



**COLORADO**  
Department of Agriculture  
Animal Health Division

# Swine Emergency Disease Response Plan



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## **1.0 Introduction**

Potential emergencies facing swine producers may include an outbreak of a highly contagious animal disease, serious toxic exposures, and foreign animal diseases. A rapid response to an animal disease emergency will be necessary to halt the spread of the disease and will require interaction between local, state, and federal agencies and industry partners. The Colorado Department of Agriculture (CDA) *Swine Emergency Disease Response Plan* describes the response actions that will be implemented by the CDA in collaboration with the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS), state agencies and entities, local and state emergency management personnel, local and state law enforcement, and swine industry partners to swiftly detect, control, and eradicate a disease outbreak in swine.

### **1.1 Purpose and Scope**

The purpose of the CDA *Swine Emergency Disease Response Plan* is to provide a framework to ensure a rapid and coordinated response to an outbreak of a highly contagious disease in swine within the State of Colorado. The goal of this plan is three-fold: to control and eradicate the disease on an infected premises as quickly as possible; to help affected facilities recover; and, to protect and maintain business continuity on unaffected premises during a disease outbreak.

This plan provides the operational considerations and details necessary to minimize the impact of an outbreak in pigs and will be applicable to any highly contagious or economically destructive disease or event that causes significant morbidity or mortality in swine.

Natural disasters may also cause devastation in the State's swine population requiring a similar response. Many of the protocols and procedures presented in this plan, such as disposal methods, will be applicable in a natural disaster event affecting swine. In such incidents, the *CDA Swine Emergency Disease Response Plan* may be used as a template to help ensure an adequate response, generally guided by a local jurisdiction such as a county.

### **1.2 Scope of Authority**

As stated in Colorado Revised Statute (CRS) 35-50-105, "(1) The commissioner is responsible for regulation related to livestock disease or other livestock emergencies among or affecting livestock in the state." As such, the CDA will serve as the State's lead agency during an outbreak of a highly contagious disease affecting livestock in Colorado.

Although CDA serves as the lead agency during an animal disease outbreak in Colorado, natural disasters affecting livestock are managed at the local level. County emergency managers can assist producers with developing animal emergency response plans for their premises. When responding to a natural disaster or an outbreak of a highly contagious disease in cattle, local area producers may become a critical response component by providing resource provisions and communicating the threat to area neighbors.

### **1.3 Situation**

The potential impact on Colorado's economy from a disease outbreak in swine would be devastating. Such an event would be far reaching, affecting many different sectors beyond the

swine operations including processors, distributors, and retailers.

#### **1.4 Assumptions**

- Response to an animal disease outbreak will begin at the local level.
- If an animal disease emergency occurs in Colorado’s swine industry, the most probable means of discovery will be by swine producers, private practice veterinarians, and/or trace information from an animal disease investigation in another state. Local livestock experts like livestock extension agents may be involved in initial local detection and background information about livestock diseases and condition.
- Private or consulting veterinary practitioners will likely be the first responders to any animal disease outbreak.
- Veterinarians are required to immediately notify the State Veterinarian or the USDA–APHIS-VS District 6 Colorado Office of any suspected foreign animal disease (FAD).
- An animal disease outbreak may occur through natural pathways or could be introduced as an act of terrorism.
- Diagnosis of a highly contagious or emerging animal disease in Colorado, the United States, or surrounding countries may significantly restrict the intrastate, interstate, and international movement of animals (especially livestock) and animal products.
- Initiation and implementation of response actions for a suspected or confirmed foreign animal disease (FAD) will be under the jurisdiction of the CDA and carried out by the State Veterinarian or official designee. Producer input will be highly valued and integrated into the response.
- The State Veterinarian and the USDA-APHIS-VS Colorado Office will work in close coordination in any animal health emergency. There are established protocols for investigating and reporting potential FADs and new and emerging infectious animal diseases.
- Response measures for an animal disease emergency may involve the mutual aid support from sister counties and municipalities as well as local private industry support.
- Animal disease emergencies may lead to prolonged economic impacts requiring long term federal and state assistance programs for response and recovery.
- Psychological counseling and support may need to be available for owners losing livestock or having to depopulate a herd in an animal disease emergency, or for persons responding to the situation.

#### **1.5 Plan Maintenance**

The State Veterinarian is responsible for the management and maintenance of this plan, under the jurisdiction of the Colorado Agricultural Commission and the Commissioner of Agriculture or his designee. The CDA *Swine Emergency Disease Response Plan* will be reviewed and updated as required but as often as needed to incorporate updates to Homeland Security Presidential Directive (HSPD) 9 – *Defense of United States Agriculture and Food*, Emergency Support Function (ESF) 11– *Agriculture and Natural Resources*, and legislative updates as well as lessons learned that are identified in the debriefing process and after action reports following an actual event or training exercise.

