the disease varies from 2-15 days with the incubation period in chickens being 2-6 days. Clinical symptoms include gasping for air, green watery diarrhea, coughing, depression, loss of appetite, thin shell misshapen eggs, droopy wings, twisting of the head and neck, and spasms. Mortality varies with the viral strain and species infected; but may be high at the initial onset. Lesions observed with the disease include: swelling in the neck tissues around the trachea, hemorrhages on the tracheal mucosal surface, small pinpoint hemorrhages on the inside lining of the proventriculus, hemorrhage and necrosis of the lymphoid tissue in the intestines, and hemorrhages in the vent.

A presumptive diagnosis of suspicious for END can be made based upon the symptoms and lesions. However, since there are no symptoms or lesions exclusive for END. The disease must be differentiated from similar diseases such as Avian Influenza and fowl cholera by virus isolation and identification.

DISEASE- continued on next page

## Avian Influenza

Avian Influenza is a highly infectious contagious viral disease of poultry, wild birds and migratory waterfowl. The disease can range in severity from a mild respiratory trouble with little or no mortality to an acute generalized disease with extremely high mortality. The disease was first described in Italy in the late 1800's and was referred to as "Fowl Plague".

The Avian Influenza virus belongs to the Orthomyxoviridae family. These viruses have two surface antigens known as Hemagglutinin (HA) and Neuraminidase (NA). These two antigens are used to describe the virus serologically with the virus designated with the letter H and N with appropriate numbers. For instance, the H7N2 virus was the virus present in the recent outbreak in Virginia. There are currently 15 H subtypes and 9 N subtypes of the virus. Avian Influenza is classified as low pathogenic (LPAI) or high pathogenic (HPAI). The determination of LPAI or HPAI is based on several criteria such as lethality of the virus in 4-6 week old susceptible chickens and amino acid sequences at the HA cleavage site. The virus can easily and quickly mutate from a low pathogenic strain into a high pathogenic strain.

Avian Influenza has a variable incubation period of hours to days depending on the viral virulence, exposure route, species, dosage and other factors. Usually, the incubation period is 1-3 days. The natural routes of exposure to the virus are respiratory and oral. Clinical signs of the disease can include: depression, ruffled feathers, loss of appetite, a decrease in egg production, an increase in water consumption, diarrhea, and respiratory signs such as sneezing, coughing, and discharges. Lesions associated with the disease will also vary ranging from few if any to swelling of the head, neck and wattles, hemorrhages in organ systems, necrotic areas in various organs, hemorrhages on the shanks of the legs, sinusitis, tracheitis and variable amounts of mortality.

The virus is spread primarily via direct contact with infected birds or exposure to virus contaminated materials. Most Avian Influenza strains are low pathogenic and cause few problems. Historically, most outbreaks of highly pathogenic Avian Influenza started as low pathogenic outbreaks.

## Controlling Foreign Animal Diseases

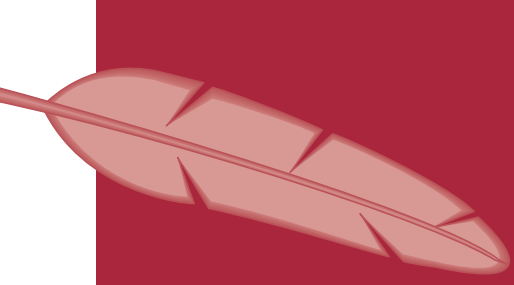
The best method of disease control is prevention. This is accomplished via Biosecurity protocols and vigilance for FADDs to prevent entry into the United States.

Currently, there is an Emergency Poultry Diseases Technical Poultry Committee (EPDTPC) that is developing plans and procedures for handling an outbreak of END or AI if outbreaks were to occur in Arkansas. This committee is part of the Arkansas Animal Disease Emergency Response team which was organized by the Arkansas state veterinarian and the Arkansas Livestock and Poultry Commission.

