

# Kansas Swine Facility Biosecurity Guide



## **Acknowledgements:**

This guide is the fourth version of a document that was originally created by the Texas Panhandle Regional Planning Commission (PRPC) with a contract to Cubic Applications Inc. and funded by the U.S. Department of Homeland Security. In 2015 the Kansas Department of Agriculture (KDA) modified the original document to make it Kansas specific. In 2018 the KDA began reformatting the document to synchronize with the national Secure Pork Supply planning efforts that are currently under development.

The guide was originally developed to provide guidance to cattle feedyard managers regarding routine day-to-day biosecurity best practices and additional guidance on how to implement heightened biosecurity, now referred to as *enhanced* biosecurity, during disease outbreaks that could affect their operations. The second version simply changed references to make it specific for Kansas feedyards. The third version was developed as part of a biosecurity project with Kansas feedyards that was undertaken in 2016. This version has been developed as part of a biosecurity project with Kansas pork producers that was undertaken in 2018. Feedback indicated that, while the original guide was very comprehensive, it was too long and also did not address the pork industry and the Secure Pork Supply planning considerations that will dictate additional biosecurity measures that need to be implemented by Kansas pork producers to be able to move animals during an outbreak of Foot and Mouth Disease (FMD), Classical Swine Fever (CSF), or African Swine Fever (ASF).

The Kansas Department of Agriculture has revised the guide into four sections. The first section gives swine facility personnel guidance on what they should be doing on a daily basis to protect their operations, and also to better prepare for the rapid transition to enhanced biosecurity, which is the second section. The third section addresses the requirements of the Secure Pork Supply biosecurity standards that have been adopted by the Kansas Animal Health Commissioner. To move animals out of a control area **or** during the first few weeks of an outbreak, a permit must be obtained from the KDA and permits will only be granted to those facilities adhering to the standards set forth in Section 3. The fourth section is a brief “All Hazards” guidance provided to help swine operation managers plan for contingencies other than disease outbreaks.

## ***Executive Summary***

The pork industry is a major contributor to the economy of Kansas. Kansas is home to 2.7 percent of the total hogs in the United States. In 2017, there were 1.9 million hogs in Kansas, making Kansas the number 10 ranked state for pork production. There are 1,010 farms producing hogs in the state of Kansas. In 2015, there were approximately 3.2 million head of hogs slaughtered in Kansas. The pork industry generated 303.3 million dollars of personal income for farmers in Kansas, and generated \$444 million for the state.

Facility biosecurity is an important element of any disease prevention program. Biosecurity means doing everything possible to reduce the likelihood of an infectious disease being introduced into or carried away from a swine facility by people, animals, equipment or vehicles.

At the national level, the United States relies on import regulations, point-of-entry surveillance, customs and border inspections, and trade restrictions with Foreign Animal Disease (FAD) affected nations to prevent FADs from entering the country. Locally, facility biosecurity measures prevent the introduction and spread of disease by minimizing movement of harmful organisms onto and off a facility. If an outbreak occurs in North America, individual facilities should be prepared. Pre-disaster mitigation actions will lessen the impact of any FAD and enhance preparedness at facility, regional, and national levels.

This *Swine Facility Biosecurity Guide* contains swine operation routine biosecurity information, and provides templates to help swine facilities prepare and implement enhanced biosecurity protocols when necessary.



## ***Instructions***

The goal of this guide is to assist swine operation owners and managers with developing and implementing swine facility biosecurity plans. Diseased animals reduce profitability. Thus, it is in the producer's best interest to adopt a biosecurity plan designed to prevent and control diseases whether they are dealing with PRRSv, PEDv, Foot and Mouth Disease (FMD), Classical Swine Fever (CSF), African Swine Fever (ASF), or anything in between. Swine facility management is responsible for pig health and production and thus is responsible for deciding the final content of this biosecurity plan. The provided plans help reduce or eliminate the introduction and spread of disease into a swine facility. The plans also outline the requirements that swine facilities will need to have implemented in order to be able to obtain a permit to move animals (such as to harvest) during the first few weeks of an outbreak or out of a regulatory control area.

## ***Guide Objectives***

1. Establish operational standards for biosecurity
2. Create data retention and recordkeeping systems
3. Identify training and education to improve biosecurity
4. Provide disease-specific information to help prevent or limit disease impact
5. Describe the Kansas Secure Pork Supply (SPS) requirements

## ***Guide Organization***

The *Swine Facility Biosecurity Guide* contains four sections.

Section one details routine day-to-day biosecurity operational areas and includes:

- Biosecurity Overview
- Employee Policies
  - a. Foreign Travel
  - b. Crisis and Risk Communication
  - c. Coordination with Animal Health Agencies and Local Government
  - d. Visitor Control
- Movement on and off the Property
- Zoonotic Diseases
- Record Keeping
- Animal Handling and Contact
- Disease Detections and Surveillance
- Wildlife Management
- Physical Security
- Vector Control

- Cleaning and Disinfection

Section two details *enhanced* biosecurity changes that need to be rapidly made within the Section One operational areas in the case of a suspected or confirmed FAD event.

Section three provides a general overview of the Kansas Secure Pork Supply requirements and where to get additional information.

Section four details other types of hazards such as tornadoes, floods, chemical spills, heat stress events, etc., that may require a KDA response to help restore the swine facility to full operation.

## ***Section One – Routine Biosecurity Overview Summary***

The Biosecurity Overview summary provides background on biosecurity, goals of biosecurity measures, and key objectives of biosecurity. The summary is followed by a template which the swine facility manager can utilize to document progress in developing the plan.

### ***Plan Elements***

An effective biosecurity plan includes these elements:

- How to create a “Line of Separation” (LOS) around swine operations
- How to receive and manage new animals
- How to control movement on and off a swine facility
- How to clean and disinfect equipment to reduce pathogen levels
- How to monitor animal health
- How to acquire a permit from KDA during an outbreak

A comprehensive biosecurity plan addresses both routine biosecurity, enhanced biosecurity, and the biosecurity requirements for operations located in a control area established by regulatory officials.

**Routine** biosecurity measures apply during normal day-to-day operations and lower the risk of a disease being brought into a facility.

**Enhanced** biosecurity measures supplement routine biosecurity measures and apply when confirmed or suspected highly contagious diseases, such as FMD, CSF, or ASF, occur in the region or in the country. Heightened measures provide a greater level of protection for the swine facility.

**Secure Pork Supply Biosecurity Standards** are those standards agreed to by state and federal regulatory agencies designed to facilitate the re-establishment of domestic and global markets in the most timely manner. Movement of animals and animal products in to and out of a control area **must** meet these standards prior to obtaining a movement permit.

## ***Biosecurity Overview***

Biosecurity is a collection of management practices designed to minimize the risk of disease introduction and spread within an operation. Such practices may include, but are not limited to: new arrival management, wildlife and rodent control, equipment cleaning and disinfection, and minimizing visitor interaction with pigs.

Responsibility for swine facility biosecurity rests with the operation owner and/or management team, through the implementation of measures designed to prevent introduction of any disease which is not already present in the facility as well as limiting the spread of existing diseases. Personnel working with livestock must take steps to ensure a reasonable level of biosecurity is practiced to protect themselves, other producers, and the livestock industry. **It is essential that all personnel exercise the utmost thought, patience, persistence, and care in carrying out a biosecurity plan—both under normal circumstances and during an outbreak.**

Due to the high volume of movement of animals throughout North America and the time it takes to diagnose disease, a positive diagnosis of an FAD anywhere in the country should trigger a reevaluation of the biosecurity risk and enhanced operative biosecurity measures. More stringent measures may seem costly and inconvenient but implementation of these measures can help protect operations and prevent potentially major financial losses.

If disease enters the facility, despite precautionary measures, government officials and regulations will require even greater biosecurity measures to prevent disease spread from the facility to other facilities with susceptible livestock. These measures are described in the Secure Pork Supply Plan and summarized in the third section of this guide.

Every swine facility management team has the ultimate responsibility to protect the health of the animals under its control. Diagnosing certain infectious diseases can be time consuming and difficult; the loss in production, and the expense of eradicating disease can be financially devastating and emotionally exhausting. Biosecurity is only useful if all facility personnel strictly adhere to the guidance as written.

A proactive approach to biosecurity that prevents the introduction of disease into the facility, rather than reacting to an outbreak, is the safest and least costly method of protecting pigs and business.

## **GOAL OF BIOSECURITY**

The goal of biosecurity planning is to minimize the risk of a disease from being introduced and spread in a swine facility.

Development of a biosecurity plan is voluntary. However, it demonstrates to packers, consumers, and government regulators that swine facilities are actively working to assure a safe pork supply. The Kansas Animal Health Commissioner encourages swine facility management to study this guide, to adapt its suggestions, and to employ the practices recommended.

The requirements necessary to get a permit to move animals or animal products during a stop movement order or when located in a control area are **NOT** voluntary. Facilities must meet the standards or they will not be allowed to move animals until the outbreak is over. This could take weeks or months so it is prudent for swine operation management to participate in the planning process **now** in order to mitigate the effects of a stop movement order or a control area designation that may occur in an outbreak.

## ***Objectives of Biosecurity***

1. Prevent the introduction of infectious disease agents to pigs
2. Prevent the spread of disease agents from affected areas to unaffected areas
3. Minimize the potential impact of disease on swine productivity and business operations

## ***Training***

The goal of biosecurity training is to make employees and facility management aware of the risks to swine operations and their role in preventing and responding to a disease outbreak. Training the material contained within the biosecurity guide is important to both employees and management and will help achieve operational effectiveness, efficiency, and organizational knowledge.

Training can be implemented using several methods. The authors recommend using paper based handouts, hands-on training and interactive communications to ensure employees are engaged in the discussion. Record individual training attendance using a training log to document who has had what training.

Links to specific training available are provided in an appendix to this guide. There are many resources available in a variety of modalities for swine facility managers to take advantage of. Some are provided in several languages.

## ***Exercising***

Once a plan has been developed and the employees have been trained, consider doing “fire drills” or exercises to reinforce the training and to evaluate how well the plan works. The Kansas Department of Agriculture regularly conducts exercises throughout the year and actively seeks participation from swine operators and other agribusinesses. Contact the Kansas Department of Agriculture’s Emergency Management Coordinator for information about participating in KDA exercises or for assistance in developing drills and exercises for your business.

# Routine Biosecurity Considerations

## Employee Policies

Special consideration must be given to protect, educate, and inform one of the facility's most important assets, its people. Employee policies are important in all stages of the employee life cycle including hiring, training and awareness, and separation.

**Hiring** the best individuals for swine operations requires sufficient commitment from management to attract and select the most qualified employees for the facility. Rigorous employee screening contributes to overall facility safety. A potential threat to the livestock enterprise is directly employing an individual who has the intent to do harm. Facilities can employ a service to screen applicants or independently obtain records for applicants through social networking sites, department of motor vehicles, past employers, and educational institutions. Use records to search for connections to or affiliation with animal rights or terrorist groups. Proper selection can prevent costly issues and protect existing staff and company assets. After candidates are hired, develop and retain staff to reduce potential employee replacement costs. For more information on references and background checks, consult the Kansas Department of Labor <http://www.dol.ks.gov/Laws/>

**Training and awareness** programs, focused on teaching staff to identify serious disease early and how to minimize the risk of disease spread, are an important part of a biosecurity program. Training programs can include topics such as what to look for in sick animals, what and who to report concerns such as tampering or unauthorized personnel, and when to contact a veterinarian. Education programs reduce uncertainty and enhance employee confidence in decision-making. Protection of the facility and livestock requires employees to be vigilant in observing the workplace and surrounding environment.

If facility employees' primary language is not English, consider translating materials to ensure the messages are clearly communicated and understood by all employees. Many existing materials are available in multiple languages. See [Securepork.org](http://Securepork.org) for more information.

**Employee separation** involves resignation or involuntary termination of employment. Regardless of the reason, take precautions to protect facility infrastructure and operations from disgruntled employees. Disgruntled employees could be motivated to cause damage to the facility or introduce disease(s) to pigs. Consider implementing some basic precautions contained in the plan to maximize safety, protect assets, and prevent harm to the company. Handle employment terminations professionally and cautiously.

**Employee owned livestock** can be a source of disease brought into a facility. Some employees raise livestock at home. Educate employees on the potential risks associated with tracking disease both to and from work. Employees are not permitted to raise pigs at home.

**Employee foreign travel** may affect the biosecurity of the facility. Visitors to foreign countries can transport FAD back to the United States on their shoes and clothing. These diseases may cause major health and economic problems to swine operations.

Foreign and emerging animal diseases constitute the primary threat to the health of livestock herds in the US increases in free market economies and relaxation of restrictions on foreign imports and exports have resulted in animals and animal products moving around the world in unprecedented numbers and at record rates. People are also traveling around the world to increasingly exotic locations.

This increase in world travel and animal traffic elevates the risk of introduction of disease causing organisms to swine facilities. Such agents are not limited to agricultural areas and can also be

encountered at zoos, rural areas, fairs, animal exhibitions, animal swap meets and meat markets. Animals used for transportation and feral animals are also a source of risk. After visiting any location with pigs, employees must have two down days with no outside pig contact before returning to work.

**Employee notification of foreign travel** requirements exist to make facility management aware of employee travel prior to departure. Notification provides the opportunity for management to discuss risks and advise employees on biosecurity before departure and to determine when the employee will be allowed to return to work. Require all employees to give notification of employee intent to travel to foreign countries prior to departure. This includes both personal and professional travel as well as travel to Canada and Mexico.

U.S. Customs and Border Protection (CBP) enforces a ban on bringing food and other agricultural items into the country in baggage or on person as these items may carry animal and plant pests and diseases. Remind employees visiting foreign countries of these restrictions before their departure.

**Visitors to foreign countries** may transport many diseases back to the United States that can cause major health and economic problems to swine operations. Disease organisms may live in soil, manure, animal carcasses or buildings. Some organisms can survive for long periods in moist, shaded locations. Animals that have had a disease may shed the organism for weeks or months after recovery. In many parts of the world, farm animals are found in cities and urban areas, not just in farming areas. Additionally, animals may be used for transportation, may be pets, or may be driven to market.

FADs are endemic in many parts of the world. For example, FMD is endemic to parts of South America and CSF is endemic to Central and South America, in the Caribbean basin, and many pork producing countries in Asia. Visitors to any of these countries could bring an FAD virus into the facility thus compromising the United States' coveted World Animal Health Organization (OIE) "FMD free" status. An FAD outbreak could devastate the entire pork industry and the US economy.

**Shoes** are particularly hard to clean and disinfect. Disease organisms can be brought into the country even if there are no visible signs of debris (e.g., feces) on footwear. Advise employees who plan on visiting agricultural sites to take footwear that can easily be disinfected (e.g., rubber boots). Any footwear worn during foreign travel should be cleaned and disinfected before wearing them to the facility, or better yet, be discarded once the individual returns to the United States.

**Clothing** can also be a source of animal disease. For example, there have been documented cases of travelers bringing screw worm larvae into the United States on clothing. Contact with foreign livestock or farms can potentially contaminate footwear, clothing and equipment with infectious disease agents; thus providing a venue to infect domestic animals.

## **Coordination with Animal Health Agencies and Local Government**

Disease outbreaks can occur naturally or intentionally. Both scenarios require facility management to communicate and coordinate with a multitude of government agencies and organizations including, but not limited to, industry partners, animal health agencies, emergency management and law enforcement. Most of these organizations have the same goal in a disease emergency: to protect public health and the health and well-being of animals and the pork industry. However, their perspectives and roles differ.

**An intentional introduction** of an FAD occurs when the disease is purposely introduced into the animal population. FAD outbreaks are rare and devastating so when an outbreak occurs, experts suspect it was intentional.

Safety considerations during an outbreak are important to all responders, but approaches are different. In the animal health community for example, the first course of action is to stop the spread of disease, clean and disinfect the affected area, and exit as soon as possible. Law enforcement, however, has a different focus. Law enforcement collects evidence and seeks to determine who caused the incident. It is important to work closely with all response agencies, most importantly law enforcement, in the event of an intentional introduction of disease into the facility.

**Natural or accidental outbreaks** occur when the FAD is native to or is introduced into the country accidentally or unknowingly. However, there may still be an investigation if there is proof of extreme negligence or accidental breaking of a law (e.g., importing prohibited agricultural goods into the country). During a natural or accidental outbreak, animal health officials with support from state or local government officials, will play a critical role in controlling and eradicating disease.

Regular communication with state animal health officials and local government agencies is important. The first time to contact these officials is not when a facility is in crisis. Relationships should be established and on-scene actions should be coordinated between response organizations prior to a biosecurity incident to minimize conflicts or confusion between first responders in the event of an actual emergency. Take steps to understand agency concerns and roles and responsibilities. Direct and effective cooperation with local officials is crucial. Invite the Emergency Management Coordinator for your county to review and refine your *Swine Facility Biosecurity Plan*. Familiarity with facility functions will be important if local officials are ever needed to respond to a situation at the facility. Establishing and maintaining an active working relationship with local officials and familiarizing representatives with the facility before an incident will expedite response during an incident.

## **Movement On and Off the Property**

Swine facilities are busy places with many employees and vehicles entering and leaving on a daily basis. Access should be limited to only those individuals essential to the operation of the site. Every person crossing the LOS arrives having showered and wearing clean clothing since last contacting susceptible animals. Everyone crossing the LOS Access Point(s) completes the entry logbook, unless they are a scheduled worker. Work schedule records for workers are maintained. Pigs and semen come from sources with documented, enhanced biosecurity practices and no current or recent evidence of an FAD infection. Semen is transported in containers whose exteriors can be cleaned and disinfected effectively to minimize the risk of virus transmission.