## 2.0 Concept of Operations

The concept of operations provides the operational framework for activating this plan and how the CDA will classify the response. In addition, this section outlines the diseases of concern in swine populations. It also provides an overview of the CDA's responder health and safety program and guidance on how the Department will interface with other agencies, the livestock industry, media, and the public during an emergency response event.

### 2.1 Animal Diseases Significant to Swine

Animal diseases found in swine vary in virulence, ease of transmission, mode of transmission, and host affinity. Diseases of concern are highly contagious diseases that cause significant morbidity or mortality in swine. Such diseases often present similar clinical signs as diseases that do not result in a high level of morbidity and/or mortality, requiring diagnostic testing to determine the specific disease agent. Upon diagnosis, if the disease identified is not considered highly contagious it will be managed within normal business operations, management, and best production practices.

Animal diseases likely to cause high morbidity or mortality in swine and trigger activation of this plan are FADs and new and emerging diseases. A list of diseases that swine are susceptible to is provided by Iowa State University's Center for Food Security and Public Health: [Swine Disease and Resources](#). The website provides additional information on disease transmission, vaccine availability, and recommended control measures for listed FADs. Swine disease of major concern include African Swine Fever, Classic Swine Fever (Hog Cholera), and Foot and Mouth Disease (FMD), which are described in the following section.

#### 2.1.1 Categorization of Animal Diseases

Animal diseases of concern are commonly categorized in the following manner.

- **Foreign Animal Disease (FAD)** (also known as exotic animal disease or transboundary disease) is defined as an important transmissible disease of livestock believed to be absent from the United States and its territories.
- **New or emerging disease** is defined as a completely new disease, an old disease occurring in new places with new presentations, or a disease that is newly resistant to available treatments.
- **OIE List of Reportable Diseases** is a unified list of reportable diseases maintained by The World Organization for Animal Health, once known as the Office of Internationale des Epizooties (OIE). For several years, the OIE created two lists (A and B) with different reporting obligations, but these were combined into a single unified list of reportable diseases in 2005. This unified list has over 115 diseases and is revised periodically.

#### [OIE List of Reportable Diseases \(2017\)](#)

The four criteria used to develop the list are: potential for international spread, potential for zoonotic transmission, potential for significant spread within a naïve population, and emerging diseases.

- **CDC Bioterrorism Agents/Diseases** are biological agents that are rarely seen in the

United States. Centers for Disease Control and Prevention (CDC) prioritizes these agents into A, B & C categories: [CDC Bioterrorism Agents: A,B,C, Categories](#)

- **Category A** agents and disease are easily transmitted from person to person, have a high mortality rate and have the potential for a major public health impact.
- **Category B** agents and disease are moderately easy to disseminate and result in moderate morbidity rates and low mortality rates.
- **Category C** agents and diseases include emerging pathogens that could be engineered for mass dissemination.
- **Zoonotic disease** is defined as a disease that can be transmitted from animals to humans and /or humans to animals. According to the CDC, approximately 75% of recently emerging infectious diseases affecting humans are diseases of animal origin.

### 2.1.2 African Swine Fever (ASF)

African Swine Fever (ASF) is a serious, highly contagious viral disease of pigs. Death can occur swiftly in infected animals, and morbidity and mortality can approach 100%. ASF can be rapidly introduced into disease-free regions via infected domestic pigs, wild pigs, or the tick vector (*Ornithodoros* spp. soft ticks). Once introduced, the virus can spread rapidly.

ASF is caused by an *Asfivirus* of the family *Asfarviridae*. There are many strains, of varying virulence. ASF virus can be found in all secretions and excretions from infected animals, with especially high levels in oronasal fluid. The virus persists in blood and tissues after death, and unprocessed meat fed to pigs may transmit the virus. Biting flies and mosquitoes are able to transmit the virus mechanically, and high levels of virus persist in stable flies for up to 2 days.

The virus can enter the body through direct and indirect contact. Entry via the respiratory tract is the most common route. Indirect entry can be through fomites, the bite of an infected tick or fly, or the feeding of infected food scraps. The incubation period in cases of pig to pig transmission is 5 to 21 days; in cases of tick exposure incubation can be less than 5 days.

Clinical signs include:

- peracute
  - sudden death
  - respiratory signs
  - nasal & conjunctival discharge
- acute
  - high fever
  - anorexia
  - lethargy
  - weakness
  - recumbency
  - diarrhea (mucoïd to bloody), constipation, abdominal pain
  - epistaxis
  - erythema
  - abortion
  - death
- subacute (same as acute – less severe)
- chronic
  - intermittent low fever
  - appetite loss
  - depression
  - swollen joints
  - respiratory signs incl. coughing
  - diarrhea and vomiting

A quick response is vital for containing outbreaks. Depopulation of affected and exposed animals, and cleaning and disinfection of affected premises, equipment, and vehicles has been known to work, but eradication in this manner is complicated by the presence of asymptomatic wild pigs and infected tick vectors. There is no vaccine. Prevention rests mainly in not feeding food scraps and preventing contact with wild pigs. Methods of disease eradication will be considered based on the epidemiological risk assessment and economic impact on the state, and upon the joint agreement of the State Veterinarian, USDA-APHIS-VS, and the swine industry.