The EPDTPC organized and conducted Tabletop Exercises in December 2000 and October 2001; other exercises are planned for 2003. The purpose of these exercises is to help in the development of plans and procedures for handling outbreaks if disease were found in Arkansas or the United States. These plans are very necessary considering that in 1999 outbreaks of END occurred in Argentina, Brazil, Venezuela, Canada, and New South Wales, Australia. In the year 2000 there were END outbreaks in Russia and Italy with 231 outbreaks in Italy alone. Costly Avian Influenza outbreaks have occurred in the USA in 1983-84 and 2002. Vigilance, common sense, and Biosecurity protocols all can help in the prevention of this disease, other Foreign Animal Diseases and more common less devastating diseases.

## Summary

Although in recent years the United States has experienced no foreign animal disease outbreaks, foreign animal diseases have not left the planet so outbreaks are still possible. An outbreak of any foreign animal disease would cause hardship on all animal production industries since the movement of animals, supplies and people would be restricted in quarantine areas. Exotic Newcastle Disease (END) and Highly Pathogenic Avian Influenza (HPAI) are two foreign animal diseases that can be devastating to poultry. Prevention is the best method of disease control. Foreign animal diseases can be prevented by strict Biosecurity procedures on each farm and vigilance by animal health professionals charged with preventing the entry of disease into the United States. ■



# A Short History of the Cleanup Costs Associated with Major Disease Outbreaks in the United States

*Since 1971 there have been two major outbreaks of foreign animal diseases in the United States and both of these outbreaks have been in poultry.*

## Introduction

Before starting our discussion of cleanup costs, it is important to understand some terminology. While diseases occur all over the world, certain diseases are very deadly to animals and can spread rapidly. There is no cure for most of these diseases consequently the most effective means of control is to destroy infected or exposed animals. While not popular, this approach has proved effective in controlling these diseases. However, the approach is effective only because each country knows what diseases are commonly found within its borders. Diseases that are not commonly found within the borders are called “foreign animal diseases” (FAD’s).

## Major Poultry Disease Outbreaks

Since 1971 there have been two major outbreaks of foreign animal diseases in the United States and both of these outbreaks have been in poultry. The first outbreak involved Exotic Newcastle Disease (or VVND), and the second outbreak involved highly pathogenic Avian Influenza (AI). An additional outbreak, which had a major cost was also in poultry. It, however, was not technically a foreign animal disease since it was classified as low pathogenic Avian Influenza

## Exotic Newcastle Disease

In 1971, a major outbreak of Exotic Newcastle Disease occurred in commercial poultry flocks in southern California. The United States Department of Agriculture / Animal and Plant Inspection Service (USDA/APHIS) was asked by the State of California to assist in the eradication of the disease. The disease threatened not only the California poultry industry but the entire U.S. poultry and egg supply. In all, 1,341 infected flocks were identified, and almost 12 million birds were destroyed. Eradication efforts cost taxpayers \$56 million, severely disrupted the operations of many producers, and increased the prices of poultry and poultry products to consumers. This cost of eradication and clean-up also included a total of \$27.5 million for bird indemnity. The outbreak was so severe that nearly four years were required to contain the disease. However, Exotic Newcastle has not infected commercial chicken flocks in the United States since that outbreak was eradicated in 1974.

Exotic Newcastle Disease was also diagnosed in backyard poultry flocks in Southern California on October 1, 2002. The California Department of Food and Agriculture and the USDA/APHIS are presently working to eradicate this disease. A total of 1,507 backyard flock premises have been quarantined and infected birds have been found on 351 premises and destroyed. Although Exotic Newcastle Disease eradication efforts are underway in backyard flocks, the disease has not been found in commercial flocks.

OUTBREAK- continued on next page

## Avian Influenza

The outbreak of Highly Pathogenic Avian Influenza was in Pennsylvania, Virginia, and Maryland in 1983 and 1984. USDA/APHIS was also asked to assist in these eradication efforts. A total of 17 million birds were destroyed and expenses associated with this outbreak totaled \$63 million. Poultry producers suffered estimated direct losses of \$55 million in the form of lost birds and eggs, but these direct losses were offset by the \$40 million in indemnity payments. Additionally, there were costs associated with cleanup, disinfection, transportation, lost income, and financial hardships which were not included in the estimate. It has been calculated that consumers paid about \$349 million more for their protein foods during the period November 1983 to April 1984 because of the outbreak of Avian Influenza.