**Vehicles** present a tremendous opportunity for transporting pathogens and efficiently delivering them to susceptible animals. Trucks are to be cleaned at a truck washing facility and disinfected before entering the premises. Vehicles moving through the PBA Access Points must be cleaned to remove visible contamination and then disinfected.

**Designated parking areas** are clearly marked and outside of the PBA, away from animal areas, for vehicles that have not been cleaned and disinfected.

**All income supplies** must be disinfected for 24 hours prior to use inside the facility.

**Animals leaving the production site** only move in one direction across the LOS at an Access Point at any one time. Areas contaminated during this process are cleaned and disinfected.

**Animals entering the production site** should be kept in an isolation area for 7 days and monitored for any symptoms of an FAD before being introduced to the rest of the population.

**Dead animals** are disposed of in a manner that prevents the attraction of wildlife, rodents, and other scavengers.

**Rendering** of carcasses will not be permitted during an FAD outbreak.

**Human foot traffic** also poses a disease risk. All visitors must shower into the facility and wear provided clean coveralls and boots. If the facility has multiple barns, common boots must be worn to walk outside between the buildings, and a clean pair of boots worn in the building to reduce the spread of pathogens.

**Manure** is an inevitable by-product of swine facilities. Regular removal will reduce health issues (decreasing the infectious burden of animal disease pathogens), odor, and fly breeding grounds. However, manure removal can also contribute to the spread of disease as pathogens can survive in the ideal environmental conditions and temperatures manure provides. Clean pens after the removal of each group of pigs, before introducing new animals. This strategy can aid in breaking disease cycles from pathogens spread via fecal-oral transmission.

Many orally transmitted diseases originate from manure that is harboring the pathogen. Follow a waste management program to control animal access to the pathogens in manure. Any compost should be kept away from animal areas. A plan should be put in place for storing manure on-site in the event that it cannot be moved off-site during an outbreak.

**Feed products** are potential sources for the introduction and/or transmission of disease. Products include harvested feeds (grain and soybeans), mineral mixes, and other supplements. Evaluate the biosecurity of feed products regularly. Purchase feed from a reputable vendor with an acceptable quality assurance program and appropriate documentation. This verifies reasonable measures are taken to protect the feed from contamination with potential disease-causing material, including porcine derived protein.

The best feed can become a threat if not handled and stored correctly. Attempt to exclude wildlife from facilities and prevent access of wild animals to stored feed. Birds and vermin are effective at transmitting disease and are common in feed storage areas. Recognize that even domestic animals pose risks as dogs, cats, goats, sheep and horses can introduce disease to pigs by contaminating feed with urine, feces or other body fluids.

Clean up and dispose of spilled feeds promptly, particularly when adjacent to storage or feeding areas. Spilled feed attracts wildlife, fosters spoilage, and serves as breeding ground for pests. Use stored feeds in a first-in-first-out manner. If more than one storage bin exists for a commodity, empty each bin completely before refilling. Avoid adding new commodities on top of existing stores.

Feeders can spread pathogens as animals eat from the same surface repeatedly. If this surface is soiled with feces, urine, nasal discharge or even saliva, it can serve as a fomite. Clean feeders frequently and remove all visible debris.

**Water sources** are another risk factor for oral transmission. Examine and clean waterers regularly. Remove all organic debris (manure, feed and other material) frequently, as this provides a source and sustenance for many pathogens.

Regularly inspect and protect the water quality. Deep wells and municipal sources afford greater protection from potential contamination. The U.S. Environmental Protection Agency (EPA) and Kansas Department of Health and Environment recommend annual testing for coliform bacteria to assess the quality of the water source.

## Crisis and Risk Communication

Risk communication is vital to any crisis response. Ideally, a risk communication plan involves all relevant stakeholders, develops key messages, and monitors the effectiveness of communication. Stakeholder interests' and responsibilities may be significantly affected by regulatory risk management decisions throughout all phases of the response.

**Facility stakeholders** include employees, pig owners, packers, and commodity and livestock haulers among others. All disasters and emergencies require immediate response; as a result, different agencies and groups may become involved. Anticipate the involvement of law enforcement, emergency management officials and state and federal officials, and industry group such as the Kansas Livestock Association (KLA), Kansas Pork Association (KPA) and the National Pork Board (NPB), by incorporating communication and coordination with outside agencies in any risk communication plan.

In 2012, the Centers for Disease Control and Prevention (CDC) published the *Crisis and Emergency Risk Communication Manual (CERC)*, which describes five distinct phases that occur in Crisis and Emergency Risk Communications. The routine biosecurity section addresses the first phase, or the pre-crisis phase. The enhanced biosecurity section discusses the remaining four phases: initial, maintenance, resolution, and evaluation. The phases are illustrated in [Figure 1.1](#).

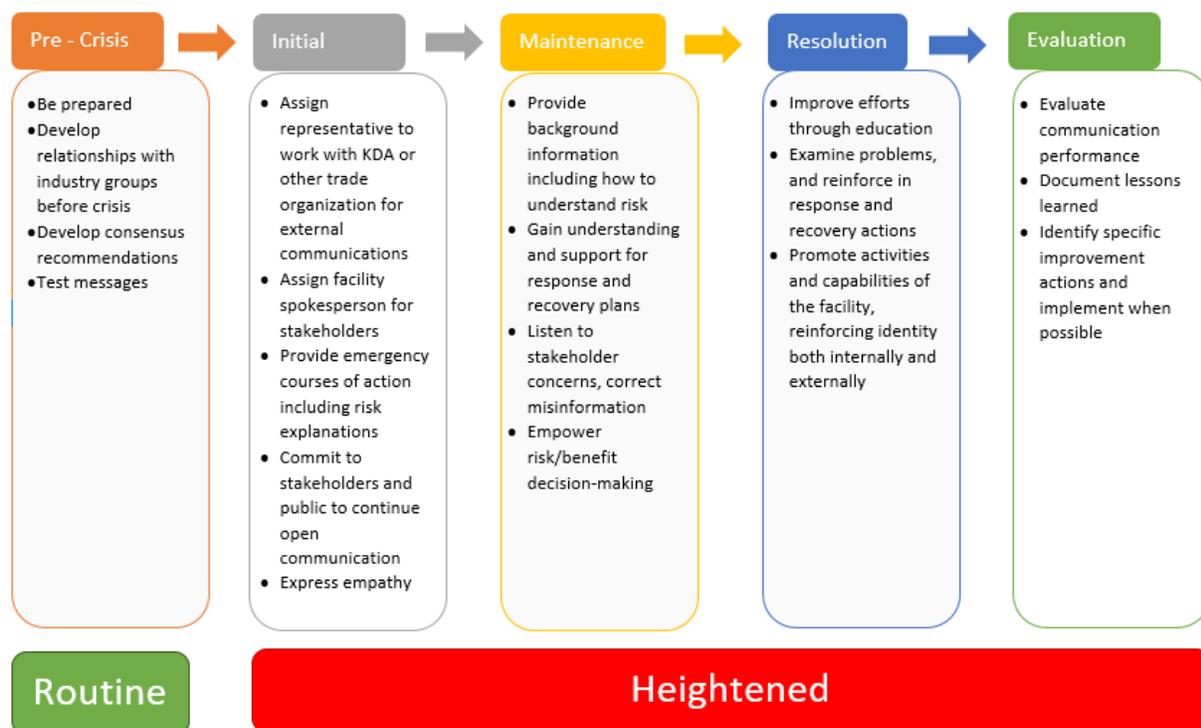


Figure 1.1 – Crisis and Emergency Risk Communication Lifecycle

**Pre-crisis** phase recommendations include: 1) fostering alliances with stakeholders and 2) developing, training, and testing communication messages. Develop initial communication strategies and messages in advance. [The Center for Food Security and Public Health](#) is great source of readily available biosecurity communication materials:

Pre-crisis activities include:

- **Designating a person or team** responsible for risk and crisis communication. The designated employee or team must be able to respond to the needs of, and communicate with, very different audiences. These include various branches of government, the public, media, industry, and employees. The goal of crisis communications is to promote and encourage openness, transparency, flexibility, and consistency in communication messages and activities.
- **Establishing and maintaining relationships** with local law enforcement and emergency management officials.
- **Educating employees** about biosecurity risks and how to protect the facility from a foreign animal disease outbreak. To be effective, risk communication plans must be understood, supported, and adopted by every employee. This may require translating materials into additional languages most familiar to employees (e.g., Spanish). Training and familiarizing personnel with crisis communications plans prior to an incident will ensure employees are prepared to react appropriately during a heightened biosecurity situation.

## ZOONOTIC DISEASES

Zoonotic diseases are diseases transmitted from animals to humans and vice versa. As shown in Figure 1.2, pigs can transmit disease to other pigs or humans. Once infected, humans can transmit disease to other humans or other pigs. Zoonotic diseases have the ability to spread quickly through a facility if good biosecurity measures are not in place.

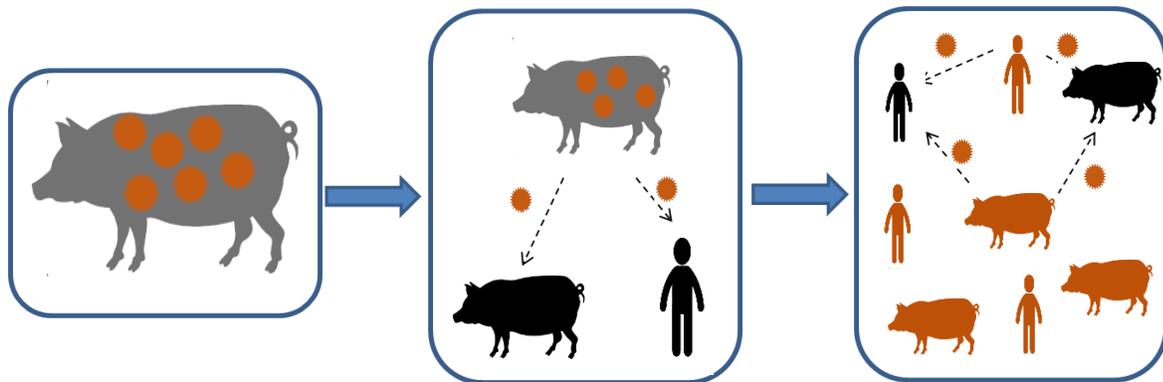


Figure 1.2 – Zoonotic Disease Model

Pigs may be a source of several zoonotic diseases that can cause severe disease in humans. It is important that people working with pigs have a basic understanding and awareness of the clinical signs of the disease as well as appropriate precautions and actions needed to prevent each disease. Some of these diseases also have the potential to be used in bioterrorist activities. Good biosecurity and personal hygiene practices reduce the risk of human illness.

**Immunocompromised individuals** have an increased risk for contracting disease. For example, these individuals include pregnant women, chemotherapy patients, organ transplant recipients, persons with HIV/AIDS, and people with chronic diseases such as diabetes, among others. Individuals with compromised immune systems may not disclose medical conditions to employers. Educating workers on how to prevent transmission of zoonotic diseases will help reduce the risk of infection among those with compromised immune systems.

**Age** increases the risk of contracting a zoonotic disease. Children under the age of five, and the elderly are at particular risk. The 2012 Census of Agriculture reported the average age of today's farmer is 58.3. While there is no physiological definition of when a person is "older" or "elderly," it is known that the immune system does not function as efficiently in older adults as it does in younger people. Illness may be more difficult to fight in this population, making prevention even more important.

**Immigrant workers** often come from countries with a higher prevalence of diseases resulting in compromised immune systems causing greater susceptibility to infection. Language barriers may cause miscommunication about risk of exposure. Work with knowledgeable translators to communicate the transmission methods and risk of exposure to zoonotic diseases. Keeping workers informed about zoonotic diseases will reduce the risk of infection.

**Veterinarians** possess the most knowledge and are a facility's primary source of information on zoonotic diseases. Work with veterinarians to educate workers on the risk factors and methods of transmission of zoonotic diseases. Veterinarians and employers must share in the responsibility of education about zoonotic disease.

While the possibility of exposure and transmission of zoonotic diseases from animals to people cannot be totally eliminated, it can be minimized.

## Visitor Control

Visitors to a facility can pose a significant disease risk to pigs and operations. Visitors can be grouped into low-, medium-, and high-risk visitors (see Figure 1.3) based on their prior exposure to animals and how closely they come in contact with pigs in the facility.

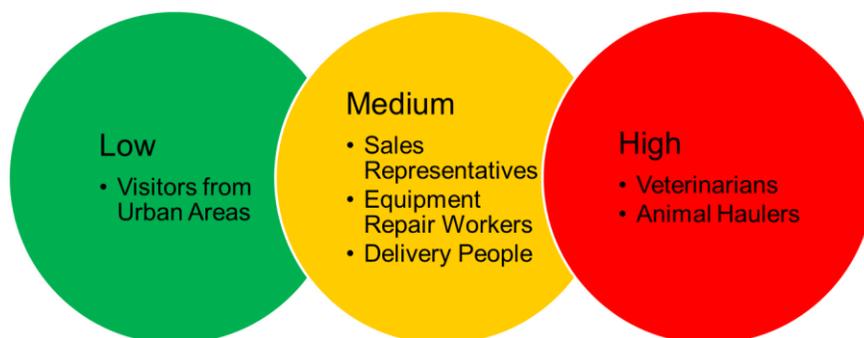


Figure 1.3 – Visitor Risk

**Low-risk** visitors are individuals with no recent livestock or poultry contacts prior to the visit. An example of this type of visitor is someone who lives in an urban area with no livestock or poultry contact.

**Medium-risk** visitors are individuals who have limited animal contact due to the location of worksites on premises. Examples of this type of visitor include sales representatives, equipment repairpersons, and delivery people.

**High-risk** visitors are individuals who have regular close contact with animals, their excretions, and secretions. Examples of this type of visitor include veterinarians, animal and manure haulers, and custom processing crews. Additionally, visitors who recently traveled to foreign countries should be evaluated as a potential high-risk visitor.

Visit requests from medium- and high-risk visitors should be evaluated on a case-by-case basis. Facility management can make discretionary decisions as to whether these visit requests are granted, and may decide that these visitors should follow some or all of the enhanced biosecurity visitor control recommended measures.

Visitors who work with livestock pose a risk due to the likelihood of coming into contact with other herds and diseases those herds may carry. Even if management knows these individuals and works with them regularly, it is important that the facility manages the actions and interactions of these visitors in the facility. People and equipment that interact with other herds regularly pose a significant threat of foreign animal disease transmission to an operation.

Anyone who has recently interacted with livestock or traveled outside of the country should be asked to have at least two days without exposure to animals, as well as cleaned and disinfected footwear, equipment and vehicles before coming onto the facility premises. If the visitor was on a farm in a region known to have a FAD, the visit should be postponed until his or her risk can be reduced.

All visitors allowed on-site should be escorted at all times and be informed as to what is and is not allowed.

**Visitor logs** are an easy way to track who is coming into the facility. The simple act of requiring individuals such as delivery, sales, and service representatives, to sign-in ensures the facility staff knows that a visitor is onsite.

**Visitor policies and procedures agreement forms** outline basic rules for all facility visitors. The visitor agreement form can be expanded to include general operational security outside of biosecurity procedures. For example, the facility can include a statement alerting visitors “not to take photographs without facility management permission.”

## **Record Keeping**

Record keeping is a key component in maintaining routine biosecurity in a facility. Facilities need to keep records of the business operations that pertain to biosecurity, including: 1) products and inventory, 2) animal identification, 3) treatment records, 4) animal purchase, sale or transfer and 5) personnel contact and vehicle information and 6) visitor sign-in forms. Keep records in a uniform manner and update as needed, or anytime animals are treated.

**Product and inventory** records are essential for biosecurity purposes. Maintain a record of product lot or serial numbers in case of a manufacturer’s recall. This will help identify both the tainted products and the animals that were administered the product. Keep records of product inventory and use products before expiration date. Maintain an inventory of keys for doors and locks to keep track of personnel who have access to pharmaceuticals, feed additives, and hazardous materials. Limit the potential for sabotage by only allowing authorized personnel access to storage areas.

**Animal identification** is essential for disease tracking and helps reduce the number of animals that need to be investigated, the time needed to respond, and decreases the cost to producers and the government. Individual tagging of pigs is the best means of facilitating disease tracing. When pigs are received; record the animal identification number, breed, sex, source, and the

trucking company used for transport on the Pig Receiving Log. Keep these records for at least five years.

**Animal treatment records** help identify the origin and extent of a disease outbreak. It is important to routinely record all illness and treatment of pigs because outbreaks may not be recognized in the earliest stages. Maintain thorough animal health records to assist the veterinarian in making recommendations or adjusting treatment protocols. Use the Animal Health Record Form when dispensing veterinary pharmaceuticals or administering treatment.

**Purchase, sale, or transfer of pig records** are also necessary for disease traceability. Maintain purchase, sale and transfer records for at least five years, so the animal's origin and dates of possession can be determined. Record the transfer of pigs within the facility and animal movement history on the Pig Movement Record to aid in disease outbreak investigations.

**Vehicle and contact information** of all visitors and employees that access the facility will facilitate timely determination of exposure to an outbreak. In an outbreak of a highly contagious zoonotic disease, public health officials may recommend performing diagnostic testing on personnel and visitors. Maintaining current contact information for employees and facility visitors are essential for surveillance measures. Record the contact and vehicle information for all visitors, delivery, sales, and service representatives

**Employee training** on topics such as how to recognize signs and symptoms of disease, and required roles and responsibilities during a heightened biosecurity event is important. Maintain records to ensure personnel are educated on matters pertinent to facility biosecurity.

