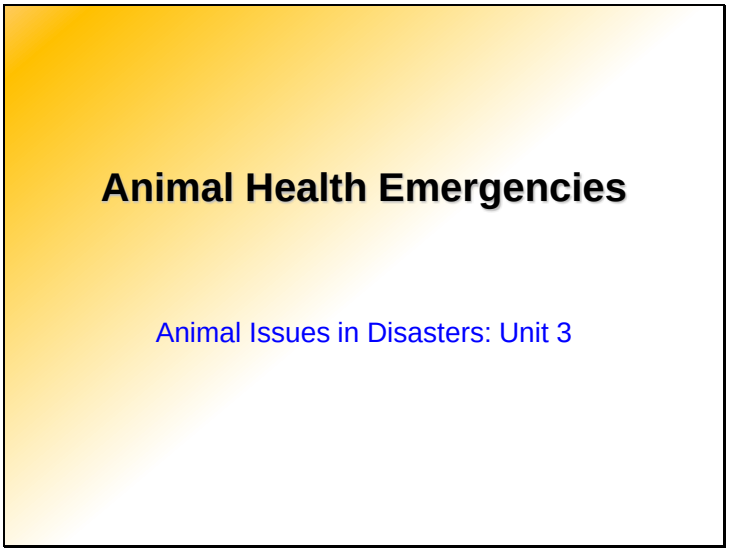
Slide 1



Animal Health Emergencies: Unit 3

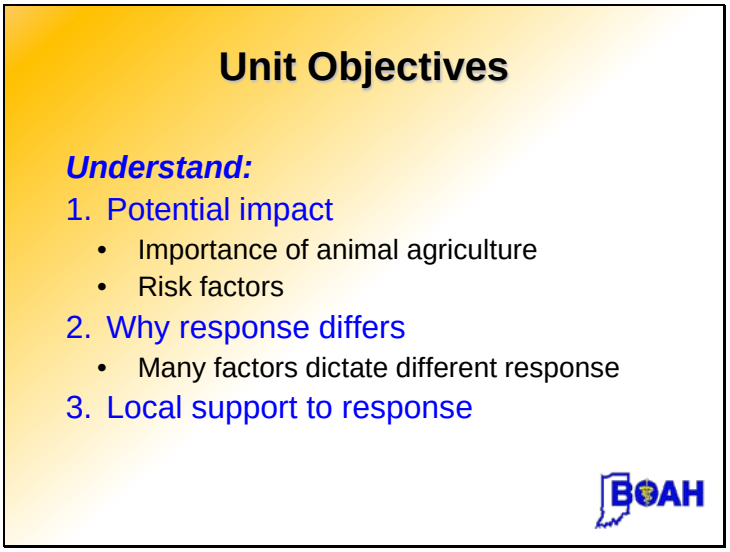
This unit will address Animal Health (or disease-related) Emergencies.

Emergency planning in Indiana—and the entire United States—changed dramatically in 2001, after Great Britain endured a widespread foot-and-mouth disease (FMD) event that resulted in a loss of more than 10 million head of livestock.

Beyond the loss of life, the economic impact to the country, local communities, and individual farms was traumatic and took many years to achieve full recovery.

That incident, the most dramatic large-scale disease event in recent history, gave U.S. animal health officials a new understanding of how vulnerable modern agriculture—and, therefore, our food supply—is to other types of disasters.

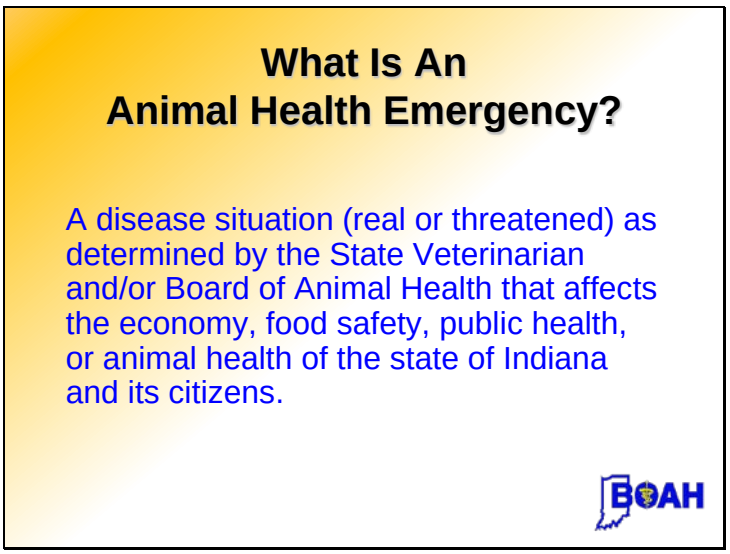
Slide 2



Objectives for this unit are to understand:

1. The potential impact of an animal health emergency because of the importance of livestock and poultry production to Indiana's economy, as well as factors that increase Indiana's risk of a catastrophic event;
2. Understand that, to be effective, not all animal health diseases can be handled in the same way. Many factors dictate different response efforts needed to achieve success; and
3. Ways local responders can help support response efforts by state/federal agencies.

Slide 3



What is an animal health emergency?

First, a definition of an animal health emergency is:

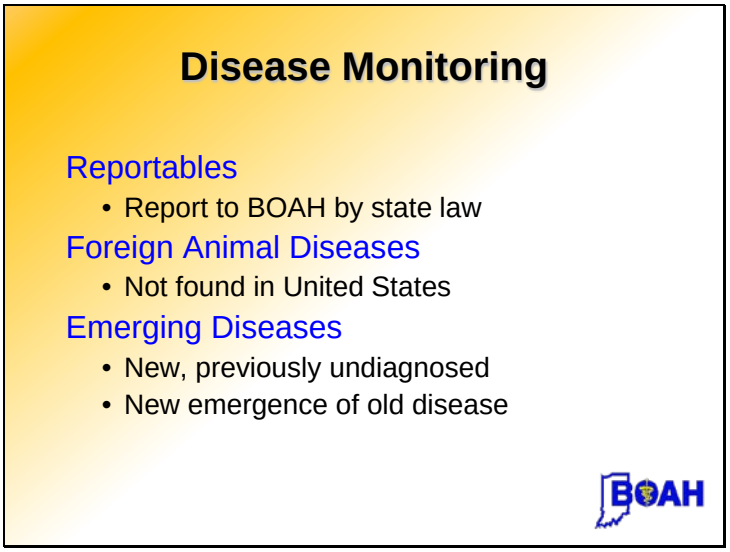
A disease situation (real or threatened) as determined by the State Veterinarian and/or Board of Animal Health that affects the economy, food safety, public health, or animal health of the state of Indiana and its citizens.

Notice that the motivation for response is not just about infected animals. A threat to Indiana's economy or food supply can warrant a large-scale response to a disease.

Animal health emergencies are incorporated into ESF11, as discussed in Unit 2.

First responders accustomed to handling floods and tornadoes will see that response to a disease issue is very different in many ways.

Slide 4



Disease Monitoring

As part of the agency's mission, the Indiana State Board of Animal Health (BOAH) regularly monitors the status of animal health in Indiana, other states, and the rest of the world. Agency staff members are concerned with three general categories of disease: Reportable, Foreign, and Emerging.

REPORTABLES:

Under the agency's charge in state law, BOAH is responsible for the health of all of Indiana's animals; therefore, the agency maintains a list of reportable diseases. By law, any diagnosis of a disease listed as reportable requires prompt notification to the State Veterinarian (online: www.in.gov/boah/2372.htm). In general, reportable diseases are those human health consequences, part of a national eradication program, have a significant potential economic impact, and/or are classified as foreign to the United States.

FOREIGN:

The list of foreign animal diseases—which are also known as "FAD"—for the United States is maintained globally by the World Organization for Animal Health. A unique list is maintained for every country in the world for international trade purposes. Diseases considered endemic in some parts of the world cannot be found in others. As a matter of protection, nations want to maintain their animal health status as disease-free. A single case of a disease classified as foreign to the United States has the potential to shut down global trade in certain products and goods for the entire nation.

Examples:

Rabies (reportable in Indiana): Classified as foreign in Australia, where the disease does not exist, but rabies is endemic to the United States.

Foot-and-mouth disease (foreign to U.S.): Does not exist in North America, but is endemic to much of the world, including Asia and Africa.

EMERGING:

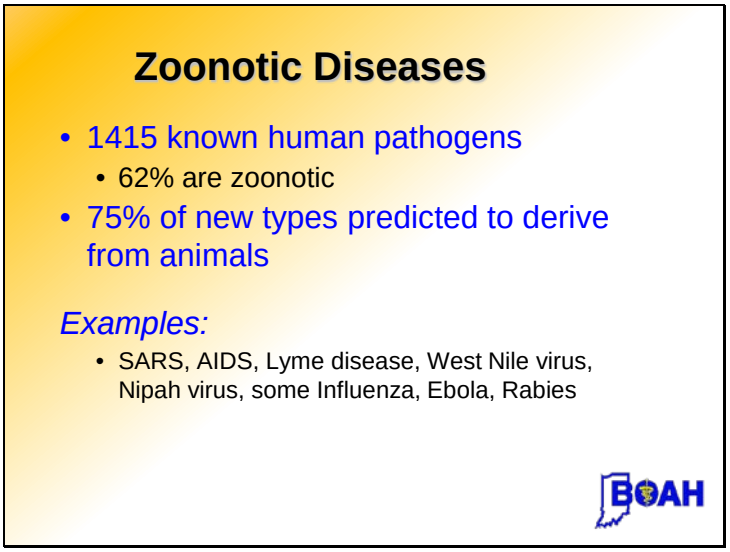
Emerging diseases present another area of concern. These are new, previously undiagnosed conditions, or the manifestation of an old, previously eradicated disease within the state or the United States.

Examples:

Reentry of pseudorabies to Indiana's swine population. (The disease, which is fatal to many animal species, but has no human health effects, was eradicated in 2000 to increase the pork industry's access to global markets.)

West Nile virus was considered an emerging disease when it was first discovered in the United States in 1999.

Slide 5



Zoonotic Diseases

Zoonotic is another term used in animal health response.