An additional incident illustrates the unpredictable nature of Avian Influenza. A number of table-egg farms in Lancaster and Lebanon Counties, PA tested positive for Avian Influenza in 1996 and 1997. The virus was isolated and said to be nonpathogenic to chickens, but the outbreak had devastating effects on the local poultry industry. The virus causes such severe losses that nine layer flocks were depopulated. The Pennsylvania Agricultural Department also imposed a quarantine on a 75-square-mile area restricting movement of poultry or poultry products into or off of operations in the area of the quarantine until the outbreak was cleaned up. Why did a supposedly non-pathogenic virus cause losses in chickens? The Avian Influenza virus can easily mutate from a non-pathogenic or low pathogenic strain to a highly pathogenic strain without warning.

An additional major disease outbreak has recently occurred. This outbreak involved low pathogenic Avian Influenza and occurred in the Shenandoah Valley area of Virginia. The outbreak spread very quickly and there was great concern that it would mutate to high pathogenic Avian Influenza as had happened in outbreaks in Mexico, Italy, and Pennsylvania. Because of this concern, the State of Virginia asked USDA/APHIS to help eradicate the disease. Positive cases were diagnosed from March 12 thru July 3, 2002. The last of the quarantined farms were released on October 9, 2002. The total costs for this outbreak have not been enumerated as yet. However, the estimates are \$13 million for eradication efforts and \$50 million for indemnity payments. The Poultry Federation of Virginia has estimated that the outbreak cost the poultry industry of Virginia \$129 million.

## Major Poultry Diseases in Other Countries

It is obvious that disease outbreaks can be costly to eradicate and cleanup. There are also costs from loss of trade since restrictions are dictated under treaty obligations associated with the Office of International Epizootics (OIE). Currently, OIE lists an outbreak of Newcastle Disease in laying hens in Algeria and an outbreak of Newcastle Disease on 132 premises in Denmark. Visitors to these countries could transmit the disease to animals in this country if precautions are not taken.

## Summary

Although the United States has not experience the trade restrictions associated with a foreign disease outbreak, the possibility always exists. Costs associated with the eradication of foreign animal diseases are high, but the costs to the industry and consumers are even higher. Constant vigilance is necessary to protect our animals and our industry. ■



# Biosecurity Practices for Arkansas Livestock Farms

*The greatest threat of disease introduction comes from new animals being moved to the farm or animals returning to the farm after contact with other animals.*

## **Biosecurity and Best Farm Management**

An outbreak of a disease on a farm can cause loss of animals for sale, production losses, and extra expenses from veterinary services, quarantine, and/or costs of sanitation and disinfection. All of these “extra” costs can seriously impede or eliminate farm cash flow and animal equity.

Biosecurity is the term used for the overall practices and protocols designed to keep disease off the farm. These measures should be a part of the daily management routine and in essence are part of the best management practices designed to enhance farm profitability.

## **Assessing Biosecurity Risks**

The first step in developing a Biosecurity program is to assess the “on farm” risks of disease. This assessment should be made in consultation with your veterinarian, county agent, or extension livestock specialist. The assessment allows custom tailoring of a Biosecurity plan to the individual farm since each farm has differences. However, there are certain practices that can be utilized on any farm. It is these practices that will be discussed in this paper.

There are many ways in which diseases can gain entry to a livestock farm. The introduction of new animals to the farm is the greatest risk faced. Animals returning to the farm from a location where they have been exposed to other animals offer a risk equally as great. The second greatest threat is from traffic to and from the farm (people, vehicles, and equipment) which may inadvertently carry a disease organism onto the farm. Other sources of disease include vermin, wildlife, and contaminated feed, water, and supplies.