## **Animal Handling and Contact**

A fundamental practice for controlling disease exposure is limiting animal contact through segregation of various groups of animals. Sick animals and new arrivals pose the greatest risk; however, disease transmission can result from contact between seemingly healthy animals from different sources, of different ages, or at different production stages. The properties of various diseases and the health status of the herd are crucial considerations in biosecurity planning. The extent and effectiveness of biosecurity measures will depend on how these significant variables are addressed.

**New animals** are the primary source of disease in a facility. New pigs can be infected with a disease without showing signs right away. For example, animals exposed to the FMD virus can take as long as 14 days before signs of illness are exhibited. The most certain way to prevent introducing a new disease would be to maintain a "closed herd." Keep newly-arrived animals in a specific section of the facility. Continual introductions to an established group of animals result in social stress (which increases susceptibility to disease) and repeated exposure to new pathogens.

Limit purchases to the minimal number of sources possible, preferably those with a known and trusted herd health program. Producers can use risk categorization to determine the level of acceptable biosecurity risk compared to cost. Figure 1.4 below depicts an example of risk categorization.

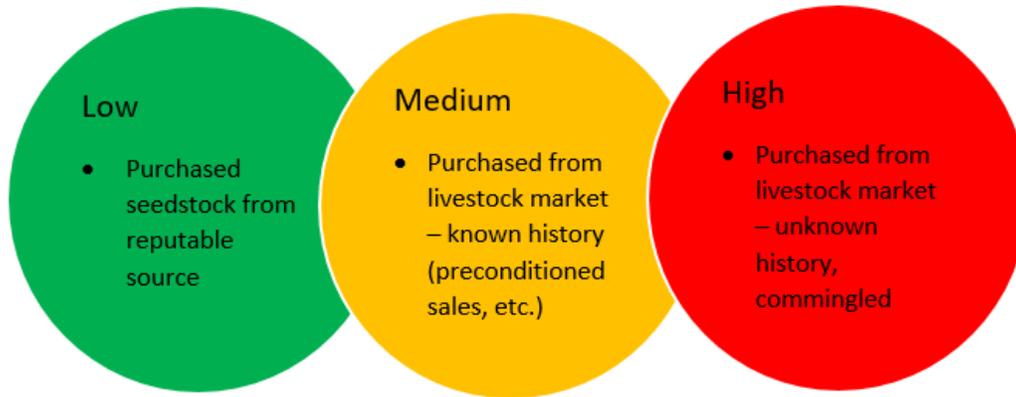


Figure 1.4 – New Animal Biosecurity Risk Groups

Frequently observe animals for symptoms to detect a disease early and prevent its spread. Follow the Facility Health Management Plan developed with your veterinarian. If something unusual is seen, contact your veterinarian and isolate the suspect animal.

Do not use the same treatment areas for healthy animals as sick animals. If this is not possible, thoroughly clean and disinfect facility and equipment after treatment of ill animals.

Humanely euthanize animals that are not going to recover in a timely manner, as these animals can serve as a reservoir for many disease organisms.

**Deadstock** can be a reservoir for many disease organisms. Dead animals need to be disposed of promptly and properly so predators, wild birds, etc. do not spread disease. Have a veterinarian or trained personnel necropsy animals that died of unknown causes to help identify a potentially infectious disease.

Develop protocols for handling and removing deadstock. Carcass disposal options vary, and typically there is no one-preferred way. Consider using rendering services, where available, as it is an easy, safe, and cost-effective method. However, because rendering trucks can introduce disease to the yard, pre-identify carcass staging areas as far away as possible from healthy livestock, preferably at the perimeter of the facility premises. Review applicable federal, state and local regulations for disposal options.

**Animal contact** creates a potential for spreading disease from affected to susceptible animals. Treat, feed, or handle the most susceptible animals first and sick animals last; while taking appropriate disinfection precautions between groups. When diagnosis is uncertain or a disease of severe consequence is suspected (i.e., an FAD), stop animal movement and have a veterinarian examine affected animals, perform necropsies, and collect and submit proper diagnostic samples.

### **Disease Detection and Surveillance**

Many diseases are already present in North American pigs. For some diseases, the monetary consequences may be severe even if sickness and mortality are not. This can be the result of a loss of consumer confidence, the cost of diagnosis, treatment and intervention (vaccination etc.), and potential carcass management costs. Additional losses may include human health costs such as medical care, lost productivity, and loss of employees (who may quit or be unable to return to work).

Medical treatments are administered to protect herds from disease; these measures are part of a *Facility Health Management Plan*. Biosecurity plans address physical, sanitary and other aspects of animal health and should be aligned with facility health management plans.

**Diagnostic sample collection and testing** is performed when an FAD is suspected. Veterinarians, animal health technicians, and other trained personnel should follow Standard Operating Procedures (SOPs) for sample collection, preservation, packaging, and shipment. More information on sample collection can be found in the enhanced biosecurity section of this chapter.

Educate employees on the signs and symptoms of any diseases that are a concern to the operation. Check new pigs closely for signs of illness. It is critical that persons responsible for the daily evaluation of animals inform management immediately if they observe signs and symptoms that are not consistent with normally observed illnesses on a daily basis.

**Disease traceability** is fundamental to health management plans (medical treatments and vaccinations), and marketability in facilities. Implement disease traceability measures such as individual tagging of all animals during routine biosecurity operations to prepare for a potential disease incident. Check the KDA-DAH website for current regulations regarding identification and tagging.

During an animal disease emergency event, it may be necessary to: locate the source of the animal(s) in question, identify premises on which the animal(s) previously resided, and source or current location of other exposed or potentially exposed animals. Retain records of animal origin and movement to expedite disease investigations.

**Routine vaccinations** vary depending on prevalence of disease both in the facility area and in the origin of the pigs. Considerations for vaccine selection are safety, efficacy, necessity, and economics. Tailor protocols to needs based upon geographic location, facility industry sector, the facility itself, and husbandry practices. Most pigs in facilities receive vaccinations for common viral pathogens and bacterial diseases.

## WILDLIFE MANAGEMENT

Rodents, feral animals, and wildlife may be a source of disease in a facility. Mobility allows them to spread disease both on and off premises. The threat posed by animals may be overlooked due to their small size and nocturnal activity. Preventing feral animals and wildlife from entering the premises is the best strategy to mitigate the threat to livestock.

Feral animals and wildlife can act as fomites by carrying disease causing organisms on their fur, feathers or feet. Birds and rodents can spread diseases for a short time and distance and can also contaminate feed and water sources with their urine and/or feces. Additionally, some diseases can be spread from feral animals and wildlife through insect vectors.

**Rodents and vermin** (e.g., rats, mice, and rabbits) spread diseases from contaminated areas to uncontaminated areas by walking through infected manure and bodily excretions. This can subsequently contaminate the food or water supply on the premises or neighboring facility.

**Feral cats and dogs** may carry parasites and diseases and travel easily between farms and facilities. Feral animals infected with leptospirosis or rabies can cause outbreaks in both people and pigs.

**Wildlife**, such as birds (both resident species and migrating flocks) can contaminate food and water sources and pass diseases like coccidiosis and salmonella to pigs and personnel.

## Physical Security

The goal of biosecurity is to prevent the introduction of diseases into a facility. Physical security is the first line of defense against the accidental or intentional introduction of disease by wildlife, vector, or people. Routine physical security also prevents and deters theft and damage.

**External security** is an important part of a biosecurity plan. Fencing around the premises is the most effective security measure against the most significant threats to the facility. Wild animals, such as deer, can transmit diseases to both pigs and humans. If a disease of concern is present in wildlife in the area, then consider adding fencing to prevent wildlife from entering the premises. For example, to prevent deer from getting onto the premises, fences should be at least 8 feet high. While fences are expensive to install, they are inexpensive to maintain and could prevent larger future loss.

Activists, terrorists and disgruntled employees could intentionally introduce diseases to a facility. Fencing, locked gates, lighting, surveillance systems, security guards, and signage will discourage unauthorized persons from accessing the facility. A surveillance system or night watchman help ensure the facility remains secure after business hours. Well-placed signs clearly communicate property boundaries, the presence of alarm systems and security patrols. Post signage along the perimeter of the facility and prominently display at entrances, parking lots, and on buildings and gates. A well-lit facility and perimeter discourages trespassing. Install motion detection lights in areas where people could attempt to access the facility after hours, such as site entrances, external gates and parking lots.

**Internal security** will ensure the safety of animals, feed, records (computer and paper), and equipment and supplies. Safeguard the inside of buildings, computers and other systems to prevent tampering or sabotage. Evaluate the security of water and feed systems with respect to ease of intentional introduction of pathogens or other forms of contamination. Protect sensitive or restricted areas (such as water and feed systems) with locks or other access control measures, and maintain a door or lock key inventory to keep track of personnel who have access to those areas. Consider using combination locks or key cards for restricted areas, change combinations and re-program cards as part of routine security or in the event of employee termination.

Hazardous materials, pharmaceuticals and feed additives must be securely stored to prevent unauthorized access.

**Employees** are a critical component in enforcing physical security; train personnel to be aware of and immediately report suspicious behavior.

## Vector Control

Vectors such as mosquitoes, ticks, and flies can pose a significant disease risk to pigs. These parasites can amplify the spread of zoonotic and porcine diseases and increase stress on pigs. Prevention practices are the most effective strategy of routine vector control.

Vectors can transmit diseases to pigs either mechanically or biologically. Mechanical transmission occurs when the vector obtains the disease from one animal directly from an animal's eyes, nose or from the environment in contaminated manure or feed and transmits it to another animal. Biological transmission takes place when the vector ingests the pathogen from the blood of an infected animal and then transfers the pathogen into or onto another animal.

The most effective way to prevent mechanical or biological transmission is to reduce vector breeding areas, minimize vector exposure to the pigs, and eliminate the vector(s) using a combination of environmental, biological and chemical control methods. Follow an Integrated Pest Management (IPM) plan under the direction of a qualified pest control specialist. Examine and

augment Integrated Pest Management Plans as necessary to align with the goals of this *Biosecurity Plan*.

**Environmental control** is the most important prevention strategy for vector control. Focus effort on controlling insect breeding areas. Elimination of locations for breeding and laying eggs reduces the number of disease spreading insects in the facility. Remove sources of standing water or treat them with larvicide, regularly remove organic debris and keep vegetation short to discourage mosquito, fly and tick breeding.

**Biological controls** include parasitic wasps, predatory mites, biocides and beetles that feed on pupae/larvae living in manure and vegetation and are effective methods to control insect populations. However, only use insects in approved areas because they may feed on other beneficial insects. Check with an IPM specialist for recommendations.

The use of certain chemical and biological pesticides is restricted by state laws in most states and may only be used by licensed pest control specialists. State law requires keeping records of pesticide application for two years. Follow the Kansas Department of Agriculture pesticide applicator requirements. Use the Pesticide Use Record form to record application of restricted-use and state-limited-use pesticides.

**Chemical controls** include pesticides, insecticides, antiparasitics, and feed additives. Chemical products are effective in controlling vectors when used in conjunction with prevention practices. Pests may become resistant to chemical controls if improperly used. Consult a licensed pest control specialist regarding the use of chemical control products.

**Fly control** is important in the prevention of swine dysentery, TGE (Transmissible Gastroenteritis), greasy pig, and coccidiosis. Adult female flies lay eggs in organic matter. Prevent eggs from hatching and limit the adult fly population by regularly clearing organic debris such as spilled feed. A comprehensive manure management plan is also imperative to discourage egg laying and controlling adult flies. In addition to prevention strategies, the adult fly population can be managed using insecticides.

**Tick control** is important to the prevention of classical swine fever (CSF) and African swine fever (ASF). Ticks are not commonly found on pigs indoors, however.

**Mosquito control** can prevent the transmission of Japanese Encephalitis (JE). The best way to control mosquitos is to remove sources of standing water where mosquitoes lay eggs. Use chemical control products to eradicate mosquito larvae.

## **Cleaning and Disinfection**

Cleaning protocols, when implemented correctly, can be a cost-effective means of reducing pathogenic organisms and are an important step in any biosecurity plan. Disinfection protocols further reduce the risk of pathogens entering and spreading through a facility. Every item (e.g., supplies, new boots) must be disinfected and unused for 24 hours before entering the clean side of the facility.

**Basic cleaning and disinfection (C&D)** of premises, equipment, vehicles, and personnel is a required part of routine operations in a swine facility. Increase C&D effort during an animal health emergency. Carry out C&D processes in a systematic manner to ensure efficacy and efficiency. Regardless of the situation, item, or area, effective C&D involves understanding the steps of the basic C&D protocol. The basic steps of C&D are listed in [Figure 1.5](#).

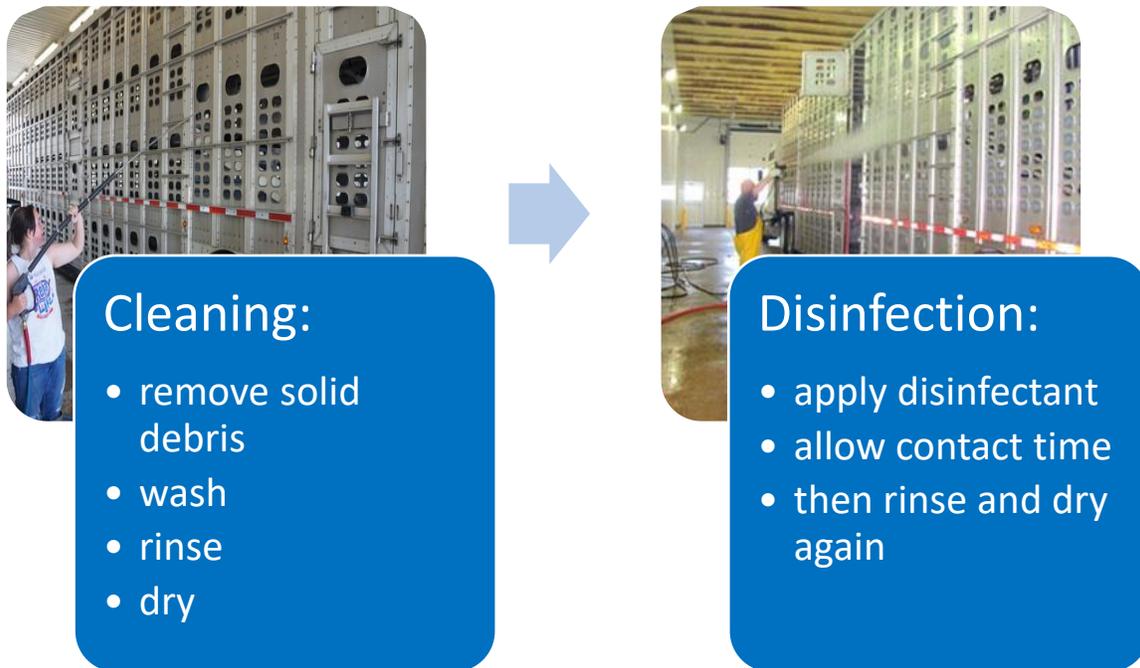


Figure 1.5 – Basic Cleaning and Disinfection Protocol

**Cleaning** is the most important steps in the C&D process. When done correctly, cleaning alone can remove over 90% of microorganisms. The goal is to remove as much organic matter as possible. Organic material can harbor microorganisms for long periods of time. This step improves disinfection efficacy since most disinfectants are not as effective when organic material is present. The cleaning process involves 1) dry cleaning (removal of debris with a shovel, brush or broom), 2) washing, 3) rinsing, and 4) when possible, complete drying.

**Washing** further reduces the number of microorganisms in the area to a safer level. This is the most crucial step in the C&D process and will most likely eliminate the majority of remaining microorganisms if performed correctly. Soak the area with hot water and detergent or other cleaning agent, and then wash by wiping, spraying, or scrubbing.

Allow areas to dry before application of the selected disinfectant to reduce potential dilution of the disinfectant upon application.

**Disinfectants** are physical or chemical agents that destroy vegetative bacteria (but not necessarily spores), viruses, and fungi. Use disinfectants that target a wide variety of organisms, work in any environment, and are non-toxic, non-irritating, non-corrosive and relatively inexpensive in routine biosecurity situations where no specific disease of concern is identified. Unfortunately, no disinfectant is ideal for all criteria. Therefore, careful consideration of the characteristics of a disinfectant is essential to select the most useful, effective and cost-efficient product. See Figure 1.6.

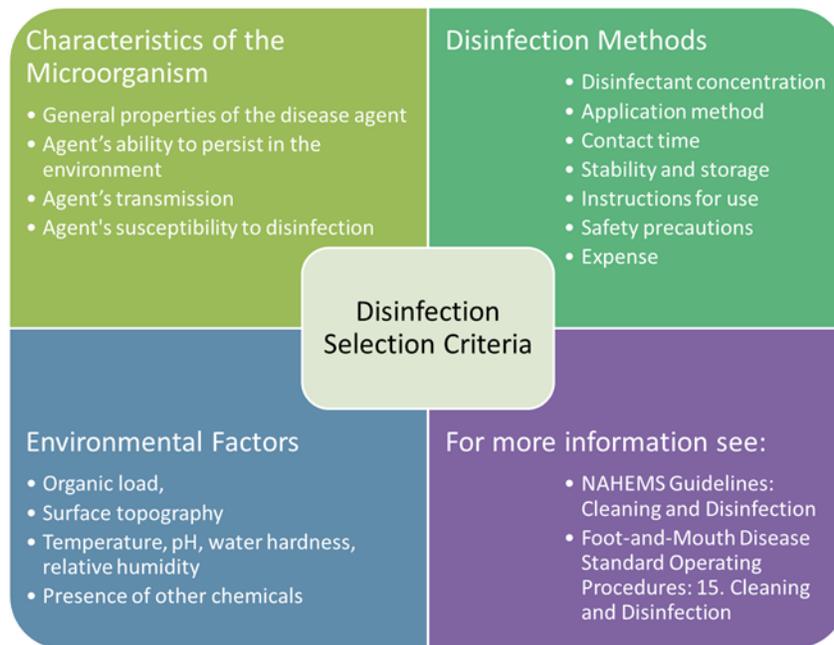


Figure 1.6 – Disinfectant Selection Criteria

**Disinfectant selection** will depend on the microorganism targeted, as well as environmental factors (e.g., temperature, pH), and disinfection methods. [Table 1.6](#) shows the effectiveness of different types of chemical disinfectants on types of microorganisms. Use the table in [Annex A](#) to determine the targeted microorganism's type and then Table 1.6 to determine which disinfectants kill the microorganism.