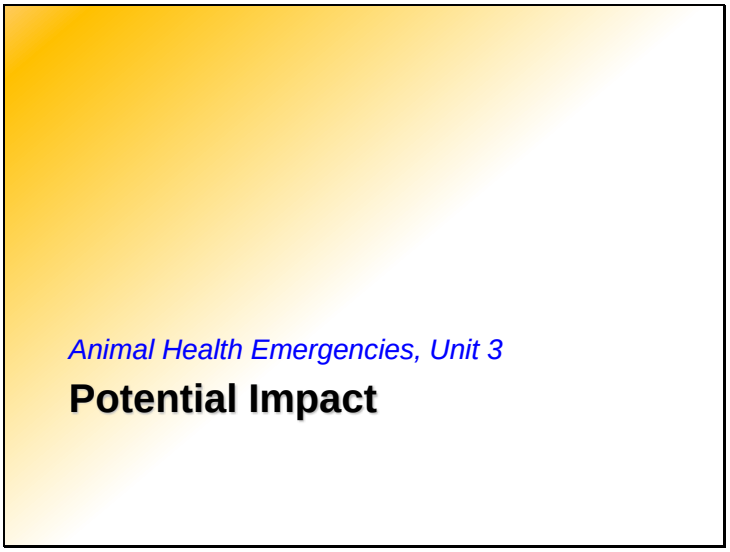
Within the three categories previously mentioned, some diseases can be zoonotic—that means the pathogen is transmissible between people and animals. While a disease does not need to be zoonotic to rise to the level of an emergency (that is, in fact, fairly rare), these organisms can present special concerns, especially to first responders.

Zoonotics are of increasing concern to both animal and human health agencies. Of 1415 known human pathogens, 62% are classified as zoonotic.

Of diseases newly discovered by science, 75% are predicted to be derived from animals.

Examples of zoonotic diseases include: SARS, AIDS, Lyme disease, West Nile virus, Nipah virus, some influenza, Ebola, rabies

Slide 6



Animal health events can pose a significant threat to the economy and food supply in Indiana and the United States.

Slide 7

"Small, but mighty" might be the best way to describe agriculture in Indiana.

Indiana farmers export globally $4.6 BILLION worth of agricultural goods each year.

Nationally, that places Indiana as #7 of all states—a major accomplishment considering the six states ranked ahead of Indiana: California, Iowa, Illinois, Nebraska, Minnesota, and Texas.

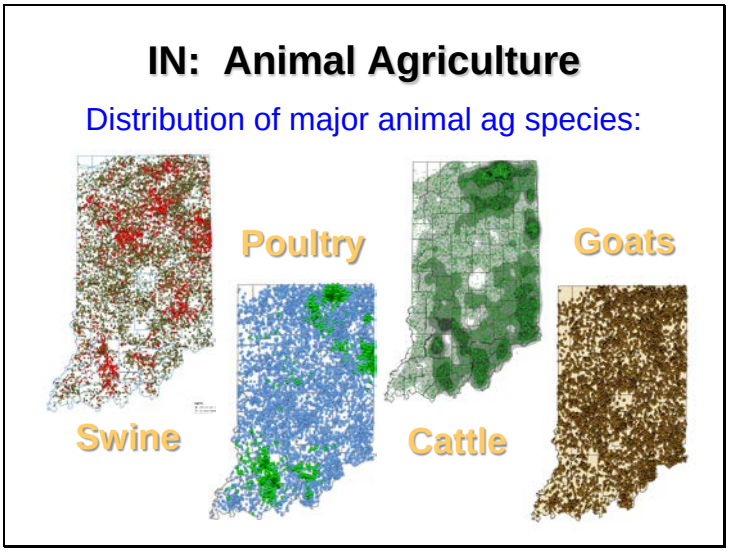
In fact, by comparison, Indiana ranks 38th of all states in land area. That means livestock and poultry production in Indiana is happening in a relatively small geographic area. An ideal climate for animal production, abundant availability of nearby feedstuffs like corn and soybeans, and geographic proximity to much of the U.S. population, has made Indiana an great place for a lot of farms.

That increases the risk to the state's economy from a catastrophic disease event spreading between farm operations.

Further increasing risk is a shift in animal agriculture. Much like other business sectors, agriculture has experienced growth and concentration to fewer, larger suppliers. Similar to what has happened to retail shopping, where we have seen a shift away from small, mom-and-pop stores to big-box chain stores, animal agriculture has evolved.

Many farms in Indiana—and across the country—have become quite large, housing hundreds or thousands of animals in highly efficient production systems on a single site.

Slide 8



Indiana Agriculture Overview

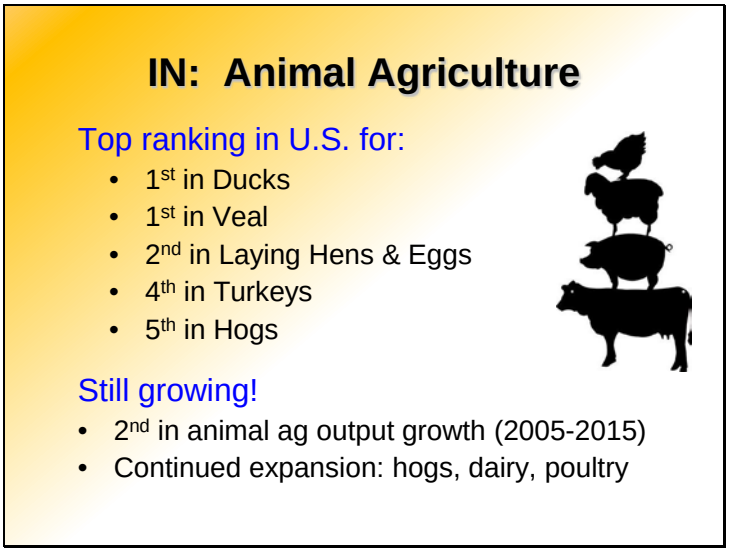
To further illustrate that scale and importance of animal agriculture statewide, these maps provide a quick look at the distribution of some of the major agricultural species in Indiana.

Because the Board of Animal Health requires registration of all premises associated with livestock species, BOAH's mapping system reveals where production is most concentrated.

These maps show premises registered for swine, poultry, cattle (including dairy), and goats. (Each of these sites may have one or dozens or hundreds of animals.)

Indiana is home to more than 60,000 farms raising animals.

Slide 9



Indiana Agriculture Overview

On the "small but mighty" theme, we can look at where Indiana stands in animal agriculture nationally.

Did you know Indiana has 20 times more chickens than people?

Hoosier farmers produce more than 700 million pounds of turkey every year?

These are top rankings for just some of the livestock sectors.

Indiana is also a strong dairy state, with the second-largest ice cream processing plant and the home of Redi-Whip and Nestle's Quik milk products.

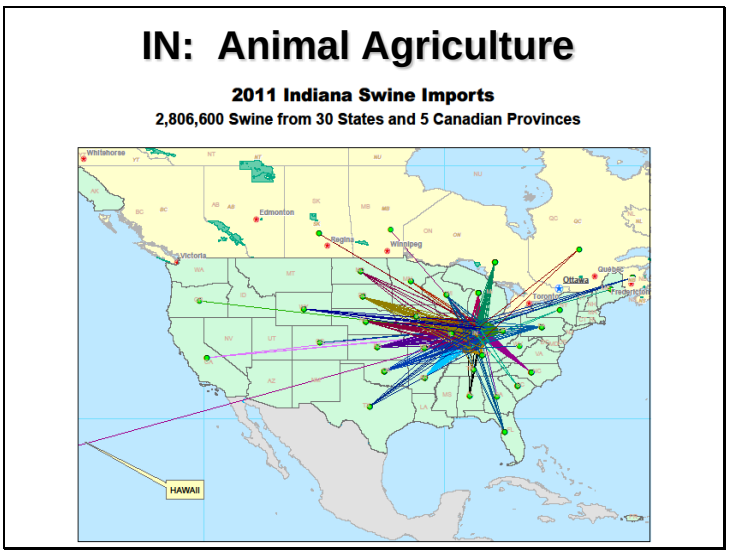
This does not mention the production of crops that feed these animals.

More than 100,000 Hoosier jobs are connected to agriculture, outside the farm.

Obviously, protecting our agricultural assets is very, very important to Indiana's economy and jobs not only on family farms, but also in industry.

Safeguarding agriculture is also an issue of protecting the supply of food for the nation and the world.

Slide 10



Indiana Agriculture Overview

Indiana is closely tied to other states' livestock production.

On a daily basis, trucks of animals are moving into and out of the state.

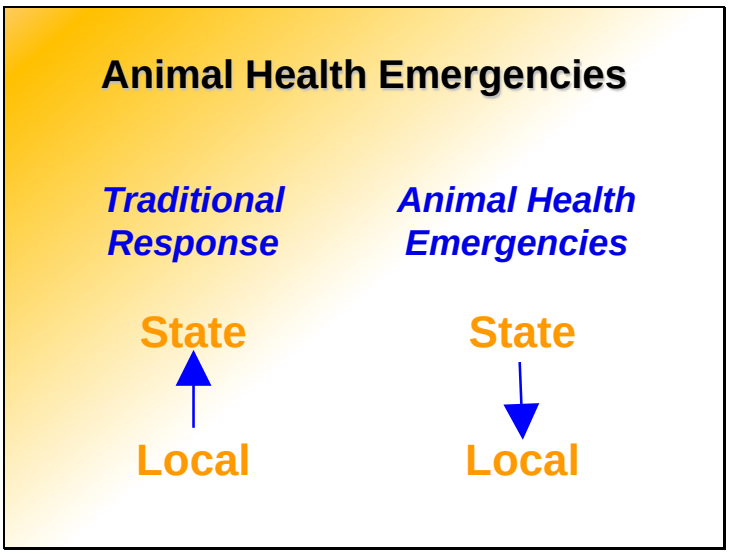
Each of the lines on this map denote movements that pose more opportunity for disease to spread from one farm to another, increasing the risk of experiencing a disease threat to Indiana's livestock industry.

Slide 11

Anyone familiar with emergency management and disaster response will soon realize that response to an animal disease event is not like other disasters such as a flood or fire or tornado or railroad derailment.

The response differs in many ways, starting with notification and who is the lead.

Slide 12



Animal Health Emergencies

When an event happens and it's time for response, those who work regularly in emergency management will notice a difference.

Unlike most governor-declared emergencies resulting from natural or man-made disasters, an animal health-related scenario would progress very differently.

Traditional Response

In most circumstances, a local Emergency Management Agency responds to a situation, then calls upon other county/district jurisdictions or the state to supply resources when local supplies are expended. This bottom-up model means response starts locally, then moves up to the state or federal government as needed.