## **Animals and Animal Movement**

The greatest threat of disease introduction comes from new animals being moved to the farm or animals returning to the farm after being in contact with other animals. The movement of animals may be a routine occurrence on many farms as animals are moved to and from exhibitions, sales, auctions, etc, or new animals are obtained to infuse new genetics or bloodlines. It is best to always attempt to purchase new animals from sources where the health and disease status are known. In addition, appropriate screening tests (as determined by your veterinarian or extension specialist) can help limit the addition of animals with some infectious diseases. However, remember that tests do have their limits. It is also important to remember that an animal may be carrying a disease and not exhibiting any symptoms. Therefore, all new animals should be quarantined for a period of time after they are purchased. The quarantine should be at the very least 3-4 weeks (most acute type diseases will become visible within this time frame). During this quarantine period the animals should be carefully examined for any clinical symptoms that are not normal. In addition, other tests can be performed that were not part of the initial screening and any animal that does become ill can be treated appropriately or removed. Any returning animal should also go through the quarantine since they may have been exposed to other animals or diseases. The quarantine area should be isolated away from the other farm animals and the animals in the quarantine should be checked daily after all other on farm animals to minimize inadvertent transmission. It is important to wear different clothing, such as coveralls and rubber or disposable boots, when caring for the quarantined animals. In addition, all wastes from the quarantined animals should be isolated from the non-quarantined

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animals and any feed or water sources. All equipment used with the quarantined animals should be thoroughly cleaned and disinfected before using it with other animals. This includes any equipment utilized in bringing the animals to the farm and any used with the animals while in quarantine.

Another important aspect to consider is the disease resistance status of the animals; both the new additions and those already on the farm. It is important to have a vaccination program in place for diseases that are most likely to affect your animals. This vaccination program works best if it is customized to your farm. Parasite control and/or preventative measures are also an important aspect of the animal's disease resistance since parasites compete for nutrients and can weaken the immune system. Additionally, a sound nutritional program will promote overall health and allow an animal to better respond to antibiotic therapy and vaccinations. Finally, the influence of stress cannot be overlooked; any environment that reduces stress will promote health.

### **Traffic and Traffic Movement**

Traffic to and from the farm (people, vehicles, and equipment) may inadvertently carry a disease organism onto the farm. It is therefore very important to minimize traffic or the potential for traffic to introduce a disease. Visitors to farms are a necessary part of operating a farm; these visitors can be veterinarians, livestock specialists, family members, other livestock owners, utility personnel, or other individuals.

All visitors can be grouped into the three categories of minimal or low risk, moderate risk, and high risk. Low risk visitors are those that rarely visit a farm and have had no contact with livestock (such as those from city and/or urban areas). As such they present a minimal risk of introducing disease. Moderate risk visitors are those that routinely visit farms, but have no or only occasional contact with livestock. This category of visitors includes individuals such as feed delivery personnel, utility personnel, and farm salespersons. High risk visitors are those that routinely visit farms and have direct close contact with livestock. Minimal Biosecurity measures for all three categories include: 1. no contact with farm livestock unless absolutely necessary, 2. parking of vehicles away from the production area of the farm on a paved, gravel, or concrete area and 3. washing of their hands before and after entering the premises.

Low risk visitors should practice the minimal security measures and not bring off farm foods to the farm or enter areas where contact with livestock could occur. You may wish to ask them to wear coveralls to prevent contamination of their clothing. Moderate risk visitors should wear coveralls and boots if there will be any contact with animals, animal wastes, feeds, pens, and or equipment in addition to the same things as low risk visitors. Additionally, they should clean and disinfect their boots and equipment before leaving. High risk visitors are the greatest risk and should practice all the minimal measures of Biosecurity and all those things done by low and high risk visitors. however, they need to take additional precautions. These additional precautions include putting on clean boots and coveralls before entering the farm, using disposable supplies as possible or cleaning and disin-

fecting all equipment before bringing it on the farm, and cleaning and thoroughly cleaning and disinfecting when leaving the farm. The use of a footbath should also be considered as part of the farm Biosecurity plan. The footbath should be in a suitable container that is water tight and large enough to allow at least one foot to be placed entirely in it. The footbath is far more effective if there is some means to remove debris from the footwear before use of the footbath since many disinfectants are rendered ineffective if contaminated with organic matter such as manure. It is important to be sure and locate the footbath where it is easily accessible and practical for use. It is best to have a footbath at the entrance to each pen or building. Unfortunately these locations are seldom practical or utilizable. therefore locate the footbath where traffic will be from the outside and in areas where the most susceptible animals are located. It is also very important to properly maintain the disinfectant solutions by cleaning and recharging at least weekly or more often if used frequently. Remember a footbath that is improperly used may hinder or harm a Biosecurity program by giving a false sense of security or actually spreading disease. All chemicals and disinfectants used for cleaning, disinfecting, and in footbaths should be EPA approved and mixed and used according to label directions.