**Disinfectant labels** contain important information on the proper use and hazards of a chemical. Always read the entire product label and explicitly follow dilution instructions to ensure the safest, most effective concentration is applied. **It is a violation of federal law to use a product in a manner inconsistent with its labeling.** Pay particular attention to the proper use of a product application, effectiveness, and associated hazards (human, animal, and environment). This information will assist in decisions for infection control efforts.

**Designated C&D areas** are locations set aside for staging and controlling C&D operations. Create a designated cleaning station containing equipment (e.g., tubs, scrub brushes) to aid in the removal of gross debris and application of disinfection products. Ensure designated cleaning station contains a water supply and runoff collection area. Ensure the wastewater and runoff collection plan is compliant with any EPA National Pollutant Discharge Elimination System (NPDES) permits the facility maintains. Runoff of infectious material or chemical solutions may be toxic to aquatic organisms or further spread disease.

**Waste management** is an important aspect of any C&D operation. Waste can be subject to different federal, state, local, and tribal regulations and requirements. Consult with the animal health authority and environmental regulating agency on how to handle waste generated by C&D procedures.

# Routine Biosecurity Template

## ***Employee Policies***

### **Hiring Process:**

- Conduct applicant screening:
  - Interview applicants
  - Perform personal and professional reference checks
  - Consider doing a background check using one of the options described below

### **Background Check Options:**

- Option 1: Hire a service to perform the background check
- Option 2: Perform a background check in house
  - Call past employers to verify the employment status of the prospective employee
  - Review applicant's social network (e.g., Facebook and Twitter) activity
  - Obtain a driving record from the Kansas Department of Revenue (requires a signed consent form TR-301 <http://www.ksrevenue.org/recrequest.html> )
  - Call educational institutions to verify the prospective employee's certificates, degrees, experience, and any other education-related information disclosed on the resume

### **Biosecurity Training and Awareness:**

- Educate employees and customers to be alert for signs of possible tampering with livestock, supplies, equipment, and facilities
- Encourage employees to report suspicious activity or unauthorized personnel on or near the facility
- Emphasize early identification of serious diseases can help minimize the risk of disease spread in the facility
- Provide reporting instructions if disease or illness is suspected/detected

**Biosecurity Training and Awareness:**

- Ensure employees know and understand the warning signs of an FAD including the identification of FMD lesions, and symptoms of CSF and ASF
- Ensure training includes a description of how diseases may be introduced and transmitted by:
  - Livestock and feedstuffs
  - Visitors and employees
  - Vehicles, machinery and equipment
  - Manure and effluent
  - Feral animals and wildlife
- Direct employees to be vigilant for signs of pig disease (blisters on the feet and snout, reddened and crusty eyes, fever, skin discoloration, diarrhea, etc.)
- Alert all employees and their family members to watch for sick animals, including wildlife, both at home and in surrounding areas
- Employees are not permitted to have pigs at their home
- Require employees who have livestock at home to report any animals with illness to facility management
- Train employees on what to expect during an enhanced biosecurity situation
  - Individual roles and responsibilities
  - Notification, warning, and communications procedures
  - Emergency response procedures
  - Location and use of cleaning and disinfection equipment
- Track employee training using sign in sheets and individual training records.
- Ensure translated training materials are available for non-English speaking employees

**Employee Separation:**

- Disable computer access, and employee building and property access
- Notify staff of any adverse terminations (e.g., suspected disgruntled former employees) in order to protect the facility
- Remind departing employee of responsibility to not share company confidential information or trade secrets

**Foreign Travel****Signage:**

- Post a sign marked “If you have traveled outside the United States in the past fourteen (14) days, you may inadvertently transmit a Foreign or Emerging Animal Disease into our facility. Please call (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_ before entering the premises.”

**Visitors to Foreign Countries:**

- Avoid visiting farms, sale barns, fairs, stockyards, zoos and any other animal facility
- Check the following websites for surveillance information:
  - <http://www.oie.int/en/alerts-disease-information/>

***Coordination with Animal Health Agencies and Local Government*****Overall:**

- Discuss facility specific risks with state animal health officials
- Arrange for local law enforcement or insurance agent to perform a security survey of the facility
- Request local law enforcement routinely conduct patrols along facility’s perimeter
- Immediately report any unusual or suspicious persons, vehicles, or activity to local law enforcement

### **Create and Post Facility Map:**

- Create a facility map so that it can be provided to law enforcement, animal health and emergency management professionals in the event of a biosecurity event. The map should include the following information:
  - The name and address of the facility owner/proprietor/manager and physical relationship of the facility to adjacent facilities, fields, or structures
  - Buildings/structures, including offices, houses, barns, outbuildings, feed bins, chemical and fertilizer storage, manure storage/pits (indicate sizes and locations of entrances), including appropriate access points
  - Transportation routes, including access roads, highways, crossroads, etc.
  - Line Of Separation (LOS) Delineating the separation of the facility operations (Clean) from the outside (Dirty)
  - Locations of storage areas for machinery or other equipment
  - Fences and gates (indicate dimensions)
  - Well and/or municipal water supply, hydrants, and ponds
  - Electric, gas, and phone lines and shutoff
  - Location of chemicals including Material Safety Data Sheets (MSDS)
  - Septic tanks, wastewater systems, and cisterns
  - Drainage ditches, culverts, and surface drains
  - Fields/pastures including areas where animals are located
  - Fuel storage tanks

### **Develop Emergency Contact List:**

- Create an [Emergency Contacts List](#) that has numbers for animal health agencies, local law enforcement, and public health
- Post list around facility near telephones and on bulletin boards. Have employees program these numbers in cell phones

## ***Movement On and Off the Property***

### **Vehicles and Equipment:**

- Ensure staff is aware of the potential for introduction and transmission of disease by visiting vehicles, machinery and equipment
- Do not share equipment or vehicles between facilities

- If equipment must be shared, remove all manure, wash equipment with warm water and soap, rinse, and disinfect. Rinse again before using equipment with animals from another facility
- Ensure vehicles, machinery and equipment entering the facility area are directed to specified locations and delivery areas within the premises
- Limit movement of non-facility vehicles, machinery and equipment to areas of the premises beyond the specified delivery areas

**Designated Parking Area:**

- Designate parking areas located on the premises
- Ensure the parking area has adequate drainage that flows away from the facility to prevent contamination

**Animal Delivery/Loadout Facilities:**

- Place animal delivery/load out areas on the perimeter of the facility
- Clean all transport trucks and trailers regularly

**Animal Movement:**

- Keep records of all animal movement

**Rendering:**

- Establish a dead animal pickup point outside the line of separation so rendering trucks do not contaminate the operation

Choose a location that:

- Allows for pick-up without vehicle movement through animal areas
- Is clearly marked
- Is located along the perimeter of the premises
- Is out of sight from main roadways and neighboring properties

- Communicate location of deadstock to drivers ahead of scheduled pick-up

**Human Foot Traffic:**

- Inform employees of the potential for introduction and transmission of disease by visitors
- Ensure all visitors entering the facility are directed to the office area where they are to shower into the facility and wear provided clothing
- Control the access of visitors to pig areas
- Maintain a register of visitors to the facility

**Manure:**

- Be aware that manure and effluent pose a potential biosecurity risk
- Use dedicated equipment (e.g., shovels, loaders, trucks) for manure management
- Clean and disinfect manure handling equipment with a solution designed to destroy or eliminate infectious microorganisms prior to using the equipment to handle feed or other commodities
- Ensure manure doesn't contaminate feed
- Enforce manure management procedures to control and prevent overflow
- Record movements of manure and/or compost removed from the facility site

**Feed Products:**

- Prevent feed delivery equipment from crossing routes contaminated by manure
- Use dedicated equipment for feed management
- Keep feed and manure handling traffic separated from each other as much as possible
- Purchase feed commodities from preferred suppliers who maintain a quality assurance program that includes a biosecurity component whenever possible

**Feed Products:**

- Ensure documentation of quality assurance procedures is provided with purchased feed
- Verify reasonable measures are taken to protect the feed from contamination with potential disease-causing material, including porcine derived protein
- Comply with FDA ban on feeding of prohibited proteins to pigs
- Enforce wildlife and feral animal control measures to prevent contamination of feed
- Protect feed from adverse weather to prevent spoilage and mycotoxin development
- Frequently clean up and dispose of spilled feeds
- Keep feed areas clean (remove visible debris) and well maintained

**Water Sources:**

- Examine and clean waterers regularly to remove all organic debris (manure and spoiled or waste feed)
- Examine water source regularly
  - Use deep wells and municipal sources whenever possible
  - Protect water sources as much as possible and monitor for problems
  - Perform annual culture tests for coliform bacteria to assess the quality of the water source

***Crisis and Risk Communication*****The Pre-Crisis Phase****General Practices:**

- Monitor and recognize emerging risks in the facility
- Create pre-scripted communication messages
- Anticipate and develop likely preliminary answers to stakeholder questions

**Designate a Person or Team:**

- Identify spokespersons, resources, and resource mechanisms well ahead of time
- Ensure messages are coordinated with the industry, KDA-DAH, KLA and KPA so that they share “one voice”
- Ensure employees know not to talk to the media unless authorized to do so

**Establish and Maintain Relationships:**

- Establish relationships with key industry groups such as KLA, KPA and NPB
- Work with experts to develop consensus recommendations

**Educate Employees:**

- Educate employees about biosecurity risks and how to protect the facility from an FAD outbreak
- Train personnel on crisis communications plans prior to an incident
- Practice following the measures in the biosecurity plan, using the messages already created, and refining the plan and messages as needed
- If necessary, translate education material

**Zoonotic Disease**

**Awareness Education:**

- Work with veterinarian or livestock extension specialists to get accurate and up-to-date information about zoonotic diseases
- Educate anyone who works with animals about zoonotic disease risks
- Provide information in both English and other primary languages (e.g., Spanish) as appropriate
- Provide zoonotic disease educational materials in employee hiring packet

- Post information for employees and visitors:
  - Define immunocompromised and list diseases or medical conditions that compromise immune systems
  - Speak proactively with employees regarding animal handling guidelines and recommendations
  - Provide handouts/brochures on zoonoses with resources for further information

**Personal Hygiene:**

- Provide hand washing facilities with warm running water, soap, clean towels and locate them next to animal contact areas
- Post signs reminding staff to wash hands after handling animals
- Check soap and towels, and replenish as necessary
- Remind staff to wear gloves when possible
- Keep employee eating and break areas separate from potentially contaminated environments

**Personal Protective Equipment:**

- Provide employees with PPE:
  - Gloves, coveralls, boots
  - Mask, goggles

***Visitor Control***

**Signage:**

- Post a sign marked "Visitor entrance. All visitors must sign-in." at the facility entrance(s)
- Post signs directing visitors to the sign-in desk
- Post signs to designate a parking area for visitors and ensure the parking area is located away from livestock and feed

**Visitor Check-in:**

- Require all visitors (including delivery, sales and service representatives) to sign in and out each time they visit the facility. The Routine Biosecurity Visitor Sign-in Form provided in the form section of this chapter will be printed and kept in a log at the \_\_\_\_\_.
- Require all visitors review and sign a visitor policies and procedures agreement when visiting the facility. The Routine Biosecurity Visitor Policy and Procedure Agreement Form provided in the forms section of this guide will be printed and kept at the \_\_\_\_\_.
- Require visitors going anywhere other than the main office or entrance be accompanied by a facility employee
- Ask visitors if they have interacted with other livestock within 24 hours. If they answer yes, treat them as high-risk visitors
- Ask visitors if they have recently traveled to a foreign country

**Visitor Personal Vehicle Control:**

- Require all visitors park their personal vehicles in designated visitor parking areas

**Visitor Control:**

- Do not allow visitors to proceed to pig areas with food or drink
- Require visitors bringing equipment into the facility to clean and disinfect equipment before and after each use
- Require visitors wear clean disposable or reusable protective clothing e.g., coveralls, hats, gloves, and clean disposable or reusable boots
- Require visitors to wash their hands with soap and water before entering and after proceeding past the office

## ***Record Keeping***

### **Animal Identification:**

- Upon receipt of pigs, record the:
  - Animal ID (Ear tag information)
  - Age
  - Breed
  - Sex
  - Source/Origin
  - Trucking company used for transport
  
- Maintain records for a minimum of 5 years

### **Inventory Security:**

- Inventory pharmaceuticals, hazardous materials, chemicals, and feed additives. When shipments are received, record the:
  - Date
  - Quantity
  - Supplier/Distributor
  - Product name
  - Lot/Serial number
  - Expiration date

**Animal Treatment Records:**

- Keep records of animal treatment for at least 5 years from the date of transfer or sale of pigs
- Store paper records in a fire-proof safe or electronically off-site
- Treatment records will contain the following information:
  - Animal identification
  - Treatment date
  - Diagnosis and associated treatment
  - Product administered (include manufacturer)
  - Product lot/serial number
  - Dose given
  - Route of administration (Intramuscular, Subcutaneous, etc.)
  - Location of injections
  - Earliest date the animal could clear withdrawal time
  - Name or initials of person who administered the drug

**Purchase, Transfer or Sale of Pigs:**

- Keep records and store at the \_\_\_\_\_ for at least 5 years from the date of transfer of pigs

**Vehicle and Contact Information:**

- Keep contact information of all facility personnel and associated personal vehicles
- Keep personnel records up-to-date and retain for at least 12 months
- Keep a log of all visitors to the facility by requiring visitors to sign-in at the office
- Keep a log of delivery vehicles and service or sales representative visits by requiring drivers and representatives to sign-in at the office

**Personnel Training:**

- Require employees to sign-in when receiving training or education, store copies of training log at the \_\_\_\_\_.

## ***Animal Handling and Contact***

### **Stock Purchases:**

- Purchase feeder pigs from preferred suppliers with a quality assurance program including a biosecurity component
- Purchase replacement gilts and semen from a seedstock supplier with a quality assurance program including a biosecurity component
- Prior to purchase, check best practice guidelines for specific diseases and request appropriate declarations regarding the health status, herd health program, or preconditioning of purchased pigs

### **New Animals:**

- Inspect pigs on arrival to assess animal health status
- Minimize the mixing of newly arrived pigs with other stock during the introductory period

### **Sick Animals:**

- Follow the prescribed Facility Health Management Protocol developed in conjunction with your veterinarian – including signs and symptoms to be aware of as well as treatment recommendations.
- Do not allow any animal to come into contact with urine, saliva, or fecal discharge of suspect animals
- Maintain separate treatment areas for sick animals and processing areas for healthy/new pigs
- Do not use the same treatment areas for healthy animals as sick animals
- Thoroughly clean and disinfect facility and equipment after treatment of ill animals.

### **Deadstock:**

- Dispose of deadstock in accordance with documented procedures taking into account environmental and public considerations

- Maintain dead stock in an enclosed area to prevent predators, wild birds, etc. from coming into contact with the carcass
- Identify/assign pre-staged carcass pickup location near facility perimeter
- Have a veterinarian, or other trained person, perform a necropsy on any animals that die from suspicious causes. Trained personnel that conduct a necropsy should immediately contact a vet, if the cause of death is not known

**Animal Contact:**

- Do not allow contact between facility animals and outside animals
- Provide as much distance between pigs in the facility and neighboring animals as possible
- Ensure perimeter walls are maintained to minimize exposure of pigs at the facility to outside animals and pathogens
- Ensure facility internal gates are maintained to minimize accidental mixing of pigs within the facility
- Prohibit all non-essential visitor contact with animals
- Ensure essential visitors (e.g., veterinarians, nutritionists, animal health officials) follow biosecurity guidelines
- Prevent contact between animals of differing status (newly arrived pigs versus market hogs, replacement gilts versus multi-parity sows)
- Minimize switching animals between pens
- Limit sharing of water sources to prevent orally spreading diseases between pens of pigs
- Clean waterers on a regular basis to remove organic matter
- Ensure adequate space for the number of animals that utilize feed and water
- Minimize stacking of stressful events (e.g., handling pigs multiple times on the same day)

## ***Disease Detection and Surveillance***

### **Health Management Plan:**

- Ensure that the goals of this *Biosecurity Plan* are aligned with the *Facility Health Management Plan*

### **Surveillance:**

- Train facility personnel to report sick animals
  - Ensure that all staff involved in the daily monitoring and handling of animals are aware of the importance of early detection of emerging diseases and know what to do if they suspect an animal may be exhibiting symptoms of such a disease
  - Inspect animals daily
  - Monitor daily feed intake for early identification of illness in the pigs
  - Contact the facility veterinarian immediately if unusual illness or signs are noticed
- Perform necropsy on animals that died from unknown causes
- Collect information on the health status and the source of any animal(s) brought into the facility
- Undertake routine monitoring of pigs in the facility for signs of sickness

### **Sick Animals:**

- Isolate sick animals from the herd to minimize disease spread. Isolation should be, at a minimum, two incubation periods for the disease (consult your veterinarian)
  - Use separate facilities, equipment, and staff to handle isolated livestockOR
  - If this is not possible, at a minimum, handle or visit the isolated animals last
- Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals
- Report cases of unusual sickness or death in the facility to your veterinarian or the local government veterinary officer
- Comply with the requirements for initial investigation of unusual sickness and/or deaths as directed by the federal and state animal health agencies

**Sick Animals:**

- Work with a veterinarian to develop treatment protocols and monitor response rates on routine visits to the facility
- Train work crews to monitor treatment response rates and stay aware of treatment success even when a veterinarian is not in the facility

**Disease Traceability:**

- Individually tag all animals
- Place a secondary identification on all animals that were treated for illness so they can be rapidly identified and more closely monitored once they have returned to their home pen
- Keep records of all medical and vaccination treatments.