### 2.1.3 Classical Swine Fever (*Hog Cholera*)

Classical Swine Fever (CSF) is a highly contagious and economically significant viral disease of pigs. Morbidity and mortality can approach 100% in naïve populations, and reintroduction to eradicated areas can be devastating. CSF can be rapidly introduced into disease-free regions via infected domestic pigs or wild pigs.

CSF is caused by a *Pestivirus* of the family *Flaviviridae*. There are many strains, of varying virulence. CSF virus can be found in oronasal and ocular secretions, urine, feces, and semen from infected animals. The virus persists in blood and tissues after death, and unprocessed meat fed to pigs may transmit the virus. Biting insects are able to transmit the virus mechanically.

The virus enters the body primarily through oral or oronasal routes, although it can also enter via mucus membranes, genital transmission, and skin abrasions. Indirect entry can be through fomites, the bite of an infected tick or fly, or the feeding of infected food scraps. The incubation period is typically 2 to 15 days, but in herd outbreaks can extend up to 4 weeks or more. Viral shedding can occur before the onset of clinical signs, and piglets infected near the time of birth can become persistently infected, and shed the virus continuously for months.

Clinical signs include:

- Acute
  - High fever
  - Huddling
  - Weakness
  - Drowsiness
  - Anorexia
  - Conjunctivitis (then eyelid crusting)
  - Constipation then watery diarrhea
  - Uncoordinated or staggering gait
  - Vomiting
  - Respiratory signs
  - Hemorrhagic skin
  - Convulsions
  - Death within 1 to 3 weeks
- Chronic
  - Depression
  - Wasting or stunted growth
  - Alopecia
  - Skin lesions
  - Waxing & waning course
  - Death
  - Poor reproductive performance with abortions and stillbirths

A quick response is vital for containing outbreaks. Measures taken to control an outbreak include quarantine and movement restrictions, euthanasia of affected and exposed animals, and cleaning and disinfection of affected premises, equipment, and vehicles. Both modified live and marker

vaccines are available. Vaccination must be approved by state and federal animal health officials, but may be used to reduce the spread of FMD virus or protect specific animals. Methods of disease eradication will be considered based on the epidemiological risk assessment and economic impact on the state, and upon the joint agreement of the State Veterinarian, USDA-APHIS-VS, and the swine industry.

#### 2.1.4 Foot and Mouth Disease (FMD)

Foot and mouth disease (FMD) is a highly contagious viral disease that primarily affects cloven-hooved livestock and wildlife. Although adult animals generally recover, the morbidity rate can be very high, and significant pain and distress can occur.

FMD can be readily re-introduced into disease-free regions via animals or animal products. Once introduced, the virus can spread rapidly, particularly if livestock densities are high or detection is delayed. Outbreaks can severely disrupt livestock production, result in embargoes by trade partners, and require significant resources to control.

FMD is caused by an *Aphthovirus* of the family *Picornaviridae*. There are more than 60 strains of FMD, and immunity to one FMD virus serotype does not protect animals from other serotypes. FMD virus can be found in all secretions from infected animals, including expired air, saliva, milk, urine, feces, and semen, as well as in the fluid from FMD-associated vesicles. Some animals can shed FMD virus for up to four days before the onset of clinical signs. The virus can enter the body by inhalation, ingestion, skin abrasions, or mucous membranes. The incubation period is 2 to 14 days, and morbidity can approach 100%.

Clinical signs include:

- Most severe lesions on feet
- Vesicles on coronary band and interdigital space
- Severe lameness, resulting in pigs crawling rather than walking
- Sloughing of digits
- Vesicles on mouth and snout
- Anorexia
- Lethargy
- Inconsistent fever
- Sudden death in young pigs

Measures taken to control an FMD outbreak include quarantines and movement restrictions, euthanasia of affected and exposed animals, and cleaning and disinfection of affected premises, equipment, and vehicles. Vaccination must be approved by state and federal animal health officials, but may be used to reduce the spread of FMD virus or protect specific animals. Methods of disease eradication will be considered based on the epidemiological risk assessment, economic impact on the state, and upon the joint agreement of the State Veterinarian, USDA-APHIS-VS, and the swine industry.