Ideally, there should be only one farm entrance that can be gated or closed off to discourage and prevent visitors and traffic. Vehicles should not be allowed on the farm unless absolutely necessary. All vehicles should be parked on an area of concrete, asphalt, etc. so the wheels and undercarriage can be properly cleaned and disinfected and there is minimal contact with dirt, mud, farm drainage, and/or animal wastes. If this is not possible at least park on an area of grass. Ideally all vehicles should be cleaned and disinfected before arrival at and upon leaving a farm. Additionally, some type of insecticidal spray should be used in the vehicle before leaving. Farm equipment should not be loaned to other farms if at all possible. If this is not possible the equipment should be thoroughly cleaned and properly disinfected before returning to the farm or use with other animals. All supplies that are non-disposable should be cleaned and disinfected after each animal. Another important point about traffic (both vehicular and personnel) is traffic flow patterns. It is always best (because of differences in immunity and susceptibility) to visit the youngest animals first then progress age-wise to the oldest. All quarantined and/or sick animals should be checked last.

### **Summary**

Disease outbreaks can reduce farm efficiency and profits. Effective Biosecurity programs can reduce the risk of disease outbreaks. Effective Biosecurity programs reduce the probability that diseases will gain entrance to the farm. Animals and animal movement is the greatest biosecurity risk farms face, while traffic (people, vehicles and equipment) to and from the farm can transmit disease. ■





# The Office of International Epizootics

## Background

In 1920 Rinderpest, a deadly and highly infectious viral disease of cattle, was found in cattle from India being held in Belgium for shipment to Brazil. While swift action could have limited the disease, the inevitable slowness of negotiations using diplomatic channels between nations allowed the disease to spread and hampered eradication efforts. Realizing their predicament, the founding 28 countries created the Office of International Epizootics or OIE in 1924. The OIE is headquartered in Paris and held its first session in 1927. Since this beginning; membership in the OIE has grown and the stature of the organization has as well. The OIE presently includes 162 member countries.

## Operating Procedures

The International Committee, which is composed of delegates from member countries, is the controlling body of OIE. The International Committee holds a general meeting every year in Paris for the purpose of adopting international trade standards and resolutions related to animal health or animal disease control. Additional business conducted at the general meeting includes: election of members to governing bodies or commissions, appointing the OIE Director General, approving annual activity reports and authorizing budgets. The general meeting also allows delegates to discuss regional problems and report on the worldwide animal health situation.

## Meeting OIE Objectives

OIE members agree to strive toward four objectives. First, member countries agree to tell the truth about what diseases have been found in their countries so that other countries can protect themselves. Second, members agree to analyze their own disease situation and share that data with other members in an effort to help each other understand how to control these diseases. Third, members agree help each other learn how to control and eradicate diseases. Fourth and last members agree to develop standards for protection of member countries without erecting trade barriers. This standard is called the International Animal Health Code (AHC). The World Trade Organization recognizes the AHC of the OIE as international sanitary rules.

How does OIE accomplish its objectives? This is done via OIE's world animal health information system through which member countries declare current animal diseases and zoonoses (diseases that are transmitted from animals to man) in their respective countries. OIE information can be viewed at [http://www.oie.int/eng/oie/en\\_oie.htm](http://www.oie.int/eng/oie/en_oie.htm). Diseases reported to the OIE are classified into two categories: List A and List B.

## Disease Classifications

List A diseases are transmissible diseases that have the potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic or public health consequence and that are of major importance in the international trade of animals and animal products. List B diseases are diseases that are transmissible, are considered to be of socio-economic and/or public health importance within the reporting countries, and that are significant in the international trade of animals and animal products. While important enough to be tracked, List B diseases tend to be those that spread less easily and are controlled more readily.

The List A and List B diseases for avians are listed below:

List A

- Newcastle disease
- Highly pathogenic avian influenza

List B

- Avian chlamydiosis
- Avian infectious bronchitis
- Avian infectious laryngotracheitis
- Avian mycoplasmosis (M. gallisepticum)
- Avian tuberculosis
- Duck virus enteritis
- Duck virus hepatitis
- Fowl Cholera
- Fowl Pox
- Fowl typhoid
- Infectious bursal disease (Gumboro disease)
- Marek's disease
- Pullorum disease

### Trade and Economic Effects of OIE

Members also agree to abide by the International Animal Health Code which states:

“International trade in animals and animal products depends on a combination of factors which should be taken into account to ensure unimpeded trade, without incurring un acceptable risks to human and animal health.”