**Routine Vaccination:**

- Implement protocols for routine vaccinations

***Wildlife Management*****Rodents and Vermin:**

- Keep facility parking lots, premises and storage areas clean to discourage rodents
- Raise stationary equipment and ensure it is easily movable to facilitate cleaning behind and underneath it
- Stack bagged feed on pallets to allow room for traps or bait placement
- Tightly seal building and container openings greater than ¼ to ½ inch
- Ensure distance between the bottom of doors and thresholds does not exceed ¼ inch
- Install floor drains with metal grates to prevent rodents from entering buildings using drainage pipes or sewage systems

- Keep grass and weeds short around buildings and structures
- Install a 3-foot wide gravel rodent barrier around buildings and structures to discourage burrowing
- Set traps along walls and in areas where rodent activity is suspected
- Use bait and/or traps according to instructions; check baits and/or traps regularly

**Birds:**

- Keep facility parking lots, premises and storage areas clean to discourage bird activity
- Work with animal damage control experts to manage bird populations
- Clean up spilled feed around feed bins
- Install plastic “strip doors” in doorways of buildings to prevent bird entry
- Place netting on the undersides of rafters to discourage bird nesting
- Keep grass, weeds, and brush short around the perimeter of the facility to discourage bird nesting

***Physical Security***

**External Security:**

- Install fencing the perimeter of the premises, check for damage and make repairs in a timely manner
- Employ a guard or security patrol to monitor the facility after business hours
- Use an off-site monitored security system with electronic alarms on doors and windows
- Install video cameras at the following locations:
  - Site entrances
  - Parking lots
  - Restricted areas

**External Security:**

- Storage areas (hazardous materials, pharmaceuticals and feed additives)
- Feed bins
- Driveways
- Other
  
- Use ladder guards to prevent unauthorized use of ladders
- Install locks on the entry and discharge points of:
  - Feed bins
  - Water lines
- Lock and secure all vehicles, machinery and equipment stored outside after business hours
- Ensure door hardware and locks are intended for industrial use
- Install locks on all doors and windows on buildings
- Install self-locking doors and/or alarms on emergency exits and auxiliary doors
- Conduct security inspections of facilities on a  basis

**Signage:**

- Prominently display alarm and security service signs
- Post "Warning: This Property Monitored by a 24-Hour Security Patrol" signs along perimeter and in parking areas
- Post "Private Property No Trespassing" signs along the perimeter of the facility  
See Signs for Routine Physical Security for an example
- Post "Do Not Enter Authorized Personnel Only" signs on the outside of all emergency exits
- Post signs directing visitors to the office and sign-in desk

### **External Security:**

- Post signs designating a visitor parking area. Ensure the parking area is located away from livestock, feed, and other restricted areas.

### **Lighting:**

- Ensure areas surrounding structures and buildings are well-lit after dark
- Install back-up lighting for emergencies
- Install motion detection lights and electronic sensors at site entrances and parking lots
- Have keys labeled "Do Not Duplicate" to prevent unauthorized duplication
- Frequently change combination locks or re-program key cards, ensure codes and combinations are changed after employee resignation or termination
- Maintain a key inventory for all personnel with keys for doors or locks; ensure keys are collected after employee resignation or termination
- Restrict access to keys and controls to the following:
  - Front office
  - Computer systems
  - Heating, Ventilation, Air Conditioning (HVAC systems)
  - Propane, natural gas
  - Fuel supplies
  - Pharmaceuticals
  - Hazardous Materials (chemicals, pesticides, etc.)
  - Water
  - Electricity/generators
- Require delivery drivers to check-in at the office and maintain a log recording all deliveries to the facility
- Ensure that the packing manifest for incoming deliveries matches the purchase order
- Inspect packages for tampering, if packages show signs of tampering, contact local law enforcement and supplier

- Keep receiving areas locked after-hours

**Awareness and Training:**

- Train employees to challenge visitors who do not have visitor identification or who are not accompanied by facility personnel
- Train employees to recognize and report all suspicious behavior

***Vector Control***

**Environmental Control:**

- Remove sources of standing water or treat with larvicide
- Frequently clean waterers and remove organic matter
- Employ a manure management program
- Clean up spilled, soiled feed and materials
- Eliminate sources of decaying organic matter
- Remove grass and weeds around the facility

**Biological Control:**

- Utilize parasites such as predatory mites, beetles or parasitic wasps that feed on fly larvae
- Utilize biocides such as Bt (*Bacillus thuringiensis*) to kill insect larva
- Follow an Integrated Pest Management Plan under the direction of a licensed pest control specialist

**Chemical Control:**

- Use pesticides, insecticides, antiparasitics and feed additives according to manufacturer's recommendations
- Utilize a licensed applicator to apply all restricted-use and state-limited-use pesticides to the environment
- Use feed impregnated with larvicide or insect growth regulator (IGR)
- Utilize area sprays (knockdown) to kill adult flies
- Use approved pour-on, spray, or ear tag insecticides on animals as needed
- Record and observe withdrawal times associated with each product
- Follow an Integrated Pest Management Plan under the direction of a qualified pest control specialist
- Keep records of pesticide application for two years in accordance with state law
- Keep a record of restricted-use and state-limited use pesticides

**Fly Control:**

- Utilize baits and fly traps (e.g., fly paper)

**Mosquito Control:**

- Drain tarps and covers that collect water after a rain
- Keep roof gutters clean to prevent them from holding water
- Pick up and properly dispose of all trash, especially anything that could hold water
- Grade areas where road ruts and potholes exist

**Personal Protection:**

- Check for and remove any ticks after working near infested pigs or vegetation

- Use insect repellent containing N,N-Diethyl-meta-toluamide (DEET) on exposed skin
- Wear appropriate Personal Protective Equipment (PPE) to avoid contact with vectors and/or chemicals during treatment

## **Cleaning and Disinfection**

### **Cleaning Equipment, Vehicles, and Premises:**

- Clean pens after each group of pigs, before introducing new animals
  - Power wash pens
  - Clean and repair (as necessary) feeders and waterers
- Ensure equipment brought in by outside contractors is cleaned and disinfected before being brought into the facility
- Clean equipment in between processing of new/different groups of animals
- Clean equipment that comes into contact with manure before using it for any other purpose
- Clean up and dispose of spilled feeds promptly
- Clean vehicles regularly, including wheel wells and undercarriage
- Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals
- Ensure that animal processing areas and sick pens are cleaned regularly
- Do not use the same facility for processing healthy animals as treating sick animals
  - If this is not possible, thoroughly clean and disinfect facility and equipment after treatment of ill animals; process healthy animals before treating sick animals

### **C&D Equipment:**

- Create a designated cleaning station for movable equipment that contains C&D tools (e.g., tubs, scrub brushes)
  - Ensure designated cleaning station contains a water supply and runoff collection
  - Prevent runoff water from draining into "clean" areas

**C&D Equipment:**

- Locate area (and drainage from the location) away from sensitive areas, such as wellhead areas, livestock areas (e.g., down slope from animal areas) or driveway
- Create a mobile cleaning set-up for C&D of areas such as hospitals and processing facilities
  - Develop a plan for ensuring the mobile equipment has a water supply
  - Develop a plan for runoff collection and disposal
- Maintain C&D equipment
- Train employees on how to operate C&D equipment

**Waste Management:**

- Comply with federal, state, local, and tribal regulations and requirements

## Section 2 - Enhanced Biosecurity Considerations

Maintain all of these enhanced protocols throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

### ***Employee Policies***

For employee safety, security, and continuity of operations, management should know what to expect of employees during a potential or confirmed incident and how to manage operations. A real or perceived danger or threat to health can lead to employee hesitancy to report to work. Prepare for these situations in advance through regular employee training and communications.

**Determine staffing needs** to maintain optimum functionality of operations during a crisis. Designate employees in advance as either:

- Essential Personnel - Employees required for critical functions
- Non-Essential Personnel—Employees not required to report to work during an enhanced event (i.e., not involved in the direct care of animals during an event)

**Implement employee recall and call-back procedures** during an enhanced biosecurity situation. Procedures help managers clearly communicate expectations and, most importantly, continue operations. Consider setting up a team conference call, calling staff individually, or using a service to systematically communicate to employees. It is important to maintain two-way communications. Text groups and emails should also be considered.

**Emergency responsibilities** include actions facility employees may need to take to protect the region as a whole. During a period of enhanced biosecurity, management may need to work with neighboring facilities. This may include:

- Assisting with communication and information flow to neighboring producers
- Serving as local Subject Matter Experts and assist in identification of needs

- Providing labor, feed and/or equipment resources to help meet the immediate needs of an emergency response

## ***Foreign Travel***

Be aware of the disease status (disease alerts, or countries where disease is endemic) of countries where employees and visitors may travel. Disease reporting and investigative systems in some countries may be inadequate, and information is often not up to date. Assume anyone who travels to a foreign country may come into contact with disease organisms.

Require all visitors and employees to report foreign travel. Check the disease status of the country. Consult your veterinarian and/or state health authority for information about the disease status of a country. Additional resources for learning about active disease outbreaks worldwide are available on the following websites:

- <http://www.oie.int/en/alerts-disease-information/>

Any employees traveling to a high-risk FAD country should be treated with extra caution. Consult with your veterinarian and/or state health authority to determine when an employee who has traveled to a high-risk area should be allowed to return to work, and what cleaning and disinfection measures they should undertake.

## ***Visitor Control***

During an animal disease outbreak, visitors to a facility pose a significant disease risk to pigs and operations. **As such, all visitors should be treated as high-risk.** Visits can be divided into essential or non-essential.

**Essential visitors** are individuals who need to come into the facility in order to perform a function necessary to maintain facility operation and animal health. Examples of essential visitors include vendors, contractors, repairmen and veterinarians.

**Non-essential visitors** are individuals who wish to visit the facility, but whose visit is not required for the operation of the facility. Examples of non-essential visitors include someone requesting a facility tour or sales representatives.

During an animal disease outbreak emergency, all non-essential visit requests should be denied or postponed until the health emergency is over. All essential visit requests should be reviewed to ensure they are essential. All granted visit requests should be strictly monitored and enhanced biosecurity measures practiced.

In an outbreak situation, the risk of a visitor bringing disease into the facility increases, especially if the premises are within or near the outbreak area. If a disease outbreak occurs within the United States, but the facility is located outside the outbreak area, facility management is responsible for ensuring visitors observe biosecurity and Cleaning and Disinfection (C&D) measures appropriate to the level of perceived risk.

**Facilities near outbreak area** may be at a greater risk than those located further from the outbreak area. This is because there is a greater chance that facility visitors may live or work in the outbreak area. Therefore, premises nearer to the outbreak area should institute stricter visitor control measures than operations hundreds or thousands of miles away.

**Facilities outside outbreak area** may choose to enforce some or all of the enhanced biosecurity practices. Facility management should use this guidance and the attached forms to aid in determining if a visit request should be granted. Additionally, many veterinary practitioners are more comfortable making multiple farm visits outside the quarantined area as long as they diligently observe enhanced biosecurity measures.

**Facilities inside outbreak area** should require visitors to follow enhanced biosecurity recommended measures. Only essential visitors should be allowed to enter the premises. Outside consultants (for example, veterinarians and nutritionists) should limit their visits to no more than one facility per day and only make on site visits to non-infected locations. (**Note:** some diseases, such as FMD, can be persistent for days. As such, the length of time between visits to multiple facilities may need to be longer.) For specific biosecurity measures, refer to the *FAD PReP SOP: Biosecurity*.

**Zoonotic diseases** can be transmitted between animals and humans. With a zoonotic disease, there is risk that visitors who have the disease could infect the pigs, or that infected pigs on the operation could give the disease to visitors.

### ***Coordination with Animal Health and Government Agencies***

Relationships with animal health officials and local government agencies are critical during an enhanced biosecurity event. These relationships are crucial to response to a disease outbreak (regardless of cause) in a facility. Be prepared to accommodate requests for information and access by animal health officials and other government agencies.

Report suspected FAD outbreaks to Kansas Department of Agriculture – Division of Animal Health (KDA-DAH) and, or the Veterinary Service unit of the U.S. Department of Agriculture’s Animal and Plant Health Inspection Service (USDA-AHPHIS).

Coordination between facility management and local/State officials is essential during an FAD outbreak occurring anywhere in the country. Federal and state animal health officials will have access to important information on quarantines and movement control restrictions for example, and can advise facilities on how to ensure the safe movement of livestock around controlled areas. Emergency managers can coordinate with state and federal responses and are an invaluable line of communication during any type of crisis.

Response to an FAD will be managed from the top down meaning initial control will be under the Kansas Department of Agriculture. Authorities will determine if and when to activate local, regional, state, and federal emergency management plans. For more information on the Kansas response plan see: The Kansas Food and Agriculture Incident Annex - Appendix C (Livestock Emergency).

In most situations, a foreign animal disease diagnostician (FADD) will be assigned to investigate the health status of animals. The FADD will be responsible for: 1) obtaining samples and submitting them for analysis, 2) establishing movement restrictions and increasing biosecurity, and 3) facilitating animal health official and local government coordination protocols throughout the duration of the animal health emergency until the disease has been eradicated or otherwise controlled.

### ***Movement On and Off the Property***

If there is a confirmed FAD outbreak in the United States, state and federal regulations restricting movement, increasing surveillance, testing, and reporting requirements may go into effect. Within 48 hours of the identification of the Index Case, the USDA will implement a surveillance plan

which helps: 1) define the extent of the FAD outbreak, 2) identify Infected Premises, 3) identify new cases quickly through a combination of observation and laboratory testing, and 4) identify Disease-Free Zones. Once a facility, region, state, or country is established as a Disease-Free Zone, movement restrictions and disease monitoring requirements lessen, easing the response effort in that area.

**Quarantine and movement control measures** may be put in place to stop the spread of disease if an FAD outbreak occurs within the United States. These quarantine and movement controls will define Infected Zone(s), Buffer Zone(s), Control Area(s), and biosecurity procedures to protect non-infected animals. [Figure 2.1](#) from the Foreign Animal Disease Preparedness and Response Plan (FAD PReP) Foot and Mouth Disease Response Plan, illustrates an example of the zones and premises.

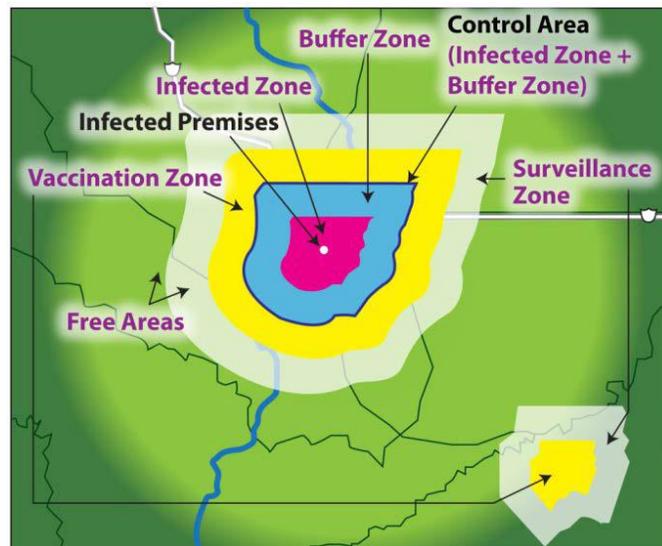


Figure 2.1 Example Illustrations of Zones and Premises

Do not move susceptible animals from outside an Infected Zone into or through an Infected Zone unless they are going to slaughter and the nearest facility is inside the Infected Zone. To ensure any product from an infected or exposed animal is properly disposed of, and any suspect product is detained, quarantine and movement controls will be imposed on such products. Permits may be required to move livestock into, within and out of a Control Area. Reroute livestock conveyances prior to reaching the Infected Zone.

Even if movement restrictions do not directly impact operations (i.e., if facility is located outside of the Control Area), restrictions may make the purchase, sale, and shipment of livestock and feed difficult. Practice proper biosecurity measures by developing a vehicle routing plan with commodity transporters to ensure Control Areas are avoided.

**Vehicles and equipment** pose a serious threat during enhanced biosecurity operations. Clean all transport trucks and trailers regularly, preferably after each use. Clean the outside and undercarriage, as well as the interior of the trailer. If pigs are still being transported into the facility, clean livestock trailer between every load of pigs. If possible, provide a wheel wash facility for any vehicle coming onto the premises. Wheel washing will help prevent contamination from feed delivery vehicles to facility equipment.

Park non-essential vehicles off-site. Document the movement of people and vehicles at the facility during a disease outbreak.

**Live animals** present the greatest risk for introducing or spreading disease during an outbreak. Movement of uninfected finished pigs out of the facility may be halted during an FAD outbreak depending on the facility's proximity to the processing facility and whether travel through or within a Control Area is required to get animals to the processor. In order for permits to be issued for movement, visual inspections and diagnostic testing may be required. Additionally, finished pigs may be required to be sent to the closest processing facility to minimize movement. If contracts exist between the facility and a processing facility, and the transportation required to reach the destination crosses Control Areas, route modifications may be required.