Animal Health Response

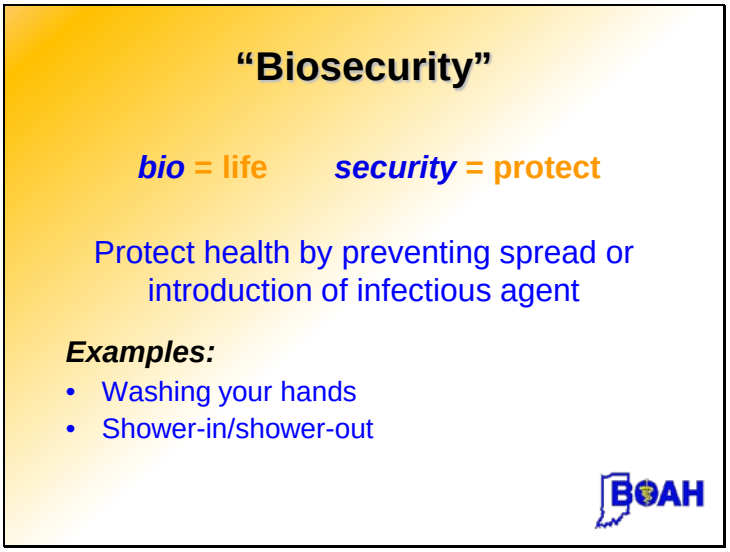
That bottom-up approach does not apply to animal health emergencies. Under legal requirements for disease reporting, state/federal officials will learn of an animal health (disease) situation before local officials.

So the model could be viewed as "top-down". State or federal agencies begin the response, then call upon local agencies to assist. A local community's first notification will come from the Indiana State Board of Animal Health and/or Indiana Department of Homeland Security.

What's more, primary response to an animal health emergency requires specialized equipment, trained personnel and specific strategies to afford quick containment/control, appropriate veterinary medical diagnosis/treatment and effective eradication efforts. Board of Animal Health and U.S. Department of Agriculture veterinarians and field staff are specially trained to diagnose, handle, and document large-scale disease situations.

The ultimate goal is to contain and/or eradicate a disease-causing organism to stop its spread.

Slide 13



Biosecurity

As this course discusses response to any type of animal emergency, an understanding of the term "biosecurity" will be helpful, as that stands at the core of efforts to prevent, control and eradicate disease.

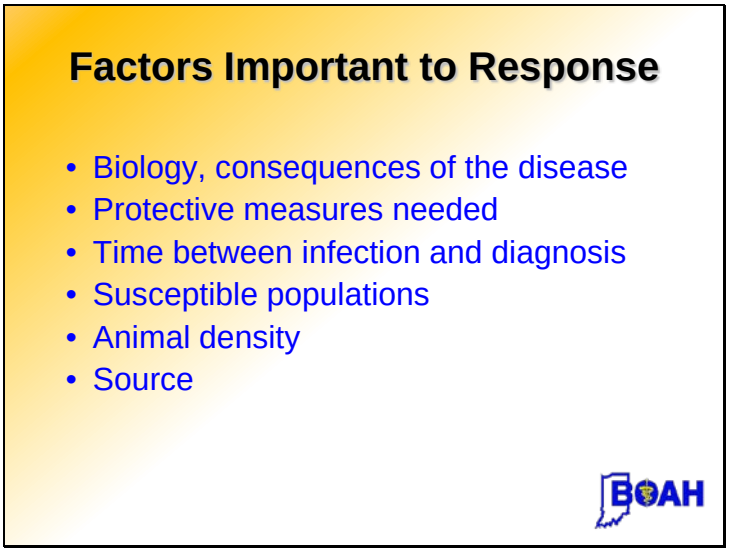
In the absence of an animal health event, the State Board of Animal Health continually encourages animal owners, farmers, veterinarians, and others in agriculture to take steps to mitigate the risk of a disease event in a herd or flock.

"Biosecurity" means protecting the life, or health, of animals or people. Any step that can keep disease-causing pathogens or "critters" (think ticks, wild birds, insects) out or away from animals is an act of biosecurity. Biosecurity practices are mitigation steps for livestock and poultry owners.

An example of personal biosecurity is washing your hands before you eat.

A farm example: Many pork producers have a policy requiring everyone who enters or leaves a barn to take a full shower and change clothes before entering and after exiting. While the barn's environment is not sterile, diseases are less likely to be introduced.

Slide 14



Factors Important to Response

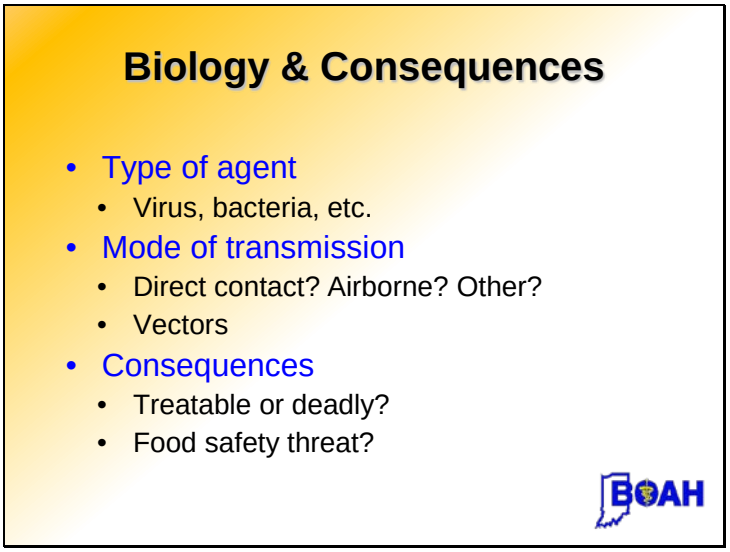
A few key factors dictate exactly how response happens. This is why the expertise of veterinarians with the State Board of Animal Health and/or U.S. Department of Agriculture is essential to leading response efforts.

Different diseases warrant very different actions based on:

- Biologic nature and consequences of the specific disease;
- Protective measures taken at the site and in the area;
- Time elapsed between infection and diagnosis;
- Breadth of populations susceptible to the disease, including wildlife;
- Farm/animal density in the affected area; and
- Source of disease

Unless diagnosis and containment occur very quickly, potential impact needs to be considered in terms of the community or the broader industry, not just a single livestock operation.

Slide 15



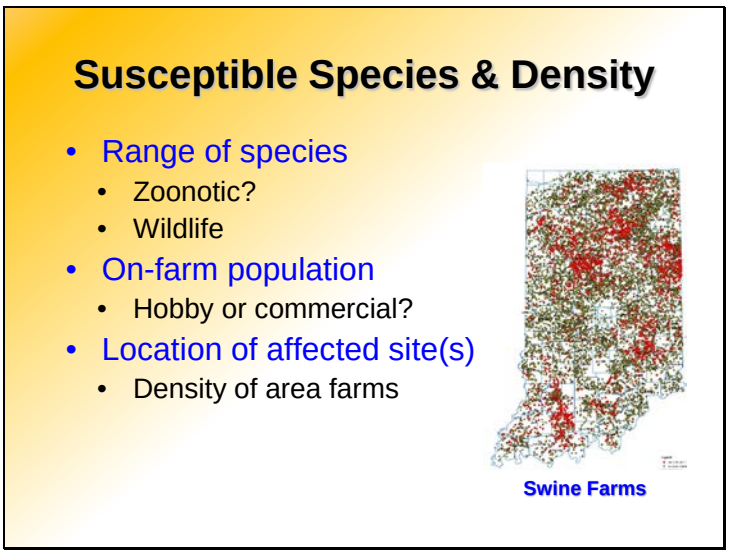
Biology & Consequences of a Disease

The biologic nature of a disease is important to response.

Essential factors include:

- Type of agent: Is this a bacterium? A virus? Identifying the disease-causing pathogen will aid future diagnosis and encourage animal owners to report suspicious clinical signs. The type of organism will determine if vaccination and/or treatment are viable options to prevention.
- Knowledge about the mode of transmission, or how the disease is spread, will dictate how to prevent further spread, either within a herd or between farms. Some organisms are spread only through direct, physical contact, while others may be airborne. Vectors, like insects, birds, or human traffic, can carry some organisms from site to site, which means other steps should be taken.
- Consequences of a disease will also have an influence. Is the disease deadly to the affected animals, or can they recover? Is a treatment available, and, if so, is it cost-effective? Does the disease present a threat to the safety of the food supply, either as a contaminant or as a disrupter of food supply availability? Is the disease easily transmitted to people?

Slide 16



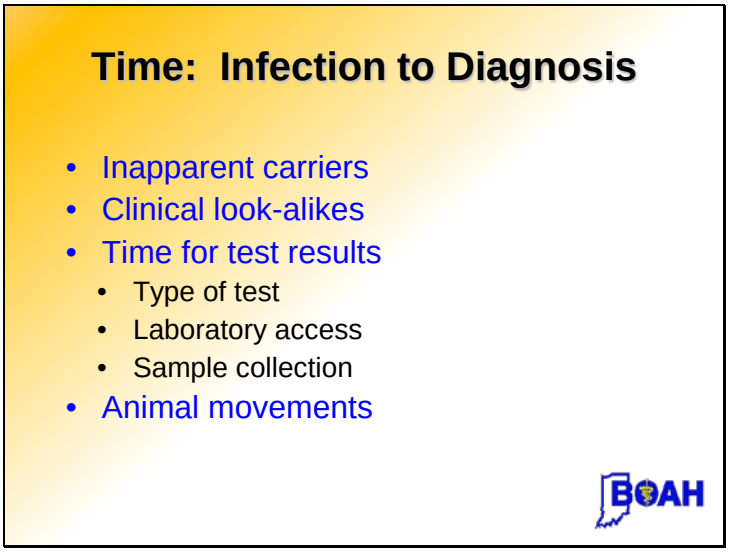
Susceptible Species & Density

More factors that determine response efforts include:

- The range of species that can be infected by a given organism can vary widely. Is the disease zoonotic (threat to humans)? Can wildlife become ill or carry the disease? Other agencies and resources must be part of the planning process when wildlife are threatened.
- The population of animals on an affected site can change the scale of response. Small, hobby farms do not require the resources and personnel that a large commercial poultry farm or dairy need.
- The location of the affected site(s) relative to other farms with susceptible species is important. When many sites are in close proximity, the planning section needs to be aware. Densely populated regions will generate more surveillance tasks. BOAH's premises registry (USAHERDS) provides the agency with tools for estimating farm densities throughout the state.

This map of hog farms in Indiana provides a glimpse of areas at greatest risk to swine diseases.