## 2.2 Colorado Reportable Disease of Swine

An additional animal disease category is the [Colorado Reportable Disease List](#). A Colorado reportable disease is an infectious or contagious disease reportable to the state veterinarian. An infectious or contagious disease is defined by the Colorado Revised Statutes CRS 35-50-103 as a reportable or emerging disease of livestock that poses a significant risk to the livestock industry of

the state resulting from infectious agents, such as viruses, rickettsia, bacteria, fungi, protozoa, internal or external parasites, or prions, or any reportable disease or emerging communicable disease that is capable of being transmitted from one animal to another animal or to a human, whether communicated directly or indirectly through an intermediate plant or livestock host, vector or the environment. Colorado Reportable Diseases of Swine are listed below.

- Anthrax
- Brucellosis
- Pseudorabies
- Rabies
- Salmonella
- Screwworm
- Any infectious disease or parasite of livestock not previously known to exist in Colorado
- Any disease of unusual morbidity or mortality than does not fit the normal expected clinical picture
- Senecavirus A or Seneca Valley Virus (SVV)
- Swine Enteric Coronavirus Diseases – Porcine Epidemic Diarrhea (PEDV or SECD)
- Vesicular Stomatitis
- Any suspected FAD
- Any Vesicular Disease

### **2.3 Incident Command System and Response Levels**

Since incidents will vary in size and scope, the level of activation will depend on the nature of the outbreak. Not all swine disease incidents will require local, state, or federal emergency response functions. Many incidents are handled routinely by private practice veterinarians and/or veterinarians employed by the State Veterinarian or APHIS Veterinary Medical Officers (VMO). The swine industry has also invested time and resources in developing plans to deal with their own livestock incidents and situations.

In the event of a highly contagious disease outbreak in swine, the CDA will manage the incident using the National Incident Management System (NIMS). NIMS provides standardized incident management processes, protocols, and procedures for all emergency responders. During an incident CDA will implement the Incident Command System (ICS), as mandated by NIMS. Designed to be a flexible all-hazard incident management tool, ICS allows decision makers to fill ICS positions to meet the complexities and demands of the incident. For example, a localized disease event of a short duration may only require the incident commander position to be filled; where as a regional or more wide-spread disease outbreak may require all positions in an ICS incident organization chart to be filled. See Appendix C for an ICS incident organization chart designed for an animal disease outbreak in CDA's authority and jurisdiction.

CDA will also follow NIMS incident typing and will respond to an animal health emergency using the activation levels described below. NIMS incident typing will assist decision makers in determining resources required for specific incidents. *Table 1 Response Levels and National Incident Management System (NIMS) Incident Typing System* summarizes level of response, lead agencies, and NIMS protocol for each level of response.

#### **2.3.1 Level 5 Response**

A level 5 response refers to a situation with little complexity that could be managed with one or two single resources. This level of response would be of a short duration and would consist of one 12-hour operational period or less.

### 2.3.2 Level 4 Response

A level 4 response is normally limited to one 12-hour operational period and requires minor state resources to manage the incident. This level of response does not require an incident action plan (IAP) and can be managed using the resources and personnel of the CDA Animal Health Division. Level 4 activities will include those identified for Level 5 in addition to the following additions:

- Increase animal origin verifications.
- Notify private practice veterinarians of specific clinical symptoms of the disease(s) in question.
- Notify USDA-APHIS-VS Colorado Office of the situation.
- Review of the *Swine Emergency Disease Response Plan* in relation to potential response to the disease in question.
- Notification of swine industry representative(s) of the disease outbreak and clinical symptoms.

### 2.3.3 Level 3 Response

A level 3 response reflects the elevated surveillance, preparation, and limited response that may be initiated by the state if there is a presumptive positive or confirmed diagnosis of a FAD in Colorado. A level 3 response may trigger activation of the State Emergency Operations Center (EOC) and deployment of the Eastern Colorado Incident Management Team (ECIMT) or a similar State Type 3 Incident Management Team (IMT).

The ECIMT will be activated to support incident management for incidents that exceed departmental capability to manage the incident effectively. Type 3 IMTs are deployed as a team of 10-20 trained personnel to manage major and/or complex incidents requiring a significant number of local, regional, and state resources. A level 3 response may evolve into multiple operational periods that require a written IAP for each operational period. Level 3 activities will include those activities identified for all preceding levels and also the following:

- Suspend the importation of pigs from affected or from potentially affected areas, or possibly all pigs from the impacted states, pending control and eradication of the disease.
- Inventory relevant state resources and review and implement contract mechanisms to support the logistics portion of the response.
- Review and update public relations materials and collaborate with key contributors in preparation for release. CDA and APHIS will be consulted for their message map on the appropriate disease, its implications for public health, animal health, and the livestock industry.