**Animals in transit** present a difficult issue in the event of an FAD outbreak. When a highly contagious FAD is first discovered in the United States, state or federal animal health officials may issue an immediate restricted or stop movement order. Establish driving routes that minimize potential disease exposure, while accounting for the welfare of the animals, to lower risk and improve safety. Federal and state mandates will be issued and must be followed for pig owners to receive compensation for pig losses.

**Unfinished pigs** in uninfected facilities in a Control Area during a highly contagious FAD outbreak may be allowed to remain on feed and be finished to normal market weight. Alternatively, depending on their proximity to Infected Premises and risk of exposure, regulatory officials and facility management may decide to send pigs to harvest early to control disease spread. Consider withdrawal times for all products used on the animals. Depending on the FAD, animals may be vaccinated against the disease, finished, and then sent to a processing plant. Follow vaccination withdrawal times if animals are to be slaughtered for human consumption.

**Mortalities** may be much higher than normal during an FAD outbreak. This can be directly from disease, or from culling animals as a means to control the outbreak. Plans for enhanced biosecurity operations should address the possibility that the facility may have to dispose of large numbers of carcasses in the event of a disease outbreak. Some facilities rely on renderers to handle their routine mortalities. In heightened biosecurity operations renderers may be reluctant to process animals due to concerns of potential contamination. Conversely, renderers may be called in to help with the processing of diseased carcasses as part of the ongoing response to an outbreak. In either case, it may be necessary to develop an alternative carcass management plan to handle routine mortalities during heightened biosecurity operations. Depending on the number of mortalities, and the amount and type of land available on the premises, it may be possible to dispose of some animals on-site via composting or burial. Facility managers should work with KDHE to determine how much of their land is suitable for on-site disposal and roughly how many carcasses can be managed on-site.

Transportation of large numbers of infected carcasses to an off-site location for disposal may be required. If so, specialized transport vehicles will be needed to transport items (carcasses, other materials) to the disposal site whether it is on or off the premises. If waste must travel on public roads, transport it in closed, leak-proof trucks or dumpsters. Secondary containment may be needed, depending on the type of waste being transported. Consult a qualified waste management professional to determine what disposal options and capacities are available locally. Follow local, state and federal guidance on the transportation of infected carcasses.

Consult the KDA-DAH and see the following for more information:

FAD PReP, Foot-and-Mouth Disease Standard Operating Procedures: 14. Disposal, DRAFT 2012.

U.S. Department of Transportation Hazardous Materials Program Definitions and General Procedures at 49 CFR 105.5(b)

**Manure** management is important in controlling pathogens as a large number of diseases are spread via feces. Most pathogens in fecal matter are susceptible to heat, desiccation and sunlight if exposed. Organisms, however, may be protected by fecal matter and may live for an extended period of time, especially in cold weather.

During and after a disease outbreak, make decisions on how to disinfect and dispose of pathogen contaminated manure. Untreated manure can spread disease to other livestock and possibly wildlife. In many operations, the manure management plan involves the application of manure to crop land and possible contamination with pathogens of concern will need to be considered before application. Clean and disinfect manure handling equipment between operations. For additional details, see *FAD PReP/NAHEMS Guidelines: Disposal (2011), Cleaning and Disinfection (2011)*.

**Feeders** can be a means of spreading disease as they are a gathering point for pigs and can become contaminated with feces, urine, nasal discharge and saliva. Feeders should be cleaned routinely under normal operations; during enhanced biosecurity operations feeders should be disinfected if used for multiple groups of pigs. Further, if concrete troughs are used, they can deteriorate over time; cracks and holes serve as reservoir of organisms when packed with feed and moisture. Plastic bunk liners, polyethylene, polyurethane or epoxy coating can be used to keep the surface smooth if needed.

## ***Crisis and Risk Communications***

Some of the procedures and recommended measures may not be applicable to every situation or specific facility. Choose objectives to implement based on the situational need. The recommended measures for an enhanced biosecurity incident are scalable and customizable.

The remaining phases of crisis and risk communication, as outlined in *CERC*, are **initial**, **maintenance**, **resolution**, and **evaluation**. These four phases may occur during a heightened biosecurity incident.

**The initial phase** of a crisis can be characterized by confusion, uncertainty, and intense media interest. Information is usually incomplete and the facts scattered. Recognize that information from the public, the media, other organizations, and from within the facility may not be accurate. Situational awareness is key. During this phase, 1) collect information about what happened, 2) interpret and separate the factual information from rumors, 3) determine the communication response, 4) coordinate with other response groups and agencies and 5) verify the magnitude of the event as quickly as possible.

**The maintenance phase** begins when most or all of the direct harm from the disease outbreak is contained, and the intensity of the crisis begins to subside. As one crisis communicator commented, “You know you have reached the maintenance phase when you get to go home and take a shower.” Communication objectives during this phase include the following:

1. Provide background and encompassing information to those who need it
2. Work to answer questions such as the following:
  - “How did this happen?”
  - “Has this happened before?”
  - “How can we keep this from happening again?”
  - “Will we be all right in the long term—will we recover?”

3. Generate understanding and support for response and recovery plans
4. Listen to feedback and correct misinformation
5. Explain emergency recommendations
6. Empower decision-making ability involving risk and benefit analysis

**The resolution phase** and the maintenance phase often blend into one another as the crisis subsides. Acknowledge the resolution phase may take considerable time as details of the event and especially responsibility and blame are addressed. Objectives for this phase include:

1. Examine problems and mishaps, and then reinforce what worked and address what did not work during the recovery and response efforts
2. Promote the activities and capabilities of the facility
3. Help reinforce the reputation of the facility as capable and responsive

As the crisis resolves, there is a return to some form of normalcy. Often this is a new normal, which includes an increased understanding of risks and new ways to avoid them. While in some cases complete recovery takes years, most of the recovery systems are put in place in the resolution phase. This phase is also characterized by a reduction in public and media interest.

**The evaluation phase** occurs when the crisis is over. During this phase the effectiveness of the communication plan is evaluated. This phase will likely be led by KLA, KPA, KDA-DAH and USDA with input from the swine community and those involved in the crisis and recovery effort. A crisis is a very important learning opportunity. Failure to learn the lessons from it increases the chance of a failed response in the future. Responders typically focus on tactics and implementation, not on the overall communication strategy. When the crisis is over:

1. Evaluate responses, including communication effectiveness
2. Document and communicate lessons learned—what worked and where were the challenges
3. Determine specific actions to improve crisis communication and thus the overall crisis response capability

When in an enhanced risk communication situation, there are some risk perceptions that must be considered. See Annex C: *Seven Cardinal Rules of Risk Communication*.

Understanding the nuances of Crisis and Risk Communications is critical to effective message development and delivery. This chapter only touched on the high points of the art of communication. Please see the 2012 Crisis and Emergency Risk Communication Manual published by the CDC for complete detail and explanation of this topic.

## **Zoonotic Diseases**

Enact enhanced biosecurity measures when there is a threat of a specific zoonotic disease. Not all diseases are zoonotic, and if the disease is not a risk to human health, (for example FMD), there is no reason to implement the recommended measures in this section. Identify actions needed to protect employees, visitors, and families in the event there is increased risk for a zoonotic disease outbreak. For more information, please see the *FAD PReP/NAHEMS Guidelines: Health and Safety (2011)* and *PPE (2011)*.

**Zoonotic risk** is not the same as biosecurity risk. Some diseases can pose a significant health risk to humans, but are not a significant risk to pig health or are not highly contagious. *E. coli* is

an example of a high zoonotic risk, but low biosecurity risk. Conversely, some diseases like FMD are a high biosecurity risk, but are not a zoonotic risk.

Table 2.2 below lists some swine diseases that are zoonotic. Annex A contains information about how these diseases are transmitted. The route of transmission is important in determining what protective measures to implement to protect humans from contracting disease. The recommended measures in the enhanced biosecurity plan are separated by route of transmission. In an enhanced zoonotic disease situation, implement plan measures warranted by the nature of the disease of concern.

For more details see the Center for Food Security and Public Health disease information website.

Table 2.2 – Zoonotic Swine Diseases

Diseases Present in U.S. Pigs		FADs
Leptospirosis	<i>Yersinia</i>	Japanese Encephalitis Screwworm Swine Vesicular Disease
Diamond Skin disease	<i>E. coli</i>	
<i>Streptococcus suis</i>	Ringworm	
Swine dysentery	Rabies	
<i>Campylobacter jejuni</i>	<i>Salmonella</i>	
<i>Clostridium perfringens</i>	Vesicular Stomatitis	

**PPE** such as coveralls and gloves must be worn by personnel handling animals, tissues, and fluids. If an FAD is zoonotic, enhanced PPE may include goggles and an appropriate respirator (N-95 or N-99) or a full-face shield if aerosolization is not a route of human exposure. See the *FAD PReP/NAHEMS Guidelines: Personal Protective Equipment (2011)* and associated SOP for more information.

### **Record Keeping**

If there is a suspected or confirmed FAD outbreak in the United States, state and federal regulations will result in increased reporting requirements. Keeping accurate and comprehensive records as part of routine record keeping is essential during an outbreak to facilitate tracing of animals and possible exposure to disease. Routine records can assist management in identifying visitors, personnel, feed, products, equipment and vehicles in the event of an enhanced biosecurity situation. Movement records of animals, visitors and personnel may be required to verify or exclude exposure to disease.

**Animal identification and traceability** play a key role in disease surveillance, control, eradication, and continuity of business. Maintaining records of animal origin as part of routine record keeping will help expedite disease investigations. See Routine Biosecurity Considerations for Record Keeping for additional information.

**Animal treatment records** are especially important during disease outbreaks. Keep accurate treatment and vaccination records during an outbreak situation because proof of negative disease status or vaccination may be required.

**Animal purchase, sale or transfer records** are important to help eliminate or confirm exposure to a disease outbreak. Keep routine records of pig purchase, sale, transfer and movement, including origin and the trucking company used for transport.

**Vehicle and contact information** for all facility visitors and employees can be used to trace exposure to disease. Recording vehicles that access facility property can help exclude or confirm exposure to disease. In the event of an outbreak, require visitors to disclose recent travel. Public health officials may recommend performing diagnostic testing on personnel and visitors in the event of a zoonotic disease. Maintaining current contact information for employees and retaining visitor logs is essential for surveillance measures.

## ***Animal Handling and Contact***

Limit contact between the established herd and new animals during an enhanced event. There is a serious, but lesser, transmission risk posed by people, material and conveyances that may have been in contact with the disease and serve as mechanical vectors. Prevent contact with susceptible animals and minimize transmission risk through enhanced biosecurity and cleaning and disinfection measures.

**Sick animal isolation** periods are determined by the disease of concern, the operation, and the animals at risk. In some cases, pigs with different diseases may be combined, (e.g., pneumonia cases may be comingled with colitis cases). Limit this practice to the greatest extent possible. Sick animals, or those recovering from a disease, are more susceptible to infection with another disease and thus require extra care during a heightened disease situation.

**Deadstock management** is a key component of a successful enhanced biosecurity plan. Mortalities may be much higher than normal during an FAD outbreak. This can be directly from disease or the culling of animals. Selection of a disposal method depends on the disease, local conditions and regulations, and the number of animals. Disposal challenges included: concerns over time needed to depopulate and finding enough land mass to bury carcasses.

Develop contingency carcass management plans for both routine deadstock and mass depopulation. For example, in situations involving mass depopulation, rendering services can be quickly overwhelmed or transportation of carcasses may be prohibited due to movement restrictions. Have backup plans, preferably on-site disposal plans, in place to manage routine deadstock in case normal disposal options are not available.

## ***Disease Detection and Surveillance***

If there is a confirmed FAD outbreak in the United States, state and federal regulations will restrict movement and direct increased surveillance, testing, and reporting requirements. Within 48 hours of identification of the first animal and premises with disease (also known as the Index Case) a National Surveillance Plan will be implemented to define the extent of the FAD outbreak. The plan determines how to identify infected premises, how to confirm new cases quickly through a combination of observation and laboratory testing, and how to identify disease-free zones. If an area is determined to be a disease-free zone, movement restrictions and disease monitoring requirements lessen, easing the response effort in that area.

**Disease surveillance** is the process of monitoring susceptible animals for clinical signs of the identified FAD. Educate and require facility workers to report clinical signs of disease. Work with veterinarians and state officials to develop a facility specific disease surveillance plan. Refer to the *FAD PReP/NAHEMS Guidelines and SOP: Surveillance, Epidemiology, and Tracing (2011)* for in depth information.

**Sick animals** are often first identified through changes in daily feed intakes. For example, due to lesions on the feet and in the mouth from the FMD virus, feed intake could decrease, triggering an alert and the need for closer investigation. Monitor pig feed intakes and behavior closely during a heightened biosecurity period to identify and isolate sick animals as quickly as possible.

**Disease traceability** is critical to associate individual animals or herds of animals with accurate information on origin and contact history. Uniquely identifying individuals, pens, or herds of animals helps track movement and properly assign test results or other information for the emergency response. Packers may require proper vaccine and medication withdrawal information, and confirmation that pigs are not from a control area.

Be sure to account for potential routes of transmission information and consider possible contact with wildlife. Work with animal health officials to collect trace-back information. Typically, it will be necessary to collect trace-back information for a minimum of twice the length of the maximum incubation periods before onset of clinical signs of infected animals.

Collect trace-forward information up to time the quarantine ends. It is highly likely the index case will not be the first animal or premises that had infection or disease within the country or the area. Maximize efforts to determine the true index premises.

**Emergency vaccination strategies** may be considered in an FAD outbreak. If emergency vaccination crews are brought into the facility, they are a potential source of spreading of disease. If using a service for routine vaccinations during a disease outbreak, follow biosecurity precautions and maintain strict records including: company name (if contract crews), crew member names, contact information, exposure to other livestock in the previous five days (the maximum time humans can carry foot-and-mouth disease virus in their nasal passages in a high exposure, research setting). Also record the name(s) of products, date(s) administered, and tag numbers of pigs vaccinated. This information may be needed to trace where a highly contagious FAD infection came from (trace back) or where it may have been spread to (trace forward).

**Diagnostic sample collection and testing** allows for the correct diagnosis and treatment to be implemented. These measures will be performed under the direction of the animal health authority. Inform employees about sampling procedures and teams that may be coming into the facility. This information can be added as a part of the Disease Surveillance Plan. Like vaccination crews, sample collection crews are also a potential source for spreading disease.

In any FAD outbreak, require strict adherence to biosecurity and infection control procedures. Personnel handling animals, tissues, and fluids need to wear PPE such as coveralls and gloves. Utilize appropriate PPE for zoonotic diseases. Clean and disinfect equipment in the designated area prior to leaving the facility.

## ***Physical Security***

In the event of an enhanced biosecurity incident, a facility will need increased physical security measures to prevent a known threat (such as disease agents or an activist group that intends harm) from entering the premises. Physical security will be the primary line of defense in preventing or minimizing the risk of disease introduction to a facility.

If an FAD is suspected in the area, take necessary steps to prevent non-essential access to the facility:

- Establish one access point to minimize the introduction, and mitigate the spread of disease
- Designate an entrance/exit that is on or near a level surface with access to a water source for cleaning and disinfection.

- Lock all doors and secure/block access points to prevent people, vehicles, and equipment from unauthorized entry into or departure from the facility

## ***Vector Control***

Vector control can play an important role in the prevention of the spread of disease on or off the facility in the event of an outbreak of a vector transmitted FAD. The most effective way to prevent vectors from transmitting disease to or from pigs or personnel is to follow a comprehensive routine vector control program.

If there is a confirmed FAD outbreak in the region, consult with local, state or federal emergency management officials and a local vector control specialist.

## ***Cleaning and Disinfection***

C&D procedures are a crucial part of any animal health emergency response situation. The potential for the spread or transfer of microorganisms, especially highly contagious pathogens, can occur from the direct or indirect contamination of premises, equipment, vehicles or personnel and the movement of animals or animal products. C&D procedures are used to inactivate or destroy microorganisms, thereby inhibiting or eliminating further spread. These efforts are vital for disease control and eradication measures.

During an enhanced situation, target efforts against the properties of the disease and organisms that cause it. As discussed in previous chapters, this includes knowing the route of transmission of disease so C&D procedures can be targeted toward contaminated areas. Select effective disinfectants working against the particular organism (see Table 1.6 and [Annex A](#)).

**Microorganisms** vary in survivability or persistence in the environment, and in susceptibility to disinfection. Be aware of the suspected or confirmed pathogen involved to select the most efficacious disinfection method. This includes understanding the disease agent's 1) general properties, 2) persistence in the environment, 3) route of transmission, and 4) susceptibility to disinfection.

**Vehicles** (trucks, trailers, etc.) used for transporting animals, products or by-products or contaminated equipment have the potential to spread disease. Contamination can occur directly by the vehicle or by transfer of material by wheels. During enhanced biosecurity operations, limit the number of vehicles allowed to enter the premises.



Clean the vehicle first to remove as much organic debris as possible. Brush or scrape debris from the vehicle. Washing of the vehicle should follow. High pressure spraying equipment (i.e., 200 - 1000 psi) may help to clean wood pores, cracks and crevices. Clean the vehicle from top to bottom and wash the underside of fender wells and the vehicle frame. Apply an appropriate disinfectant with a low-pressure sprayer and allow its proper contact time to elapse. Also, clean and disinfect the interior of the vehicle prior to leaving the premises.

**People** coming into the facility can be a source of disease. Limit access to the facility during enhanced biosecurity operation.