As a part of this trade agreement certain countries that meet the criteria are declared “disease free” for List A diseases. When a country has a “disease free” status, unimpeded trade can proceed with that country. However, if a List A disease is discovered in a “disease free” country, trade is restricted with that country so that the disease can be controlled. Unimpeded trade can resume with the affected country six months after the last positive has been discovered. Although, this procedure is needed and necessary, it has economic consequences. These consequences are outlined in another article. ■



# Integrity and Rules of Practice for Veterinarians

## **Veterinarians Oath**

We probably all realize that, once they have completed their training, veterinarians must pass state board examinations and are required to take an oath. That oath is as follows:

Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health, the relief of animal suffering, the conservation of livestock resources, the promotion of public health and the advancement of medical knowledge.

I will practice my profession conscientiously, with dignity and in keeping with the principles of veterinary medical ethics.

I accept as a lifelong obligation the continual improvement of my professional knowledge and competence.

## **Regulations Veterinarians Must Follow and Why**

Most veterinarians honor the personal commitment they make upon taking their oath, maintaining the integrity of the profession. However, as the oath implies, veterinarians, like other professionals, have rules to obey and are expected maintain their competency. Veterinarians are expected to obey the same regulations that any other citizen of the United States must obey. However, there are also additional regulations that apply only to the practice of veterinary medicine. Veterinarians who do not follow these regulations are punished and could have their licence to practice within the state revoked.

In the United States the veterinary profession is regulated in each state by a state Veterinary Medical Board, which enforces a set of regulations known as the Veterinary Practice Act. While specific regulations found in the Veterinary Practice Act may vary slightly from state to state, regulations, and policies are similar. Regulations are usually set forth by the legislative body of the state (i.e. the state house or senate) and are established to define the practice of veterinary medicine in the state, establish a veterinary board, and establish penalties for the illegal practice of veterinary medicine. Some of the duties of the veterinary board may include: examining to determine the qualifications of applicants to practice in the state, issue of veterinary licenses, investigate complaints against veterinarians, and enforce the provisions of the Veterinary Practice Act.

## **Consequences for Violating Regulations**

The Veterinary Practice Act is designed to protect the general public and their animals by insuring that licensed, qualified veterinarians are properly engaged in the practice of veterinary medicine. The practice act outlines a code of professional conduct for veterinarians to follow. Any veterinarian that violates the rules of the practice act is investigated by the veterinary board and may be issued a citation, temporary suspension of their license or a revocation of their license to practice. Unprofessional conduct, such as conviction of a felony, negligence, animal cruelty, dishonesty, and a host of other behaviors are all grounds for investigation and punishment.

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The diagnosis of disease in an animal by a veterinarian is also somewhat regulated by the agency responsible for the control of animal diseases in the state. This agency issues a list of diseases that are considered reportable within the state. A “reportable disease” is one that veterinarians are required to report to the agency in charge of animal disease control. These diseases are those that have the potential to be communicable to people, are easily spread, or are a foreign animal disease (ie. one not endemic to the United States). A few examples of reportable diseases are rabies, Brucellosis, Tuberculosis, Avian Influenza, Exotic Newcastle, Anthrax, and Hog Cholera. In most states a veterinarian is legally obligated to report any disease listed as reportable in that state or the United States if the disease is even suspected in an affected animal. In other words, the veterinarian must report the disease even if he/she suspects the disease is present and has not definitively diagnosed the disease. Once reported, certain diseases may lead to animals being quarantined until the disease can be contained. Although such quarantines can be inconvenient for producers and processors, regulations may require veterinarians to issue these orders.

### **Summary**

Veterinarians are bound by honor bound to uphold their oath and the regulations within the states that grant them licences to practice. The oath as well as the regulations are designed to protect health of the public, the health of animals, the food supply and to prevent deadly and costly disease outbreaks. In addition, these oath and the regulations insure that a veterinarian is practicing with a certain level of knowledge, and professional conduct. ■

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