### 2.3.4 Level 2 Response

A level 2 response reflects a full-scale multi-state response that may require regional and/or national resources to effectively manage the incident. Level 2 activation is in response to a large, complex incident that will involve multiple operational periods. A written IAP is required for each operational period. A Rocky Mountain Type 2 or equivalent IMT may be deployed to support management of the incident. A Type 2 IMT is deployed as a team of 20-35 to manage incidents

of regional significance and other incidents requiring a large number of local, regional, state, and national resources.

### 2.3.5 Level 1 Response

A level 1 response will be declared for the most complex incidents that require national resources to safely and effectively manage the incident. A level 1 response will be managed by a Type 1 IMT. A Type 1 IMT is deployed as a team of 35-50+ individuals to manage incidents of national significance and other incidents requiring a large number of local, regional, state, national, and federal resources over multiple operational periods.

**Table 1. Response Levels and National Incident Management System Incident Type**

<b>Response Level</b>	<b>NIMS Incident Type</b>	<b>Lead Agency</b>	<b>Emergency Response Actions*</b>	<b>Source of Resources</b>
<b>Level 5 – Local Response</b>	Type 5	CO Dept of Ag	<ul style="list-style-type: none"> <li>- One 12hr. Operational Period</li> <li>- Incident action plan not required*</li> <li>- Emergency Operations Center not activated</li> </ul>	- Local
<b>Level 4 – Limited State Response</b>	Type 4	CO Dept of Ag	<ul style="list-style-type: none"> <li>- One 12hr. Operational Period</li> <li>- Incident action plan not required*</li> <li>- Emergency Operations Center not activated</li> <li>- ICS command and general</li> </ul>	<ul style="list-style-type: none"> <li>- CDA Animal Industry Division</li> <li>- Federal</li> </ul>
<b>Level 3 – State Response</b>	Type 3	IMT Command with Unified Coordination: <ul style="list-style-type: none"> <li>- CO Dept of Ag</li> <li>- USDS APHIS VS</li> </ul>	<ul style="list-style-type: none"> <li>- May extend into multiple operational periods</li> <li>- IAP may be required*</li> <li>- ICS some/all command and general positions activated</li> <li>- A Type III IMT like ECIMT will manage incident</li> <li>- State EOC may be activated</li> </ul>	<ul style="list-style-type: none"> <li>- Local (Support)</li> <li>- State</li> <li>- Federal</li> <li>- May require regional resources</li> </ul>
<b>Level 2 – Multi-State Response</b>	Type 2	Joint or Unified Command and Unified Coordination. National and regional coordination required	<ul style="list-style-type: none"> <li>- Extends into multiple operational periods</li> <li>- IAP required</li> <li>- ICS some/all command and general positions activated</li> <li>- Rocky Mountain Type II or equivalent IMT will manage the incident.</li> <li>- State EOC activated</li> </ul>	<ul style="list-style-type: none"> <li>- Local (Support)</li> <li>- State</li> <li>- Federal</li> <li>- Regional</li> <li>- May require national resources</li> </ul>
<b>Level 1 – National Response</b>	Type 1	National Unified Command and Coordination: National, regional and State	<ul style="list-style-type: none"> <li>- Extends into multiple operational periods</li> <li>- IAP required for each operational periods</li> <li>- ICS all command and general positions activated</li> <li>- Type I IMT will manage incident</li> <li>- State EOC activated</li> </ul>	<ul style="list-style-type: none"> <li>- Local (Support)</li> <li>- State</li> <li>- Federal</li> <li>- Regional</li> <li>- National</li> </ul>

\* IAPs are required for all HAZMAT incidents regardless of the type of incident.

Source: Based on the Department of Homeland Security, National Incident Management System, 2009

For all incidents triggering activation of this plan, the Public Information Officer(s) will be Industry's contact for information on the incident.

## 2.4 Incident Complexity Analysis

The exact moment when an incident shifts from one level of complexity to the next is often a matter of perception. The State Veterinarian/Commissioner or designee must assess the complexity of an incident and authorize a level of response to meet the needs of the event. An Incident Complexity Analysis may be completed to assist in determining the appropriate level of response. The assessment tool consists of a series of questions regarding the incident and associated information that when answered will help determine the appropriate level of response and resources required to meet the needs of an incident. An example of an Incident Complexity Analysis worksheet is located in Appendix D.

## 2.5 Responder Health and Safety Program

A fundamental responsibility of CDA is ensuring the safety of Department employees involved in responding to a disease outbreak. CDA developed the Responder Health and Safety program to meet this obligation. The CDA Responder Health and Safety Program is composed of three components:

- (1) Personal Protective Equipment Guidelines
- (2) Respiratory Protection Program
- (3) Medical Monitoring and Rehabilitation

Combined, these documents and programs provide a means to assess employee fitness for emergency work, provide for personal health protection via the use of protective equipment and decontamination procedures, monitor vital signs, and provide support to assure employees maintain fitness levels needed to conduct assigned activities.