Individuals visiting the facility must thoroughly shower before entering and shower when leaving the premises. Be sure to provide warm water with antimicrobial soaps, scrubs, and hand cleaners for personnel decontamination following removal of disinfected PPE items.

Boot baths are an excellent means of preventing mechanical transfer of microorganisms by personnel between buildings. Figure 2.3 shows a photo of a boot bath being used. Boot baths must be maintained properly to be effective. Common problems with boot baths include 1) inadequate removal of organic debris prior to stepping into the disinfectant solution, 2) inadequate contact time allowed for the disinfectant, and 3) infrequent change of disinfection solution. Scrub and clean boots of all grossly visible debris prior to soaking in the disinfectant boot wash. Allowing the proper contact time for a disinfectant is as important for boot baths as it is when cleaning premises and equipment. Replace boot bath disinfectant solution daily, at a minimum; however, more frequent replacement will be needed in large or busy areas or when organic debris accumulates in the boot bath. Keep boot bath solutions from freezing and protect from rain to avoid dilution. Disinfectants are most effective on rubber boots. Porous materials like leather are more difficult to disinfect and may be ruined in the process.



Figure 2.3 – Use of a Boot Bath

**Personal protective equipment** protects employees during C&D operations. This includes wearing coveralls, boots, and gloves. Wear face protection (e.g., goggles, mask, face shield) based on the product or application method (e.g., misting) used and when mixing disinfectant solutions. Wear masks in situations involving significant amounts of dust generation or zoonotic disease potential. Additional personal protective hoods or respirators may be necessary for some situations (e.g., formaldehyde or acidic disinfectants).

For more information on PPE, see the *FAD PReP/NAHEMS Guidelines: Personal Protection Equipment (2011)*.

For more information on cleaning and disinfection see *FAD PReP/NAHEMS Guidelines: Cleaning and Disinfection (2011)* and the *FAD PReP FMD SOP 15: Cleaning and Disinfection (2010)*.

## Enhanced Biosecurity Template

*Please review any recommended measures not implemented routinely and consider implementing them during enhanced biosecurity operations*

### Employee Policies

#### Communication Measures:

- Employ one or more of the following communication methods:

**Communication Measures:**

- Activate an Automated Emergency Alert and Notification System, to automate rapid delivery of phone and text messages
- Set up a conference call with all hands at a scheduled time
- Call each employee individually with updates
- Set up group texting with employees using commercially available applications (GroupMe, etc.)
  
- Determine if employees are essential or non-essential to facility operations in the event of an FAD outbreak
- Complete the Employee Biosecurity Communication Form to communicate essential situation updates and employee expectations
- Collect updated employee contact information to communicate essential information
- Offer time for questions and answers, ask employees if they have any questions relating to the enhanced event or employee expectations

**Enhanced Biosecurity Protocol:**

- Review Enhanced Biosecurity Protocols with all essential employees and staff
- Implement Enhanced Biosecurity Plan and designate Line of Separation, Cleaning and Disinfection Stations and monitor all movement on and off the premises.

**At Risk Countries:**

- Ensure employees are aware of what countries pose a high risk for bringing an FAD into the facility
- If visiting any areas where an FAD may be endemic, do not return to the facility for at least two weeks after returning to the United States
- Consult your veterinarian and/or state health authority to determine when an employee who has traveled to an at-risk area should be allowed to return to work

**Coordination with Animal Health and Government Agencies****Recommended Measures**

- Accommodate requests for information and access by local law enforcement, animal health and emergency management officials
- Contact veterinarian with any concern or suspicion of an FAD. For example, diseases causing abnormal rates of morbidity or mortality, diseases occurring in an abnormal group of animals, or suspicious lesions (blisters around snout or feet).
- Report any suspicious diseases to a veterinarian and ensure that all cases of reportable diseases are reported to:

- Kansas Department of Agriculture – Division of Animal Health (Manhattan) 785-564-6601
- USDA-APHIS Area Director (AD) 785-228-6577
- Maintain open communications as requested by local emergency management, animal health and law enforcement officials

## **Movement On and Off the Property**

### **Quarantine and Movement Control Measures:**

- Ensure Risk Communication Strategy contains a plan for communicating movement restrictions
- Ensure vehicles, equipment, and animals coming into the facility have not recently been to an FAD control area
- Ensure movement of vehicles, equipment, and animals into the facility has a route plan that avoids control areas

### **Vehicles and Equipment:**

- Clean all transport trucks and trailers regularly, preferably after each use
  - Ensure cleaning includes the outside and undercarriage as well as the interior of the trailer
  - Provide a wash-down facility and/or a tire washing area with disinfectant

### **Animals in Transit:**

- Work with transport company to establish driving routes that minimize potential disease exposure and are not affected by stop movement orders
- Keep records of the routes followed in order to be able to trace the movement of all animals at the facility
- Consider delivering animals to an alternative location until their disease status can be determined

### **Mortalities:**

- Evaluate mortality management plan for the possibility of higher than normal mortalities
  - Determine what, if any, land is available on-site for composting or burial
  - Consult a qualified waste management professional to determine what off-site carcass disposal options are available

- If rendering is used to manage routine mortalities:
  - Consult with rendering company to determine if there may be a disruption to this service
  - Determine if modifications to the pick-up location need to be made in order to limit the entry/movement of high risk rendering trucks on the premises
- Determine if temporary alternative carcass management plans need to be implemented due to lack of availability or disruption of routine systems

**Manure:**

- Review manure management plan with veterinarian and environmental manager to determine if manure will be a source of pathogens
  - Determine if disinfection of manure is required
  - Determine if pH neutralization of disinfected manure is required
- Remove manure promptly to curb disease spread

**Feeders:**

- Disinfect feeders before they are to be used for a different group of pigs

**Zoonotic Disease**

**Surveillance:**

- Inform all employees of the risk of contracting disease and the signs and symptoms of disease in humans
- Instruct employees to report all signs and symptoms of disease in themselves and their family members and close contacts

**Implement the following measures as necessary based upon the transmission route of the disease of concern.**

**Aerosol Transmission:**

- Implement a dust control plan
- Inform employees that contaminated soil can be a source of zoonotic disease
- Require employees to wear an N-95 or N-99 mask when handling infectious animals or their tissues
- Require employees to wear a respirator when power washing

**Direct Contact/Fomite Transmission:**

- Implement the following policies regarding gloves:
  - Wear gloves when working with animals with sick or unknown health status,
  - Wash hands after removing gloves
- Implement the following policies regarding clothing:
  - Require clean coveralls be worn in animal areas
  - Restrict facility work clothing from being worn outside facility
  - Provide laundry/uniform service or laundry facilities in the facility
- Implement the following policies regarding boots
  - Require clean boots in animal areas
  - Provide a boot bath or wash bucket and brush at the entrance/exit of each building for ease of cleaning
  - Provide one pair of boots for walking outside between buildings, and a clean pair to wear inside each building.
  - Wash hands after removing boots
- Regularly clean equipment

**Oral Transmission:**

- Employ a manure management plan
- Properly handle and store manure
- Prevent manure from contaminating drinking water
- Remind staff to maintain good personal hygiene
- Remind staff to wash hands after animal contact, before eating, and drinking

**Visitor Control****Signage:**

- Post a sign marked "Controlled Area. Do not enter without permission" at the facility entrance

### Visitor Check-in:

- Require all visitors (including delivery, sales and service representatives) to sign in and out each time they visit the facility. The Enhanced Biosecurity Visitor Sign-in Form provided in the form section at the end of this guide will be printed and kept in a log at \_\_\_\_\_.
- Require all visitors to fill out the visitor questionnaire form **before** visiting the facility. The Enhanced Biosecurity Visitor Questionnaire Form provided in the form section at the end of this guide will be printed and kept in a log at \_\_\_\_\_.
- Review all visit requests and invitations; and only permit essential visitors
- Delay non-essential visits or relocate off-site until the threat level is no longer enhanced
- Require visitors to make appointments or provide advance notice of arrival
- Question visitors about any recent travel, highlighting visits to the outbreak location
- Delay the visit of anyone who has traveled to the outbreak area or find a replacement for the service provided by anyone who has traveled to the outbreak area
- Direct visitors to a location where they can put on and take off boots and coveralls and clean up before and after animal contact

### Visitor Personal Vehicle Control:

- Do not allow visitor personal vehicles access to the premises; direct visitors to park at the entrance/designated parking areas away from the animal areas and feed storage areas
- Provide facilities for cleaning and disinfecting vehicles and equipment before entry onto the premises.
- Spray disinfectant on vehicles wheel wells and undercarriage prior to entry and again upon leaving

## Record Keeping

### Animal Identification:

- In the event of an enhanced biosecurity animal health event, reevaluate the use of individual tagging to track the movement and treatment of animals
- Use livestock marking chalk, hang tags with individual number, or radio-frequency identification (RFID) ear tags to visually distinguish processed or treated pigs and return to home pen, or isolate from non-treated pigs in sick pens
- Keep thorough pig identification records including date of introduction, pig origin and the company used to transport the pigs and the license plate number of the vehicle

**Animal Treatment Records:**

- Ensure all non-routine treatments or vaccines administered are recorded on a treatment form or in a computerized swine health management system, to ensure appropriate withdrawal times are observed

**Purchase, Sale or Transfer of Pigs:**

- Maintain thorough and accurate records of animal transfer and movement as part of routine record keeping
- Document all animal movements, including the dates of introduction, where the animal was moved from, reason for move and the trucking company transporting the animals
- Treat each facility location as separate premises for record keeping purposes

**Vehicle and Contact Information:**

- Maintain a sign-in sheet of all visitors, vehicles and equipment that access the premises (including state and federal emergency response officials, vehicles and equipment), record keeping will assist with disease surveillance and tracking
- Maintain a sign-in sheet of all employees and their vehicles that access the premises, record keeping will assist with disease surveillance and tracking

**Animal Handling and Contact****New Animals:**

- Quarantine animals recently purchased for a minimum of two incubation periods for disease of concern
- Restrict all new animal arrivals to one area of the facility; do not place newly arrived pigs in pens scattered throughout the facility
- Do not allow new additions to share water, feed or facilities with established animals. May need to leave an empty pen between new and existing animals.
  - Establish an isolation room for newly arrives pigs if possible
- Temporarily stop receiving animals. Consult with veterinarian to determine appropriate duration.

**Sick Animals:**

- Implement disease surveillance measures and risk communication strategies to educate employees to identify signs and symptoms of disease
- Monitor animals closely and frequently for any developing or continuing illness or signs of disease
- Isolate sick animals from the pen to minimize disease spread

**Sick Animals:**

- Isolate sick animals for a minimum two incubation periods of the disease
- Contact your veterinarian immediately to examine sick animals
- Where possible, separate home pens to prevent direct contact between high risk animals (for example, alleys or empty pens between pens newly arrived pigs)
- Use separate facilities, equipment and staff to handle isolated livestock
- Handle the isolated animals LAST
- Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals

**Deadstock:**

- Develop a management plan for mass disposal of deadstock
- Develop contingency disposal plans in case normal disposal measures are unavailable
- Ensure that all federal, state and local disposal regulations are met
  - Kansas Department of Agriculture – Division of Animal Health (KDA-DAH) rules require that animals that die from a disease recognized as communicable by the Veterinary profession must be disposed of within 24 hours by burial or burning. Animals dying from anthrax must be burned on-site within 24 hours of death.
  - Some diseases are reportable, and require contact of the KDA-DAH at 785-564-6601 prior to disposal. See [Annex A](#) for list of KDA-DAH reportable animal diseases.

**Disease Detection and Surveillance****Disease Surveillance:**

- Write a disease surveillance plan
- Do not bring animals into the facility unless there is proof they are from disease-free areas

**Disease Traceability:**

- Identify animals that receive emergency vaccine
- Keep a record of all animals' entry and exit from the facility so potential contact with an infected animal can be traced back

### **Disease Traceability:**

- Keep records of truck delivery routes (from animal purchase point to the facility) used by all pig haulers to identify any animals which may have come from or driven through areas where disease is present (control areas)

## **Wildlife Management**

### **Fencing:**

- Conduct a fencing inspection upon implementation of enhanced biosecurity measures
- Review routine measures and aggressively implement for enhanced biosecurity as necessary

### **Rodents:**

- If a rodent infestation is suspected, contact a local pest control service and/or animal damage control experts to eradicate the population

### **Feral Cats and Dogs:**

- Set traps for feral dogs and cats to prevent them from entering the premises

### **Birds:**

- Contact a local pest control service and/or animal damage control officials to control the bird population using repellants, traps and toxicants

## **Physical Security**

### **External Security:**

- Install or make alterations to pen and perimeter fencing as necessary to prevent access to the premises
- Establish one entrance and one exit point from the facility, block and/or lock all other entrances and exits
- Use temporary fencing and concrete barriers to block all but one point of entry and exit
- Place barriers as necessary to prevent people, vehicles or equipment from entering or exiting the premises
- Lock all gates and fencing not designated as the primary facility entrance/exit
- Assign security personnel to regularly monitor blocked points of access/exit for unauthorized access

### Signage:

- Post “Access Restricted to all Visitors and Non-Essential Personnel” signs along the perimeter fencing, blocked points of access/exit, visitor office, and parking areas
- Post “Restricted Area, Keep Out, Authorized Personnel Only” signs on all buildings and structures

### Shipping and Receiving:

- Contact vendors and cancel/postpone deliveries for non-essential items
- Require delivery of essential items to be by appointment only
- Arrange for small items to be delivered off-site and picked-up by facility personnel

## Vector Control

### Fly Control:

- Contact a licensed pest control specialist for fly control services during an outbreak

### Tick Control:

- Contact a licensed pest control specialist for tick control services during an outbreak of a tick-borne disease

### Mosquito Control:

- Contact a licensed vector control specialist for mosquito control services during an outbreak

### Personal Protection:

- Wear appropriate PPE to avoid contact with vectors during an outbreak

## Standard Operating Procedures for Cleaning and Disinfection

*The procedures described below describe how to carry out cleaning and disinfection operations. The Routine and Heightened sections of the plan detail what, when and where to clean and/or disinfect.*

### Cleaning Procedures:

- Wear personal protective wear**—gloves, long sleeves, and possibly a mask when cleaning an area that will generate dust
- Dry clean**—remove all visible material by brushing, scraping, sweeping and hauling to a disposal area. Handle waste material in such a way to prevent contamination of other areas such as feed, water or other animals.

### **Cleaning Procedures:**

- Soak**—soak the area with hot water and a detergent or cleaning agent, wash and soap down all equipment in the area- waterers, feeders, pails, etc.
- Wash**—wipe, spray or scrub the area, starting with the highest area (e.g., roof of truck), after it has soaked for a period of time
  - Use pressure washers when cleaning wood, cement, or other porous surfaces
  - Use caution when using high pressure washers (200-1000 psi) as they can aerosolize disease organisms and spread them to other areas or expose the person operating the washer and others nearby
- Rinse**—remove all detergent residue by applying a low-pressure water rinse on all surfaces, starting with the highest area and working your way to the floor
- Dry**—allow the area to dry completely before applying a disinfectant so that it can work effectively and not be diluted

### **Disinfection Procedures:**

- Read the product label**—this is important to make sure the solution is handled correctly. Personal protective wear (gloves, mask) may be needed when mixing up solutions.
- Disinfect**—apply disinfectant at the correct dilution and let it “sit and work” for the suggested amount of time
- Final rinse**—remove all disinfectant by applying a low-pressure water rinse on all surfaces, starting with the highest area and working your way to the floor
- Dry**—allow the area to completely dry before allowing animals to have contact with the area or item that was just cleaned and disinfected

## Section 3 - The Kansas Secure Pork Supply (SPS) Plan

The Kansas Department of Agriculture maintains a Secure Pork Supply Plan that can be accessed on the KDA website ([www.agriculture.ks.gov/kssecurepork](http://www.agriculture.ks.gov/kssecurepork)). The SPS plan is Foot and Mouth Disease, Classical Swine Fever (CSF), and African Swine Fever (ASF) specific and describes the requirements that must be in place prior to receiving a permit to move animals during an FAD outbreak.

Participating in the plan prior to an outbreak occurring is completely voluntary.

The Kansas Animal Health Commissioner will issue a Stop Movement Order at the first sign of an FAD outbreak in North America. In order to move animals, manure, carcasses, semen, embryos and other animal products a permit will have to be obtained from the Kansas Animal Health Commissioner. Those operations seeking permits must demonstrate proof of disease freedom for a period of 14 days prior to the issuance of a permit.

Swine facilities are encouraged to review the SPS planning requirements if they plan to move any animals or related products in the days following the outbreak of an FAD in North America. Swine facilities that are implementing the biosecurity recommendations contained in these guidelines will find the SPS requirements to be manageable. There are a few added steps that must be taken in order to be a Kansas Secure Pork Supply Plan member. These include:

- Designation of a facility Biosecurity Manager
- Maintain a Line of Separation (LOS) for the duration of an outbreak
- Conduct and document FAD specific training for employees
  - Observational surveillance
  - Biosecurity standards
- Written biosecurity plan approved by KDA – Animal Health Commissioner
- Yearly audits to ensure compliance

There are several options for plan development:

- Facility personnel can complete plans and submit to KDA for review
- Facilities can hire consultants to write plans
- Facilities can work with KDA for assistance with plan development

The National Secure Pork Plan has planning templates and training tools readily available to assist facility personnel with developing plans and training employees. Those resources can be found at [www.securepork.org](http://www.securepork.org).

If you need additional assistance or you have any questions regarding the Kansas requirements, contact David Hogg, the KDA Assistant Emergency Management Coordinator at [david.hogg@ks.gov](mailto:david.hogg@ks.gov) or 785-564-7468.