Slide 17

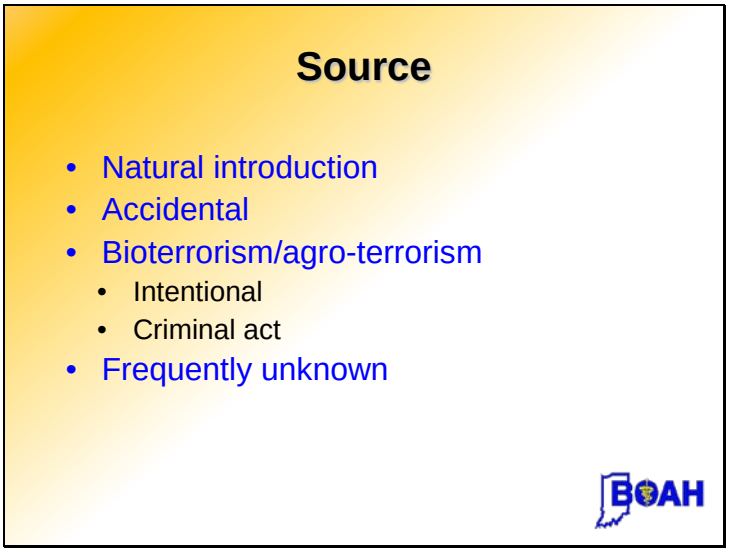


Time: Infection to Diagnosis

The time between an animal becoming infected and the diagnosis of the disease will have a bearing on the response. When a disease is capable of spreading rapidly, but is not discovered early, the number of affected animals and sites can expand quickly.

- Some animals may be inapparent carriers of a pathogen—they are infected and shedding (spreading) the pathogen, but do not show clinical signs. This presents the greatest threat because farmers may continue to move animals unaware of the looming illness.
- Clinical appearance of some diseases will closely resemble other diseases; only laboratory tests can differentiate. This causes confusion and the opportunity for significant diseases to be overlooked. Therefore, messaging to the public/farmers/veterinarians will be essential to finding more cases.
- The time for test results to confirm a diagnosis will have a bearing on response. Some diagnoses can be made rapidly at the farm level ("pen-side" tests), while others may take longer to "grow out" at a laboratory. (Bovine tuberculosis can take weeks to multiply in the laboratory.) In some cases, multiple tests must be performed to confirm the diagnosis as a matter of official reporting to international trading partners. The USDA establishes the standards for confirmatory testing. In some cases, not every type of test is considered "official" (i.e. has results that warrant regulatory action). Logistics of testing prevail on response time. Samples may need to be transported to laboratory facilities in another state. Likewise, some types of samples (blood, tissue, etc.) may need to be collected by a veterinarian instead of the farmer, a situation that slows response.
- Animal movements may continue after infection, but before diagnosis happens. This scenario increases opportunity for diseases to be moved between farms or to other states, increasing the potential impact of a disease event. When animal movements to other states are identified, BOAH notifies the State Veterinarian in the other state as part of a trace investigation.

Slide 18



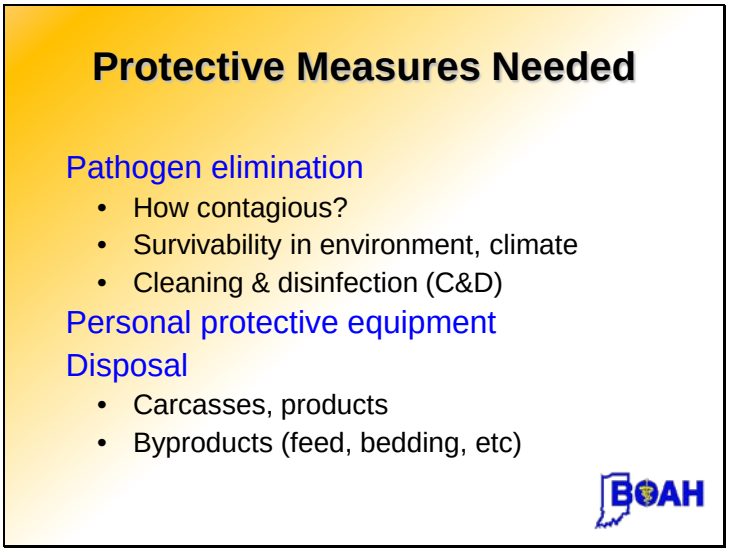
Source

The source of a disease may never be known. Animal movement traces and investigations do not always reveal the origins.

Possible sources for introduction of disease include:

- **Natural introduction:** This can happen when a pathogen is introduced by a natural process or vector, such a migratory wild bird or an insect. Cases of wind-borne spread of disease have been documented when pathogens are blown from one site to another.
- **Accidental:** Diseases are most often spread unintentially through vehicle or human traffic, animal movements, and other contacts. A swine disease was recently identified in commercial feed that was manufactured in China.
- **Bioterrorism or agro-terrorism** could be a source of infection. This intentional act, although likely difficult to prove, would be a criminal act. When this is suspected, law enforcement should be contacted to assist in the investigation.
- All too often the source of the disease will remain unknown or unidentified.

Slide 19

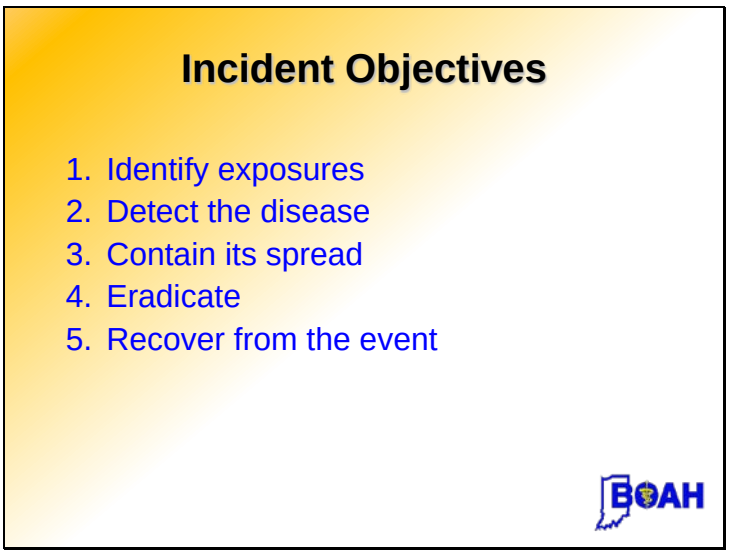


Protective Measures Needed

More factors that affect the speed and level of response include:

- What is needed to eliminate the pathogen?
    - How contagious is the disease? Highly virulent diseases, such as foot-and-mouth disease and highly pathogenic avian influenza, require rapid response to contain and eliminate the virus. Other diseases, such as bovine tuberculosis, do not spread as easily, allowing for a different pace of response.
    - Survivability of an organism in the environment can contribute to disease spread. Some pathogens cannot live outside of a living body, while others can survive in soil, feedstuffs, water, or manure. Environmental contamination requires additional steps to clean and disinfect sites, buildings, and vehicles.
    - Cleaning and disinfection (or C&D) protocols must be tailored to the organism. Not all disinfectants are effective on all pathogens. In some cases, property needs to lay fallow—or unoccupied—for a period of time to ensure no reinfection.
- Some level of personal protective equipment (PPE) for workers is generally warranted. The level and type of PPE also varies with the risk the disease presents to the workers. Even when human health impact is nonexistent, disposable PPE is used to prevent the pathogen from being carried off the site.
- Disposal will always be an issue when animals die and/or are depopulated. Often other products on the farm, such as eggs, feed, and bedding, will be contaminated and require disposal. Policies from the USDA and/or environmental laws will dictate what methods are acceptable and how the processes are carried out.

Slide 20



Incident Objectives

The main objectives for an animal health event, in order, are:

1. Identify affected animals or sites that may have been exposed to the disease of concern
2. Detect the presence of the disease—generally through official testing
3. Contain the disease to the affected sites to prevent its spread to other animals and/or sites
4. Eradicate the disease: How this is accomplished will vary, depending on many factors, including biology of disease, number of infected animals, etc.
5. Recover: recovery to get back to business or back to “normal” is the goal whenever possible.

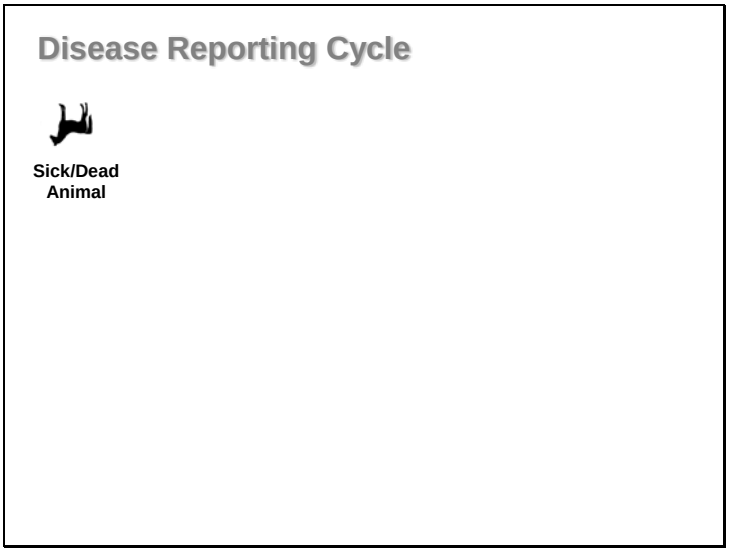
Slide 21

Disease Reporting

The following flow chart is a simplified look at how diseases of concern are typically reported to the State Veterinarian or USDA.

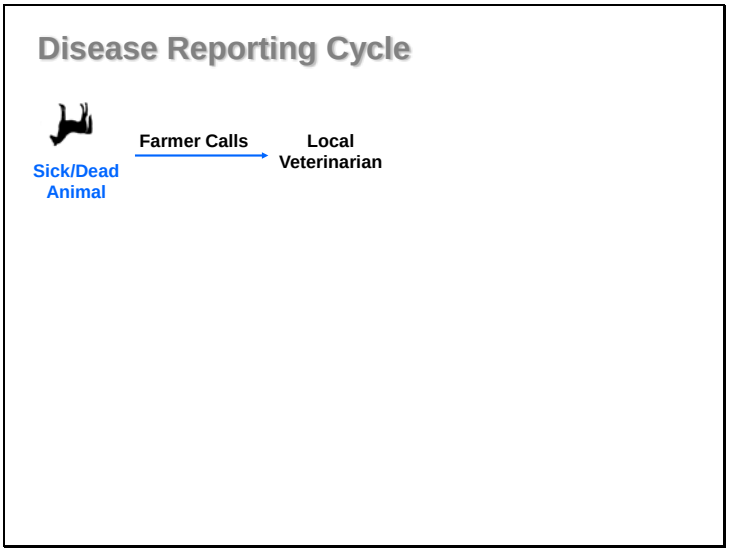
Not all diseases are reported in this way—nor should they be. The essential component in this process is that the farmer contacts his/her private veterinarian who is trained to recognize diseases of concern that should be reported to the state.