### 2.5.1 Personal Protective Equipment

This General Guidance Document provides a plan to be followed to assure a safe working environment while allowing flexibility to meet varying needs that might be expected in a livestock emergency situation. The guidance offers guidelines that incident commanders, operations section chiefs, foreign animal disease diagnostician (FADD) veterinarians, team or task force leaders, or others can use in assessing and determining equipment and procedures they will utilize when conducting their assigned missions. See Appendix E for Personal Protective Equipment (PPE) guidance for zoonotic and non-zoonotic diseases.

Initially, when the causative agent is unknown, high levels of protection may be used. Once the agent is identified, levels of protection can be adjusted (usually decreased) to fit specific challenges an agent might pose. Once the disease agent has been identified, it is likely the level of protection will be similar to employer placed biosecurity programs.

Of special note is the fact Colorado is a “non-Occupational Safety and Health Administration (OSHA)” state. This means state employees are not subject to the same regulations as are production facilities and their respective employees. The CDA program has essentially been

placed to close this gap. Even so, producers remain responsible to follow appropriate OSHA programs related to their facilities. State employees cannot provide any equipment or certain training to private employees, although they may recommend general levels of PPE be utilized for different operational activities.

### *2.5.2 Respiratory Protection Program*

A respiratory protection program is important, especially during a disease outbreak. Respiratory protection becomes essential when there are potential health risks from respiratory exposure to the disease agent, to chemicals used in cleaning and disinfection, and to risks inherently present on livestock operations. Individuals who may be deployed to an incident are required to have completed a medical questionnaire that has been reviewed and approved by a medical doctor familiar with such programs. These individuals have been trained and fit tested to utilize specific respiratory equipment. Production facilities may or may not have similar programs in place. It is anticipated if they do not, employees could still work in less hazardous areas or accommodations could be made to have employees trained and tested for such activity.

### *2.5.3 Medical Monitoring and Rehabilitation*

Emergency response often requires long hours doing strenuous work in adverse conditions and environments. Physical exertion can lead to dehydration or exacerbation of environmental factors such as heat or cold conditions. It is essential that responders be medically fit and cleared to work in such conditions. Individuals with underlying medical problems (such as a preexisting cardiac issue) who work in such challenging situations can place themselves at risk for debilitating injuries or even death. Medical monitoring affords an opportunity to identify underlying problems and hopefully mitigate them before they become quite serious. Such monitoring occurs when risks exist and is conducted both prior to assignment and throughout the assigned work period. Rehabilitation periods are scheduled to allow responders a break in which to rest, rehydrate, and get something to eat if need be.

Facility workers generally have scheduled breaks to eat or drink. These may need to be extended and rehydration beverages or food provided dependent upon work schedules and on environmental factors such as temperature and humidity. Medical monitoring of facility employees might possibly be arranged for via local public health or emergency medical service departments.

## **2.6 Communication Plan**

Effective emergency management response depends on communication – the ability to maintain a common operating picture through the constant flow and sharing of information. Integrated communication forges a link among operational and support units to enable common awareness of the incident and actions to achieve the objectives of Incident Command. Equipment, systems, protocols, and expertise are needed to achieve this integration. Procedures and protocols governing communication among the emergency responders must be established in advance of an outbreak.

The **objectives** of the communication plan in the face of an animal disease emergency are as follows:

- Furnish accurate, timely, and consistent information

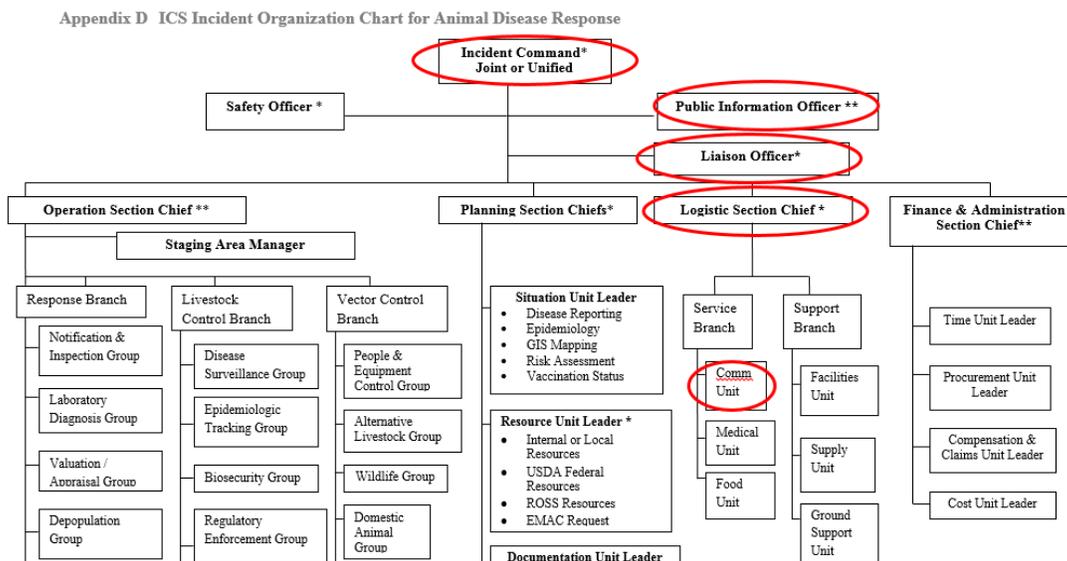
- Maintain credibility and instill public confidence in the State’s ability to respond to an outbreak
- Minimize public panic and fear
- Address rumors, inaccuracies, and misperceptions as quickly as possible; and
- Inform the public and producer what they can do to mitigate the disease or event in their lives and in their production systems