## Section 4 - All-Hazards Planning & Preparedness for Livestock Operations

Livestock operations can take an all-hazards approach to planning and preparing for potential threats or hazards to minimize losses, reduce business disruptions, and speed recovery time. This can be accomplished by identifying potential threats or hazards to the operation, taking pre-emptive measures to mitigate against the threat or hazard, identifying emergency procedures if a threat or hazard affects the property, and ensuring the employees are trained on dealing with a threat or hazard.

### Potential Threats or Hazards

- Severe Weather (including lightning, hail, damaging wind, and tornadoes)
- Winter Weather (including snow, sleet, and ice)
- Fire (including wildland fire and structure fire)
- Flooding
- Power Outage
- Hazardous Materials Incident
- Terrorism
- Active Shooter or Employee Violence
- Protests

### Chain of Command

Each facility or group of facilities should have a clearly defined chain of command for both on-site and management level personnel. A chain of command is essential for determining who can make operational and staffing decisions both before and during an incident. A written policy outlining chain of command is important so that confusion is minimized and, if it becomes an issue, legal questions can be easily answered. The chain of command should be shared with all employees so that there is no question over who can make decisions.

### Emergency Public Information

As mentioned elsewhere in this plan, public information is essential for operating before, during, and after an incident. Employees should know who is allowed to speak to the media in general or as an official spokesperson for the facility. Having pre-scripted messaging and/or message maps is a good idea. Likewise, being able to link your messaging to other relevant sources of public information can make information sharing easier post-disaster. Facilities should have these resources, and an official spokesperson, determined before an incident happens.

## Threat & Hazard Guidance

### Severe Weather (lightning, hail, damaging winds, tornadoes)

Suggested actions:

- Designate someone to monitor the weather when severe storms are possible.
- Identify a way to receive watch and warning information (*Suggestion: the facility should have an operating NOAA weather radio*).
- Determine the best method for alerting on-site employees when severe weather is imminent. Consider the use of group texts, warning devices, and other community based resources (text alerts may be available).
- If a severe thunderstorm warning is issued, employees should take shelter in a substantial structure to be protected from lightning, hail, and damaging winds. Many structures constructed of tin will not be able to withstand severe thunderstorm winds and, therefore, should not be used for sheltering. It may be acceptable to shelter in vehicles during a severe thunderstorm.
- Identify a best shelter location for employees should a tornado warning be issued. This shelter location should:
  - Be in a substantial building (not mobile or manufactured).
  - Be below ground if possible, otherwise on the lowest level available.
  - Have no windows.
  - Not be in a vehicle.
- If your location has no acceptable tornado shelter location, make plans to allow employees to leave to seek shelter well before a tornado approaches. This cannot be a last-minute decision.
- Following a severe weather event be aware of the potential for secondary hazards including downed power lines, cut gas lines, and damage to building or other structures.
- Employees should be familiar with severe weather policies as well as shelter locations.

### Winter Weather (snow, ice, sub-freezing temperatures)

Suggested actions:

- Designate someone to monitor the weather when winter storms are possible.
- Determine who has the authority to change or suspend operations when conditions are too dangerous for employee travel.
- Maintain a method to alert employees about regular staffing changes due to weather.
- Take pro-active steps to reduce employee or visitor hazards related to icy surfaces.
- Ensure that employees have appropriate clothing and equipment for operating in sub-freezing temperatures.
- Consider multiple options for mortality management in the event that a winter storm leads to mass fatality on site (rendering/burying/composting).

## **Fire (wildland and structure)**

Suggested actions:

- Fire prevention devices, including fire extinguishers, should be placed in several prominent places around the facility.
- During days with high fire danger, change your day-to-day operations to decrease ignition risk.
- In the event of an on-site fire, ensure that fire crews have access to at risk areas by opening gates/fences.
- Ensure that combustible materials, including feed and chemicals, are stored in a safe manner.
- Alert fire crews to dangerous, highly combustible materials including chemicals, propane tanks, diesel, tanks, etc., when they arrive on scene.
- Back up important documents and records in an off-site location.
- Following a fire, document all pig losses with pictures and location of the pigs. Do not move deceased pigs until having consulted with local officials regarding potential indemnity.

## **Flooding**

Suggested actions:

- Determine the risk of river flooding or flash flooding to your premises or even portions of your premises.
- Map multiple routes for employees to travel either to or from the premises in the event that road networks are compromised.
- If time allows, consider moving livestock out of susceptible areas of the premises.
- Ensure that on-site hazardous materials or chemicals are not at risk of being spilled or leached into the larger water supply.

## **Power Outages**

Suggested actions:

- Determine the premises' ability to operate during an extended power outage.
- If using generators for back-up power, ensure that proper ventilation exists to mitigate the risk of gaseous poisoning.
- Ensure that generators have been inspected and wired into the overall electrical system by a licensed electrician.
- Store fuel for generators in a safe location.
- If generators are not on-site, coordinate with local public works, emergency management, or electric cooperative officials to determine how emergency power needs can be met.

## **Hazardous Materials Incident**

Suggested actions:

- During a hazardous materials incident, be prepared to evacuate your employees to a safe location.
- Listen to local emergency responders to determine time and distance for proper evacuation.
- Handle all on-site chemicals according to labeled instructions.
- Allow buildings time to air out after an incident has passed.

## **Terrorism**

Suggested actions:

- If suspected terrorist activity has taken place, immediately contact local law enforcement.
- Report suspicious activity, including uninvited visitors, strange behavior, or surveillance activities, to local law enforcement officials.
- Suspicious packages should not be touched or moved except by trained technicians.
- Ensure that any potential evidence is not touched or tampered with until investigators arrive.

## **Active Shooter or Employee Violence**

Suggested actions:

- Take threats of violence by employees, former employees, family members of employees, or the general public seriously – report threats to law enforcement.
- If an active shooter incident occurs, follow the Run. Hide. Fight. guidelines for on-site staff.
- Provide access to emotional support for employees dealing with personal or professional crisis.
- Develop an official weapons policy for employees.

## **Protests**

Suggested actions:

- Instruct employees to not engage or speak to protesters that may be on-site.
- Avoid engaging with protest groups in an online forum (social media).
- If a large group arrives on-site, notify local law enforcement.
- If possible, provide protesters with a safe location away from production activities where they can protest without disrupting day-to-day operations.

## **Recovering from an Incident**

Following an incident, it is important to know who and where assistance can be found to aid in the recovery process - this is true on a local and state level. Use this guidance to create an index of important contacts following an incident.

### **Local Level**

County Sheriff –

County Emergency Manager –

Local Police Department –

Local EMS –

Local Fire Department –

Local Public Works –

Local USDA Office –

Local FSA Office –

Local Veterinarian(s) –

### **State Level**

KDA Division of Animal Health –

KDA Emergency Management –

Kansas Department of Health and Environment –

Kansas Division of Emergency Management –

Members of local and state agencies are available to assist with questions and concerns related to the recovery process following a major incident. It is important to be willing to reach out to these organizations who may be able to assist with topics including:

- Mortality management
- Emergency feed or fencing
- Indemnity
- Insurance
- Lost or missing livestock
- Temporary sheltering

### **Additional Resources**

For more in depth information regarding plans for your facility or operation, as well as preparedness for your own home or employees, visit [www.prep4agthreats.org](http://www.prep4agthreats.org) or request a copy

of the All-Hazards Preparedness for Rural Communities guidebook from the Kansas Department of Agriculture.

## ACRONYMS

AD	Area Director (USDA APHIS VS – replaces old AVIC)
AIDS	Acquired Immune Deficiency Syndrome
ASF	African Swine Fever
ATVs	All-Terrain Vehicles
Bt	<i>Bacillus thuringiensis</i>
C&D	Cleaning and Disinfection
CBP	U.S. Customs and Border Protection
CDC	The Centers for Disease Control and Prevention
CERC	Crisis and Emergency Risk Communication Manual
CSF	Classical Swine Fever
EPA	U.S. Environmental Protection Agency
FAD	Foreign Animal Disease
FADD	Foreign Animal Disease Diagnostician
FAD PReP	Foreign Animal Disease Preparedness & Response Plan
FAST	First Assessment and Sampling Team
FDA	Food and Drug Administration
FMD	Foot and Mouth Disease
HIV	Human Immunodeficiency Virus
HVAC	Heating, Ventilation, Air Conditioning
IPM	Integrated Pest Management
IT	Information Technology
KDA	Kansas Department of Agriculture
KDA-DAH	Kansas Department of Agriculture – Division of Animal Health
KDHE	Kansas Department of Health and Environment
KDWPT	Kansas Department of Wildlife, Parks and Tourism
KLA	Kansas Livestock Association
KPA	Kansas Pork Association
LOS	Line of Separation

MSDS	Material Safety Data Sheets
NAHEMS	National Animal Health Emergency Management System
NPDES	EPA National Pollutant Discharge Elimination System
OIE	World Organization for Animal Health
PPE	Personal Protective Equipment
PRPC	Panhandle Region Planning Commission
RFID	Radio Frequency Identification
SOPs	Standard Operating Procedures
USDA	U.S. Department of Agriculture
USDA-APHIS	U.S. Department of Agriculture – Animal and Plant Health Inspection Service
USDA-VS	U.S. Department of Agriculture – Veterinary Services

## ANNEX A: DISEASE TABLE

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico			
Acariasis	Y	N	N		S	S			M				Mites	Surroundings must be cleaned and treated with an insecticide.	Acaricides
Anthrax	Y	Y	Y	M	S	S	S		S	L	Y	2010	Bacterial Spore	Decontamination of contaminated tissues, surfaces, and environments is difficult.	Vaccine; Antibiotics effective, but course of disease usually too quick
African Swine Fever (ASF)	N	Y	Y	S	S	M	S	M		N	N	N	Enveloped virus	Use a disinfectant specifically approved for this virus.	No treatment, slaughter animals
Aujeszky's disease (Pseudorabies)	N	Y	Y	M	S	S	M			L	N	L	Enveloped Virus	Prevent Feral Pig population from interacting with pigs in the facility	No specific treatment; Supportive care and treatment for secondary infections
Botulism	Y	N	N				M						Vegetative Bacteria	Susceptible to many disinfectants; Heat treat foods	Pigs are relatively resistant to botulism; Treatment is supportive
Brucellosis	Y	Y	Y		M	S							Gram-negative bacteria	Readily killed by most commonly available disinfectants; new animals should be isolated before being introduced into the herd	No practical treatment for pigs

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis	
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico				
Campylobacteriosis ( <i>Campylobacter jejuni</i> )	Y	N	Y				M							Vegetative bacteria	Campylobacter species are susceptible to many disinfectants	No vaccine; Treatment is often limited to fluid and electrolyte replacement therapy; Antibiotics are occasionally given.
Chagas (Trypanomiasis-American)	Y	N	N					M		Y		Y		Protozoan	Reducing exposure to triatomine insects and preventing ingestion of raw tissues.	No treatment
Classical Swine Fever (CSF)	N	Y	Y				M			1978	1962	2015		Enveloped virus	Cull infected and susceptible animals; Can be deactivated with sodium hypochlorite	No treatment available; emergency vaccination after infection
<i>Clostridium perfringens</i>	Y	N	N						M					Spore-bearing bacteria	Fire or lime washing may be needed to kill the spores	Antibiotic, vaccination of sows 6 and 3 weeks before parturition
Colibacillosis ( <i>E.coli</i> )	Y	N	N		S	M	M							Vegetative bacteria	Prevention of shedding in domesticated animals is expected to decrease the number of human infections.	Vaccinate herds with persistent problems
Cryptosporidiosis ( <i>Cryptosporidium parvum</i> )	Y	N	N	S		S	M							Coccidian Parasite	The protozoa are resistant to many disinfectants	No specific treatment is available; Supportive therapy is usually effective as the disease tends to be self-limiting; Vaccines have not been developed

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico			
Diamond Skin disease	Y	N	N				M		M				Bacteria	Attention to sanitation and hygiene; Isolation of pigs with clinical signs	Antibiotics; vaccination
Dermatophytosis	Y	N	N						M				Fungal spores	Susceptible to disinfectants and high heat; Remove shed skin and hairs.	Topical antifungal creams or shampoos; Systemic antifungals
Echinococcosis	Y	N	Y				M		S	Y	Y	Y	Worm	Prevent the access of dogs to livestock carcasses or slaughter wastes from farms, households, abattoirs or butchers	Cysts are removed surgically; Antiparasitic drugs; Anthelmintic chemicals into the cyst
Ehrlichiosis	Y	N	N					M					Gram-negative Bacteria	Tick control; prevention using acaricides	Antibiotics
Enterovirus Encephalomyelitis	N	N	N			S	M						Non-Enveloped Virus	Depopulate; clean and disinfect before restocking	Quarantines; Movement controls; Ring vaccination
Foot and mouth disease (FMD)	N	Y	Y	M	M	S				1929	1952	1954	Non-Enveloped virus	Quarantine, test, slaughter, disinfect	Vaccine

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico			
Getah Virus	N	N	N	S	S			M					Enveloped Virus	Control the mosquito population	Treatment is supportive; There is no specific treatment for the virus.
Japanese Encephalitis	Y	N	N					M		N	N	N	Enveloped virus	Control mosquito populations	No specific antiviral therapy; Affected animals are treated symptomatically.
Leptospirosis	Y	N	N	S	S		S		M				Bacteria	Avoid contact with other livestock or wildlife; Sanitation	Vaccine
Louping Ill	Y	N	N					M					Enveloped Virus	Tick control	Depopulate if it is introduced into the herd; no specific treatment
Malignant Catarrhal Fever	N	N	N	M	M								Enveloped Virus	Disinfection; separate susceptible animals from sheep and goats	No antiviral treatment; antibiotics to control secondary infections
New world screwworm ( <i>Cochliomyia hominivorax</i> )	Y	Y	Y					M		1982	N	2001	Parasitic Fly	Spraying or dipping with insecticides	Subcutaneous injections of ivermectin and related compounds; Treatment with larvicides
Old world screwworm ( <i>Chrysomya bezziana</i> )	Y	Y	Y					M		N	N		Parasitic Fly	Spraying or dipping with insecticides	Subcutaneous injections of ivermectin and related compounds; Treatment with larvicides

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis	
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico				
Porcine epidemic diarrhea virus (PEDv)	N	N	N	S		S	M							Coronavirus (Enveloped virus)	Several disinfectants have been shown to effectively inactivate PEDv	Vaccine, supportive care
Porcine reproductive and respiratory syndrome (PRRSv)	N	N	Y		M		M			Y	Y	Y		Enveloped virus	Depopulate; clean and disinfect facility	Vaccines may be useful; experience suggests they are inconsistently efficacious
Q Fever	Y	N	Y	M	M	S		S		Y	Y	Y		Vegetative bacteria	Prevent contact with wild animals; Control tick population	Vaccine only in endemic areas
Salmonellosis	Y	N	N			M		S	M					Gram-Negative Bacteria	Cleaning and disinfection; minimize stressful events	Septicemic salmonellosis can be treated with a number of antibiotics.
Streptococcosis	Y	N	N	M	M	M	M							Bacteria	Use of aldehyde, biguanide, hypochlorite, iodine, and quaternary ammonium disinfectants.	Antibiotics
Swine dysentery	N	N	N				M	S						Spirochete bacteria	Eliminate mice from the facility; Cleaning and disinfection	Antibacterials in water
Swine influenza	Y	N	Y	M	S	M				Y	Y	Y		Enveloped virus	Readily inactivated by disinfectants; A number of swine influenza vaccines are made commercially	No effective treatment

Disease / Pathogen	Zoonotic Potential	KDA Reportable*	OIE Reportable	Mode of Transmission**						Endemic Areas***			Agent Type	Sanitary prophylaxis	Medical prophylaxis	
				Aerosol	Direct Contact	Fomite	Oral	Vector	Environmental	United States	Canada	Mexico				
Swine vesicular disease (SVD)	Y	N	N		M		M				N	N	N	Non-enveloped virus	Restricted pig movement, virus is resistant to disinfectants, so disinfections must be thorough	No specific antiviral therapy
Toxoplasmosis	Y	N	N				M	S						Protozoan	Oocysts are resistant to most disinfectants; Can be deactivated by formalin and ammonia	Antibiotics
Trypanosomiasis (African)	N	Y	Y			S		M			N	N	N	Protozoan	Quarantines, movement control, and isolation or slaughter; Trypanosomes cannot survive for long periods outside the host; control arthropod vectors	Antiparasitics in endemic areas
Tularemia	Y	N	Y	M			M	S			L		N	Vegetative bacteria	<i>F. tularensis</i> can survive for long periods in the environment. Good tick control programs can reduce the risk of infection.	Tularemia can be treated with various antibiotics including tetracyclines and quinolones.
Vesicular stomatitis	Y	Y	N		M			M			Y	1949		Enveloped Virus	Quarantine and movement control; uninfected livestock should be kept away from any animals that could be infected	Treatment is symptomatic. Animals with mouth lesions should be provided with softened feed.
<i>Yersinia</i>	Y	N	N				M							Bacteria	Cleaning and disinfection	Antibiotics

\*This list is not comprehensive. Certain zoonotic diseases (those with the ability to cause illness in both animals and people) are also reportable to the Kansas Department of Health and Environment

\*\*M – Major source of organism; S – Secondary source of organism

\*\*\*Y- disease present, L – Disease limited to one or more zones, - suspected but not confirmed, N - never reported and under active surveillance; date indicates last reported case (Data obtained from 2012 annual reports to OIE)

Disease information was compiled from the Technical Disease Fact Sheets on The Center for Food Security and Public Health [Animal Disease Information Website](#).