Slide 22



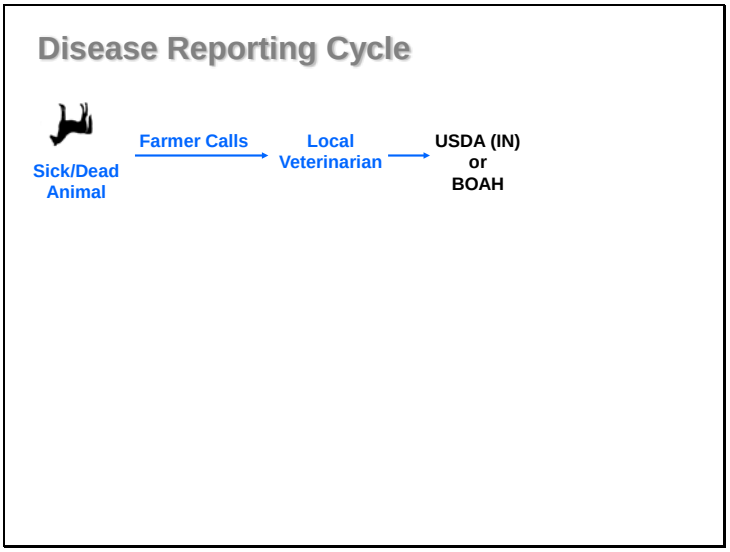
A farmer has a sick or dead animal(s) that is unusual in some way.

Slide 23



The farmer or animal owner calls a local veterinarian.

Slide 24

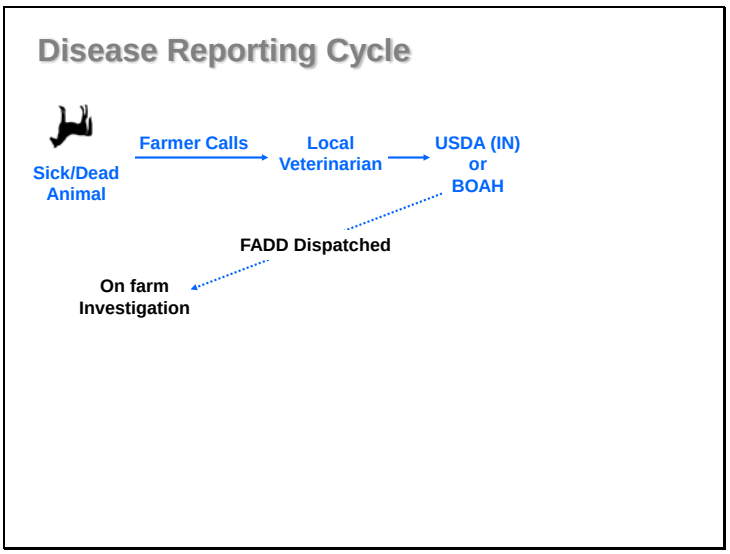


The veterinarian has reason for concern.

The concern may stem from a clinical diagnosis or test results that indicate a regulatory or foreign animal disease.

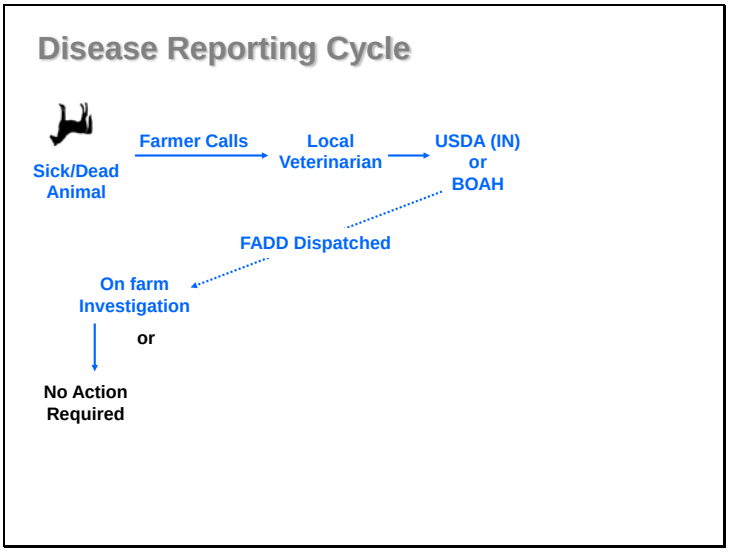
The next call is to a Board of Animal Health district veterinarian or a Indiana USDA Veterinary Services veterinarian.

Slide 25



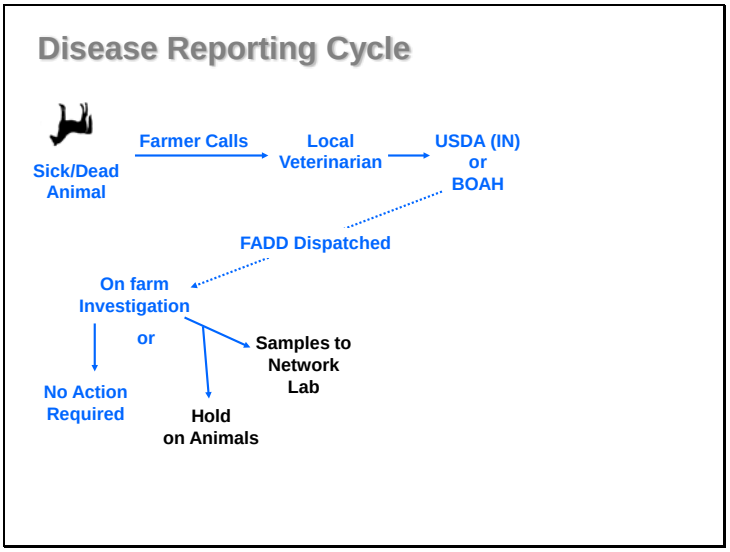
BOAH or USDA will dispatch a foreign animal disease diagnostician (FADD), a veterinarian who has had additional training in recognizing unusual diseases not known to exist in the United States.

Slide 26



Once on the farm, the FADD may determine no action is required and the situation is not a foreign animal disease. Or…

Slide 27



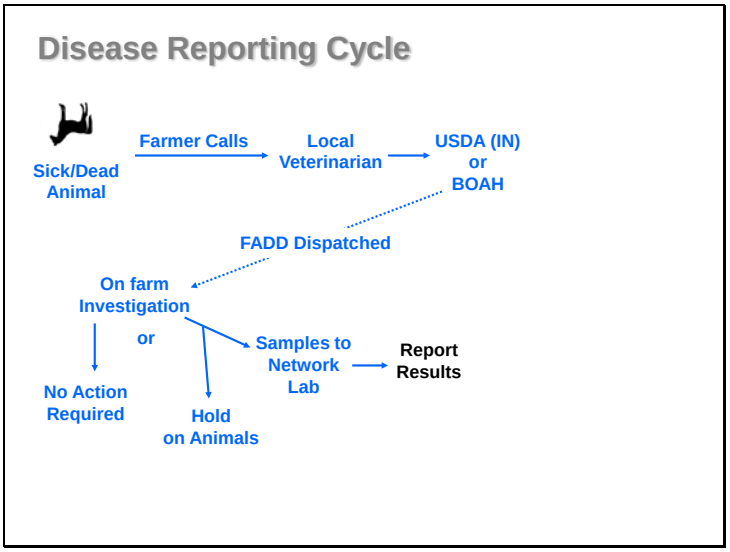
Or the FADD may feel additional testing at a USDA NAHLN (National Animal Health Laboratory Network) laboratory is warranted.

The FADD will collect and submit samples with priority.

The FADD/regulatory veterinarian will also place a hold on the animals and animal products on the farm until the laboratory results are returned.

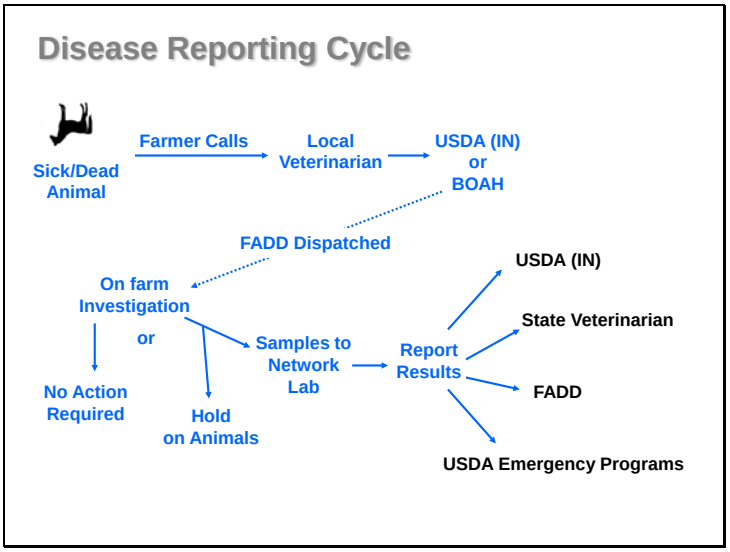
This may or may not be a formal, written quarantine.

Slide 28



The NAHLN facility will report results...

Slide 29



Laboratory results move electronically and simultaneously to the Indiana office of USDA, the Indiana State Veterinarian (BOAH), the Foreign Animal Disease Diagnostician who submitted the samples, and the USDA Emergency Programs office in Riverdale, MD (aka Washington DC).

Slide 30

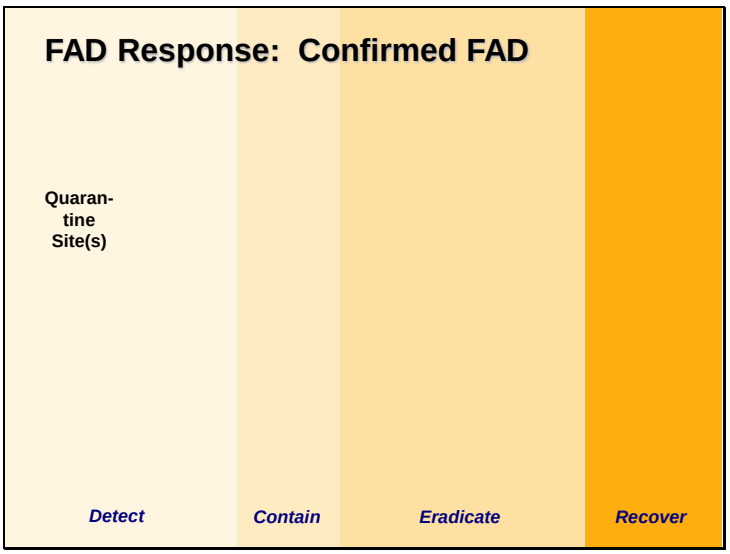
The following flow chart sequence provides an overview of the response process for a high-consequence disease event.