The **goals**, which will help to achieve the communication objectives, are as follows:

- Establish a network of stakeholders and systems for communication, prior to an incident or outbreak
- Test or exercise the systems for communication at regular intervals, prior to an outbreak
- Brief the media, public, industry, Congress, trading partners, and others on the outbreak and the actions being taken by the CDA, USDA, and other partners to control, contain, and eradicate the disease
- Highlight the importance of good biosecurity practices and steps that producers and owners can take to protect against infection
- Coordinate with USDA, HHS, DOI, DHS, State agencies, local agencies, Tribal entities, and CSU and CSU Extension to ensure a consistent message regarding animal health, public health, and food safety

### 2.6.1 Incident Command Structure: Communication

The figure below indicates which ICS positions will have a role in communication activity:



The PIO will develop an external communications strategy, which the Incident Commander must approve before implementation. This plan should include the following:

<ul style="list-style-type: none"> <li>• Designated line and staff responsibilities for the information teams</li> </ul>	<ul style="list-style-type: none"> <li>• Response team after-hours contact numbers</li> </ul>
--	---

<ul style="list-style-type: none"> <li>• Internal information verification and approval procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Contact numbers for emergency response information partners</li> </ul>
<ul style="list-style-type: none"> <li>• Agreements on information release authorities, including who releases what, when, and how</li> </ul>	<ul style="list-style-type: none"> <li>• Procedures to secure needed resources to operate the public information and media operation 24 hours a day, 7 days a week, and fund an 800 hotline number</li> </ul>
<ul style="list-style-type: none"> <li>• Regional and local media contact list</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements and procedures to join the JIC, if activated</li> </ul>
<ul style="list-style-type: none"> <li>• Procedures to coordinate with field response teams</li> </ul>	<ul style="list-style-type: none"> <li>• Designated spokespersons for animal health issues and third party validators in an emergency</li> </ul>
<ul style="list-style-type: none"> <li>• Vehicles of information dissemination</li> </ul>	<ul style="list-style-type: none"> <li>• Key messages to stakeholder groups</li> </ul>

*2.6.2 External Communications Planning:*

External communication during an outbreak will be the responsibility of the State Veterinarian and the CDA Director of Communications and Public Awareness. The State Veterinarian, with assistance from the CDA Liaison Officer will direct and maintain communication with federal, state, and local government agencies and partners that have a statutory responsibility in emergency response. Additionally, the CDA Communication Director will communicate and collaborate with livestock industry representatives throughout the incident.

Specific swine industry representatives who would be included in the communication planning would be the Colorado Pork Producers Council (CPPC), National Pork Board, and the Colorado Swine Health Committee.

Correspondence and communication with the media and public regarding the incident will be directed and managed by the CDA Director of Communications. The CDA Director of Communications or assigned designate may assume the ICS role of Public Information Officer (PIO) upon activation of this plan. In the event the ECIMT or another IMT is deployed to manage the incident, the CDA PIO shall work in collaboration with the IMT, State EOC, State and local public health agencies, livestock associations and swine industry, federal agencies, and local emergency management PIO(s) in a Joint Information Center (JIC).

*2.6.3 Internal Communications Planning:*

The Colorado Department of Agriculture has guidance documents available on [SharePoint](#) for internal communication processes.