The chart shows the steps in the context of the response objectives discussed earlier: to detect, contain, eradicate, and recover from a disease.

Remember: Many of these steps will overlap, especially when/if more infected animals or sites are identified.

In those cases, the scope of the response will expand, based on the Incident Command System chart presented in Unit 2.

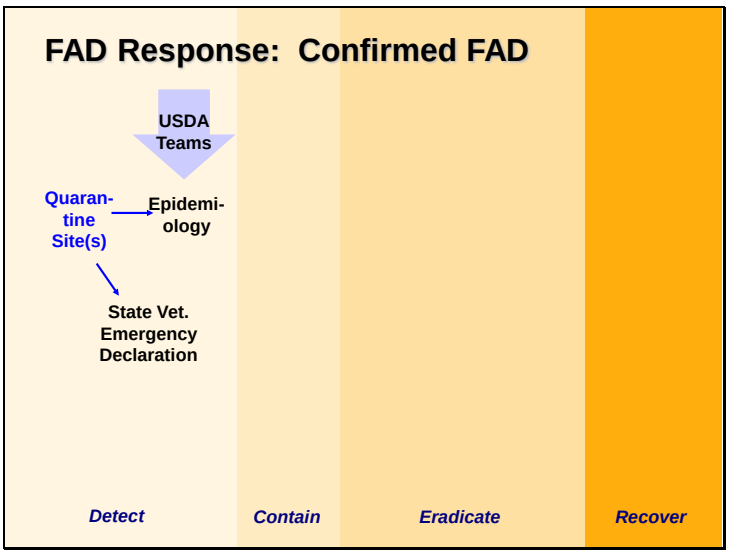
Slide 31



This chart begins with the Site Quarantine, after the Foreign Animal Disease Diagnostician receives the confirmatory positive results from the USDA laboratory. A quarantine means no movement of animals and/or animal products (eggs or manure) onto or off of a farm. People are not part of a quarantine.

This is identification of the affected site.

Slide 32



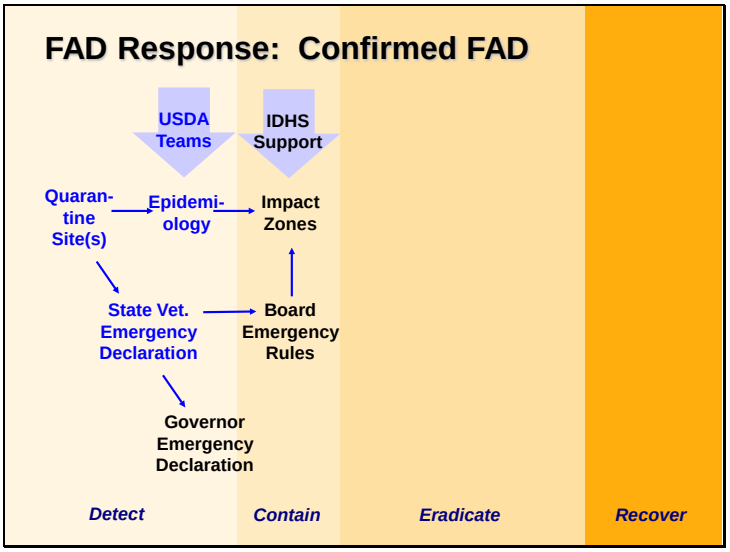
"Detect"

The FADD veterinarian on the case will begin the epidemiologic investigation to determine where the disease originated and if/where it may have moved. The "Detect" objective focuses on identifying and diagnosing other cases.

USDA teams may be requested to expand the capabilities of the state to do surveillance sampling and testing on other sites.

The State Veterinarian may take the additional step to declare an animal health emergency. This happened in 2015 when the State Veterinarian banned exhibitions of poultry at state and county fairs and swap meets after highly pathogenic avian influenza was diagnosed in a hobby poultry flock.

Slide 33



"Contain"

In an effort to contain the disease, the Board of Animal Health will establish impact zones around the infected site or sites.

This can vary, depending on the nature of a particular disease, but typically warrants drawing a circle, up to 10 miles out, around the infected site and imposing testing requirements, quarantines, movement restrictions, and/or issuing permits for animals and/or products to move into or out of the zone.

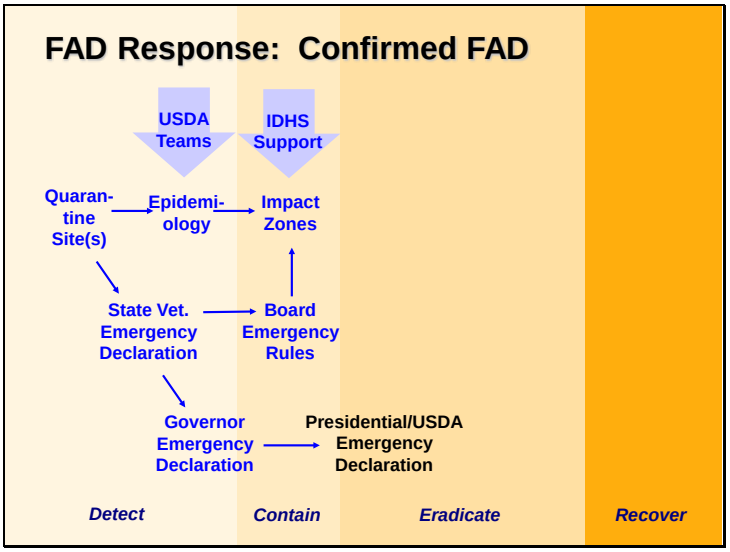
We will take a look at this process shortly.

Indiana Department of Homeland Security may be called upon to assist with support in the areas of logistics and planning, if the incident is expanding beyond what BOAH can manage in-house. This request may trigger a request for local assistance with some duties, such as security or the Incident Management Assistance Team.

The members of the Board of Animal Health may convene to vote on additional emergency rules to support the temporary declaration by the State Veterinarian.

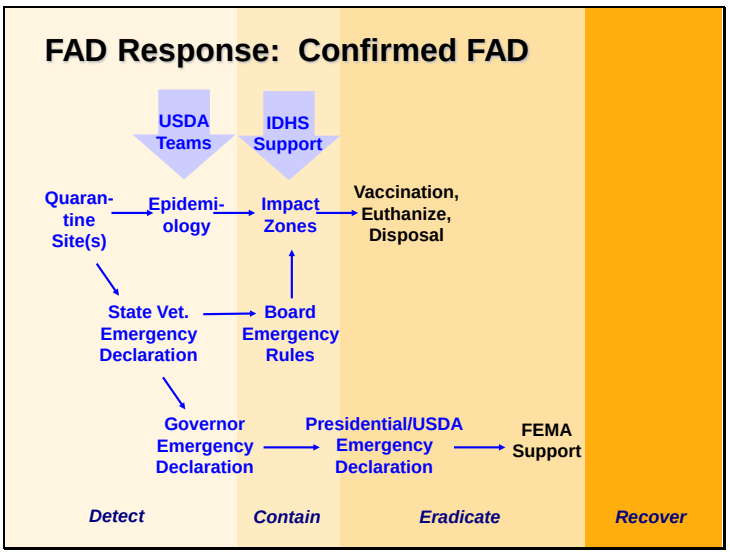
In an extreme case, the State Veterinarian also may request the Governor to make an emergency declaration to pave a way for requesting additional resources.

Slide 34



In extreme cases, a presidential or USDA emergency declaration could be made.

Slide 35



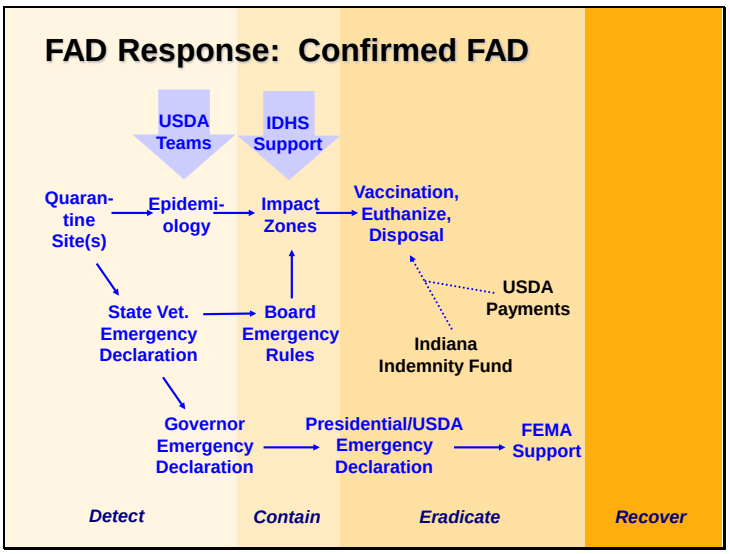
“Eradicate”

That declaration could open the doors for additional Federal Emergency Management Agency (FEMA)-based federal resources to assist with response.

Meanwhile, in an effort to eradicate the disease, other activities will be underway.

Depending on the disease and other circumstances, vaccination may be happening on nearby farms or other individual animals (if a vaccine is available). Affected animals may need to be humanely euthanized. When the disease produces mortality or depopulation occurs, proper disposal of dead animals must be completed to control disease spread and to protect public health and the environment.

Slide 36

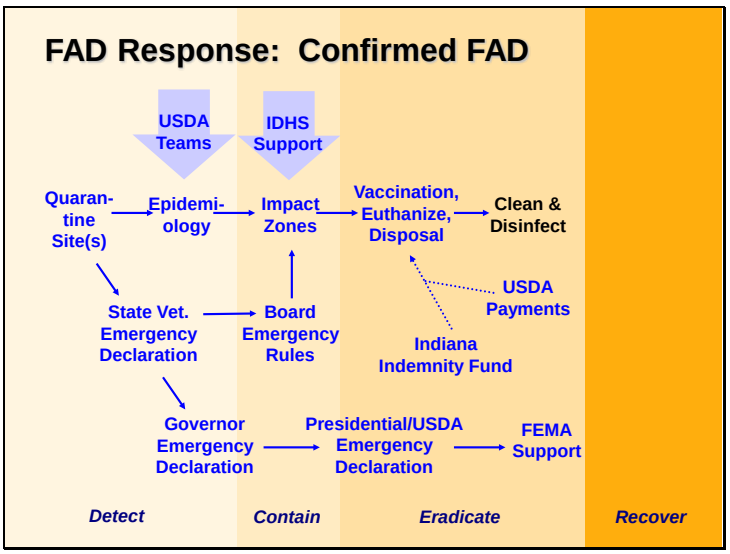


In this eradication phase of response, Indiana may access the indemnity fund to facilitate removal of infected animals from farms.

Indiana's constitution requires the state reimburse owners for condemned property. Condemnation includes depopulation of livestock or poultry.

USDA sometimes offers funds for this purpose, as well as the other eradication and site cleanup activities.

Slide 37



Cleaning and disinfection (C&D) of the sites affected by the disease is essential to its eradication.

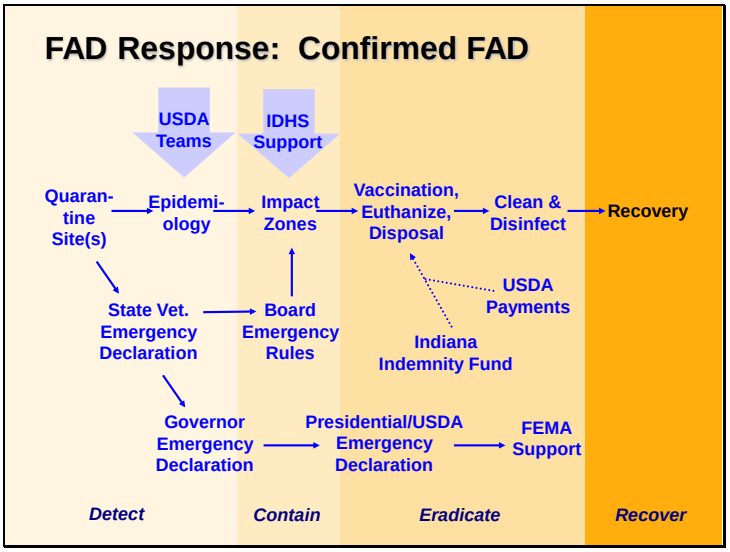
Removal of infected animals and restocking a farm is foolish without a process for ensuring the disease-causing organisms are no longer present in the facilities.

Many viruses and bacteria can live in the environment, in soil, manure, bedding, or other surfaces.

The process of virus elimination (including C&D) will vary based on science. Different organisms require different approaches—sometimes heat, or chemical-based disinfectants, or a fallow period of time. Generally, these protocols are defined by federal guidance documents written to ensure the United States meets international trade agreement requirements.

This phase of operations could involve support from local responders.

Slide 38



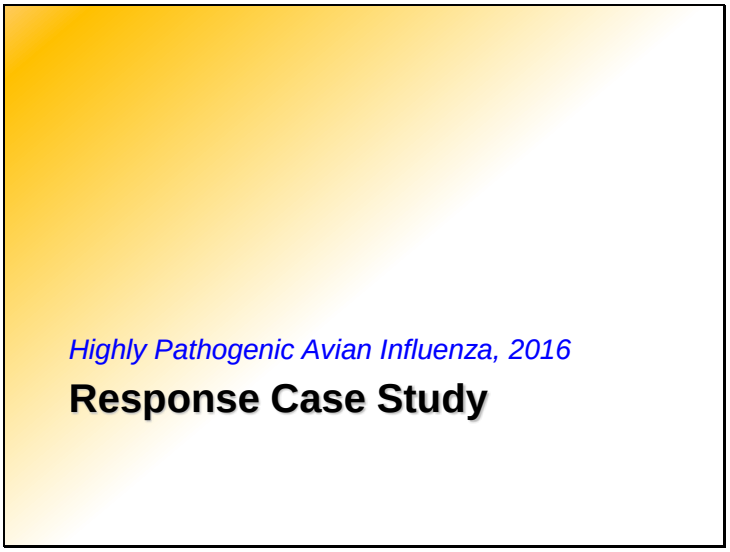
“Recover”

The final objective is to help those affected recover from the incident.

Recovery happens only after the disease is eradicated, the site is verified to be disease-free, and business can resume.

Recovery may involve local support.

Slide 39

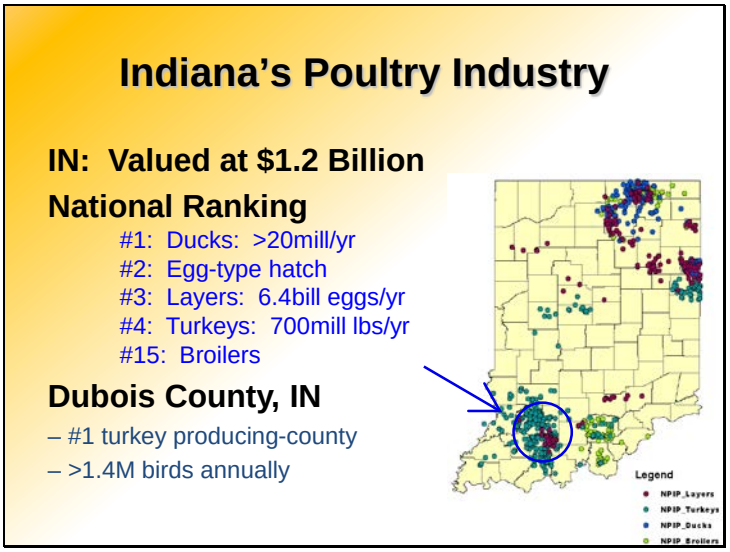


This section will review an actual animal health event in Indiana.

In January 2016, highly pathogenic avian influenza, a foreign animal disease, was diagnosed in commercial turkeys in Dubois County.

This stands as the largest animal health event response in Indiana's history.

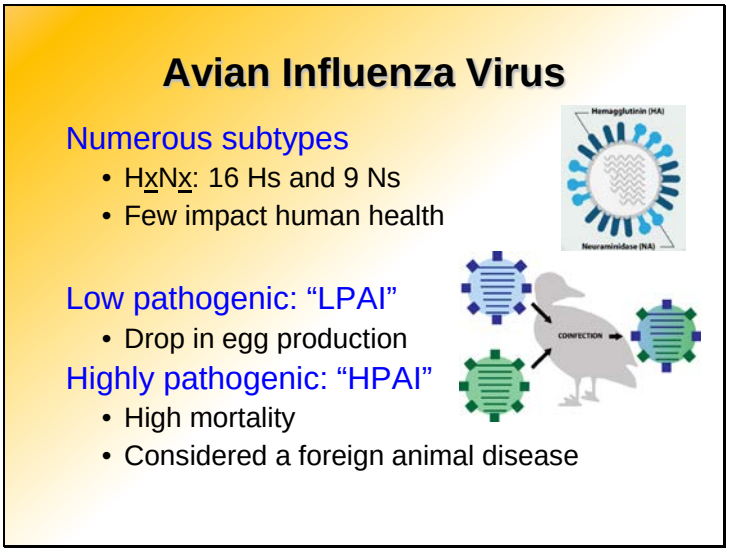
Slide 40



For context, one needs to understand how important the poultry industry is to Indiana's economy. Many family farms raise different types of birds for national and international export.

Turkey production is heavily concentrated in and around Dubois County, which is Indiana's #1 turkey-producing county, and produces more than 1.4 million birds annually.

Slide 41



The influenza virus exists in many strains. Flu strains are constantly evolving and/or combining with other strains to produce new versions that can produce very mild illness to death in certain species. (This process is called reassortment.) Much like humans, any species of animals (birds, horses, dogs, dolphins, etc.) can contract certain strains of flu.

The surface of the virus is covered with two types of proteins: hemagglutinin and neuraminidase. The H and N names associated with flu, like H3N2 or H1N1, describe a specific strain. Strains that start with H1, H5, H7 are of greatest concern for human health.

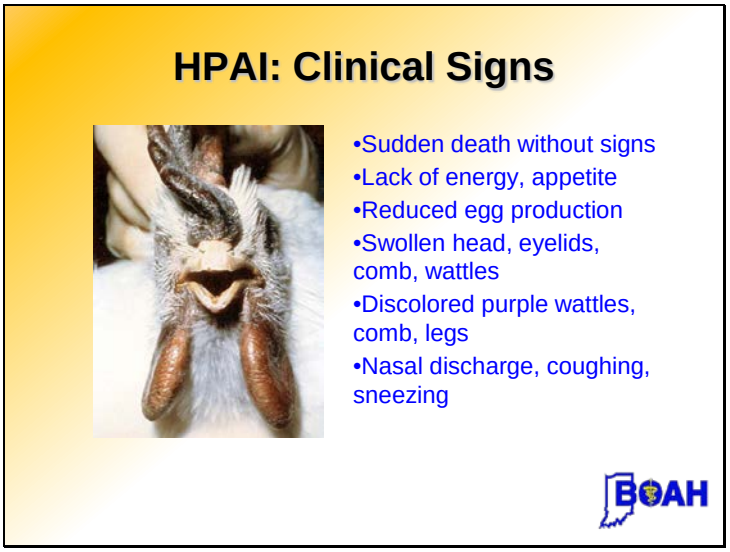
Avian influenza A viruses are designated as highly pathogenic avian influenza (HPAI) or low pathogenicity avian influenza (LPAI) based on molecular characteristics of the virus and the ability to cause disease and mortality in chickens in a laboratory setting.

Low pathogenic avian influenza ("low-path") viruses may cause no disease or mild illness (such as ruffled feathers and a drop in egg production) and may go undetected. Highly pathogenic avian influenza ("high-path") viruses can cause severe disease with high mortality (death). Both HPAI and LPAI viruses can spread rapidly through poultry flocks.

HPAI virus infection impact varies, causing mortality up to 90% to 100% in chickens, often within 48 hours. Meanwhile, ducks can be infected without any signs of illness.

Without warning, low-path flu can convert into high-path, with the more severe clinical signs—specifically mortality in birds.

Slide 42



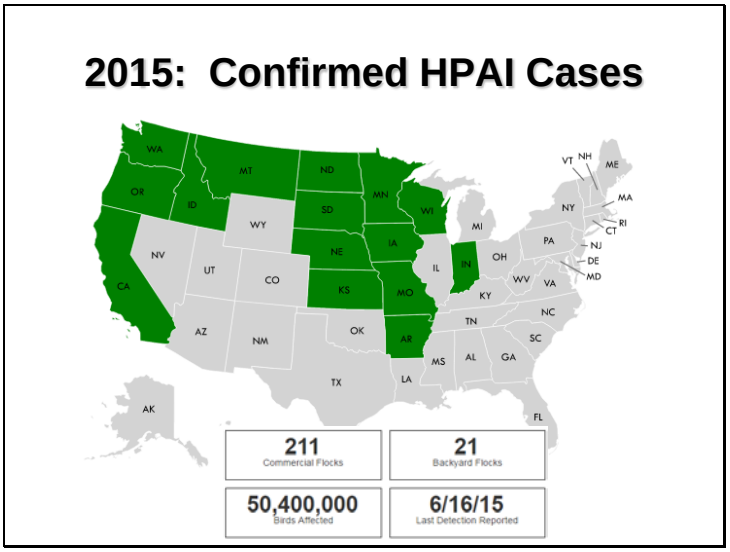
Clinical signs of avian influenza include:

- Sudden death without signs
- Lack of energy, appetite
- Reduced egg production
- Swollen head, eyelids, comb, wattles
- Discolored purple wattles, comb, legs
- Nasal discharge, coughing, sneezing

Farmers watch for these signs, as well as unusual behaviors. The case in Dubois County in 2016 was identified because the farmer noticed reduced water consumption by the birds in the barn.

Migratory wild birds, especially water fowl, can carry and spread HPAI without signs of illness. Virus particles can be found in bird excrement.

Slide 43



The 2016 finding of HPAI in a commercial turkey flock brought on a swift and strong response in Indiana.

One reason was the disaster that happened just a year earlier in the Upper Midwest.

In 2015, HPAI spread in commercial and hobby poultry farms in 15 states, including Indiana. Indiana's case was in a small, hobby flock with only 76 birds.

This event resulted in a loss of more than 50 million birds. A study found that Iowa lost $981 Million in value in their poultry industry. The United States experienced widespread egg shortages and higher grocery store and wholesale prices for months, until production could recover.

When HPAI was diagnosed in Dubois County in 2016, the poultry industry and regulatory agencies feared a repeat of 2015.

Slide 44

To illustrate how deadly highly pathogenic avian flu is to birds, this photo, taken in 2015, shows a turkey farm in Iowa.

Slide 45

This shows the same barn just 2 hours later.

These birds, which are usually walking around and vocalizing, were down and very quiet.

Slide 46

Then, later that same day, nearly the entire barn lay dead on the floor.

This illustrates why rapid containment and eradication of this disease is so important.

Slide 47

The diagnosis of the H7N8 virus, on a single farm, set into motion a response effort previously unseen in Indiana.

This chart lists a summarized version of BOAH's response "to do" list.

These activities are reflected in the animal health portions of ESF11. Some of these tasks present opportunities for local responder support, when special credentials or training are not required.

Slide 48

During the 2016 event, the Board of Animal Health was quickly assisted by the Indiana Department of Homeland Security, USDA, Indiana State Police, Purdue Extension, Indiana Department of Correction, and Indiana Department of Environmental Management to get this accomplished. Local EMA, fire, and law enforcement also supported response.

Significant assistance with logistics and resources came from county and state emergency management personnel, such as hauling in water for cleaning and disinfection, site security, and staff comfort support (meals and port-a-lets).

The expertise of the state's Incident Management Assistance Teams (IMAT) was invaluable to making operations run smoothly and efficiently.

Slide 49

This diagram shows how the impact zone was established around the affected site.

(This is not the actual map, but a representative diagram of how the layers work.)

Infected Zone: 3 km (1.86 miles) beyond the infected premises. This is where the most extensive surveillance occurred. The Board of Animal Health worked with area poultry owners to test every flock in this zone within the first 24 hours.

Influenza was found on a total of 10 sites; all were depopulated, along with an 11th site that was a high-risk "dangerous contact" operation co-located with an infected flock. The sites were quickly quarantined to prepare for depopulation.

The movement of poultry and poultry products (several egg-laying operations were located in the area) was halted.

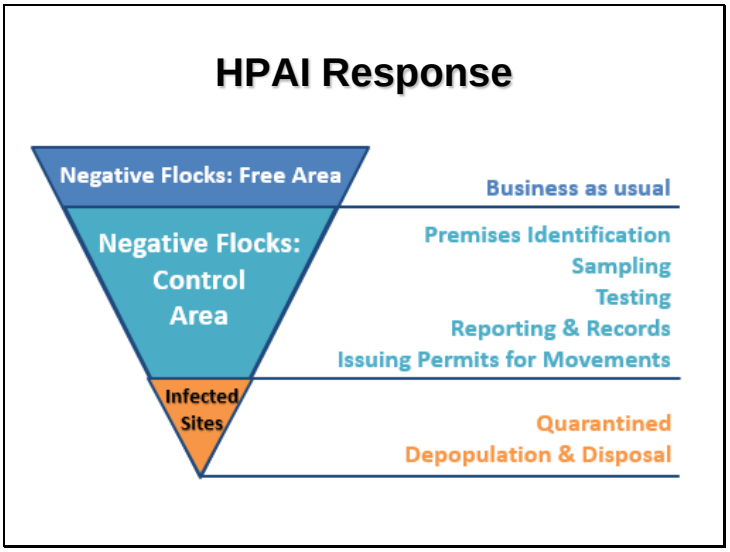
Board of Animal Health established:

Buffer Zone: 7 km beyond the Infected zone

Surveillance Zone: 10 km beyond Buffer Zone (6.2 miles)

Regular testing was conducted throughout the surveillance zones. A negative flock test was required before birds or products could be moved into or out of the area. BOAH set this standard to ensure the influenza virus was not moved.

Slide 50



With establishment of the Control Area, flocks across Indiana fell into three categories.

This chart illustrates the work associated with sites in each designation.

Anyone who has attended animal health emergency training and exercises will recognize that much of the focus has traditionally been on responding to the infected sites. However, BOAH contends that the bulk of the response work is associated with the **disease-negative** flocks (or herds) located within the control area. These operations need to continue the work of their businesses with a geographic disadvantage of being too close to the infected site(s).

Meanwhile, operations outside the control area may continue to do business as usual (although many trading partners may unfairly restrict their products).

Slide 51

Surveillance testing began immediately in the Control Area.

All flocks in the 10-km area had to have a negative test. The 65 commercial flocks in the control area were relatively easy to identify and verify as negative.

The greater challenge was to locate, identify, and test the small hobby flocks people kept in their backyards.

That meant a coordinated effort of teams going door-to-door to visit all residences in the control area. State and federal employees visited 1,945 residences in the area to identify and test 105 small flocks.

During the next 38 days—until the last site was depopulated and disposal completed—more than 5000 avian influenza laboratory tests were run to verify flocks were disease-free. Many of those were assurance tests conducted to allow movement of birds and eggs out of the area for processing, as well as eggs into the zone to an egg-processing facility located there. All of those movements were made on a BOAH-issued permit that was granted only after a negative flock test within 24 hours prior to the trucks' movement.

Slide 52

Throughout the response, biosecurity and site security was of utmost importance.

All vehicle and foot traffic onto and off-of the sites with positive diagnoses was restricted. Vehicles and people had to go through a cleaning and disinfection process to ensure no pathogens were carried off the site. This meant temporary truck washes and foot baths were set up at the farm entry points.

Humans had to wear personal protective equipment (PPE) to keep the virus on the farm and reduce the risk of infection.

One of the biggest challenges to accomplishing this task was the cold temperature, dipping below freezing on some dates. Keeping the water moving—pumps and hoses that would freeze—was a significant challenge. The local fire department offered expertise and assistance throughout.

Slide 53

Eleven poultry sites had to be depopulated. Low-risk offenders from the Indiana Department of Correction helped with the effort. (This work was strictly voluntary for the offenders.)

The mass mortality had to be safely disposed of. In this event, nearly all of the bird carcasses were composted indoors (inside the open-span barns). This effectively killed the virus as the compost pile temperature rose to a designated level.

Once all material was adequately composted and removed, the sites had to be cleaned and disinfected in a process called “virus elimination”. This effort served to ensure that later restocked barns would not become re infected from remaining virus.

Since this event, BOAH has been working closely with the Indiana Department of Environmental Management (IDEM) to identify landfills across the state that are willing and able to accept carcasses and material for mass disposal.

The agency has also been working with the poultry industry to develop plans at the farm level to handle mass mortality and disposal.

Slide 54

Engagement and outreach were important components to the response.

BOAH worked to assure the public that the food supply remained safe to eat (avian influenza cannot be contracted from meat or eggs).

Media, the public, and the industry nationwide were very interested in situation updates. Department of Homeland Security, Indiana State Department of Agriculture, and Purdue Extension provided Joint Information Center (JIC) support to BOAH throughout the event, assisting with response to inquiries and the media.

Essential information that needed to be conveyed included what poultry owners should look for and how to report suspected illness in their birds.

This was accomplished online, through industry communications, and the media.

Slide 55

Animal Health Emergencies, Unit 3

Opportunities for Support

Slide 56

Potential Local Partners/Roles

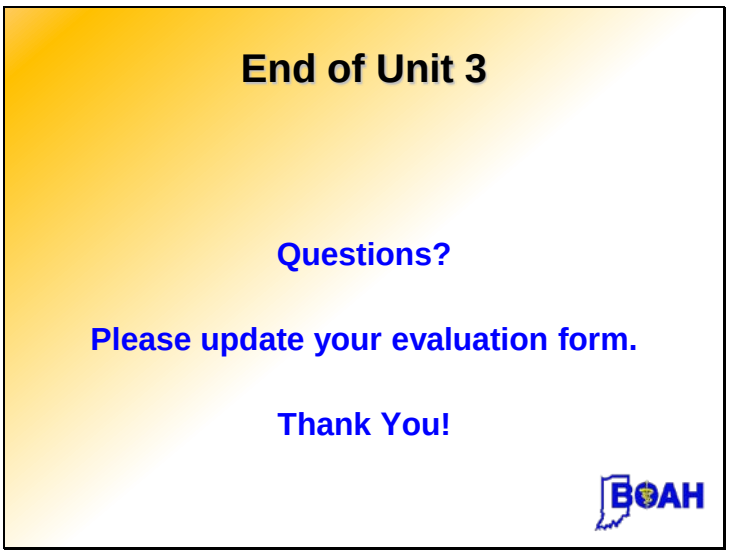
Animal health emergencies, while different from traditional disasters, do present opportunities for local agencies and organizations to assist with response support.

Among the local groups that could play essential support roles include: local emergency management agency, law enforcement, animal control, Extension, fire, and local health department personnel.

Local resources can help:

- Assist with law enforcement, site security
- Identify impacted sites
- Transport samples to official laboratories
- Locate resources, human and material
- Facilitate communication with the public, the community, and public officials
- Provide human health monitoring
- Aid in disposal process
- Aid recovery

Slide 57


End of Unit 3
Questions?
Please update your evaluation form.
Thank You!
BOAH