**The 5 W’s of Critical Information Sharing:**

- |                               |  |
|-------------------------------|--|
| 1. What do we know?           | 4. Who has the information?                    |
| 2. Who needs to know it?      | 5. What will we do to get the information out? |
| 3. What do they need to know? |  |

- Division Crisis Communication Plan
- Incident Report using the ABCD Template which helps to initially organize needed components of the disease response
  - A = Assessment
  - B = Briefings
  - C = Communication
  - D = Delegate roles and responsibilities
- Disease Response Checklist, Day 0; and Post Confirmation Checklist
  - Outlines initial communication contacts
- Emergency Response Contact List
  - Contact names and phone numbers for each pertinent agency
- Incident Action Plan
  - Form ICS 205 and ICS 205a for communication plans
- Animal Emergency Response Communication Retrieval Process
  - Process for logging messages from internal staff cell phones, desk phones, email, and assignment of personnel to return phone calls and emails
- Office Messaging Template
  - Narrative for office and field staff to use; includes: messaging to use within CDA, phone recording, email response, and website

### 3.0 Disease Outbreak Response

This section describes the processes and protocols utilized by the CDA during a disease outbreak affecting swine. These processes and protocols are designed to enable execution of the responsibilities of the CDA and to integrate federal, state, local, and industry efforts into an effective and coordinated approach to a disease outbreak in pigs. Responding to a disease outbreak in swine will involve the actions described below. *Table 2. Timeline for Disease Control Response Activities* provides a timeline for each action phase.

- **Disease Detection:** Investigate suspected animal disease and initiate movement restrictions
- **Disease Control:** Quarantine infected and exposed premises and control movement of swine and swine products
- **Surveillance:** Develop surveillance plan based on epidemiologic investigation
- **Epidemiology:** Determine the extent of the outbreak and/or confirm non-infected status
- **Stabilization:** Control, prevent spread, and, as possible, eradicate disease
- **Business Continuity:** Protect economic viability and continuity of operations
- **Recovery:** Return affected premises to normal business operations

**Table 2. Timeline for Disease Control Response Activities**

<b>Disease Outbreak Response Actions* †</b>	<b>12 hours</b> Within a confirmed positive case	<b>24 Hours</b> Within a confirmed positive case	<b>48 Hours</b> Within a confirmed positive case	<b>24 Hours</b> Within determination of need	<b>72 Hours</b> Within determination of need
<b>Disease Control -- Quarantine Infected and Exposed Premises and Control Movement of Animals</b>					
Mobilize livestock disease-related incident command personal.					
Establish initial control areas.					
Enhance biosecurity procedures on infected, contact and susceptible premises.					
Establish quarantine zones for infected and contacted premises and/or broader movement restrictions.					
<b>Surveillance -- Develop Surveillance Plan Based on Epidemiological Investigation</b>					
Develop a surveillance plan and implement existing diagnostic support.					
<b>Epidemiology -- Determine the Extent of the Outbreak and / Or Confirmed Non-Infected Status</b>					
Implement epidemiological surveillance and diagnostic support plan in at-risk species and notify other states of trace-outs.					
<b>Stabilization -- Control, Prevent Spread of, and, as Possible, Eradicate Disease</b>					
Begin treatment, inoculation, and /or depopulation of animals at identified site.					
Begin decontamination and disposal procedures at identified site.					
<b>Business Continuity -- Protect Economic Viability and Continuity of Operations</b>					
Implement procedures for the creation of bio-secure transportation corridors to market or other key facilities for disease –free goods and animals.					
Develop procedures for managing contaminated products.					
Establish storage and /or disposal areas for animals or products stopped in transit.					
<p><b>Source: Based on Department of Homeland Security, Federal Emergency Management Agency. <i>Livestock and Poultry Disease Emergencies Capability</i>, August 2009.</b></p> <p>* Disease Detection and Recovery Actions are not in the scope of the above timeline.</p> <p>† Communication with neighboring states will be initiated within 4 hours of a confirmed positive case.</p>					

## 4.0 Disease Detection – Investigations and Initiate Movement Restrictions

Rapid detection of reportable diseases is essential to minimize spread and impact on industry and local economy. Timeliness of the initial response is critical. In most situations a private and/or accredited veterinarian will be the first to encounter a foreign animal disease (FAD) and they are required by law to report any suspected FAD. Once a suspect case is identified, an FAD investigator will be dispatched to collect samples. If there is adequate suspicion that an FAD is present he/she can place a verbal hold order. This hold order will then be converted to a quarantine if the samples come back confirmed positive by the National Veterinary Services Laboratory (NVSL). During this time the CDA will begin activating the emergency response plan outlined in this document.

### 4.1 Foreign Animal Disease Investigation

Upon notification of a suspected case of FAD, the Colorado State Veterinarian or USDA-APHIS-VS Colorado Office will dispatch a FAD Diagnostician (FADD) to conduct a FAD Investigation. See CDA website for VMO territories in Colorado:

<https://www.colorado.gov/pacific/sites/default/files/atoms/files/VMO%20Map%20Colorado.pdf>

The investigation is conducted using a standardized format developed by USDA. Information and data collected during the FAD Investigation includes a general assessment, number and species of livestock present, gathering site information and samples, and epidemiological data. In addition, the FADD collects the following information about the facility:

- Premises Identification Number (PIN) or USAHERDS Location ID (LID)
- Type of facility
- Plat map description
- GPS Coordinates
- Type and number of buildings
- Available resources
- Number of personnel or employees

The goal of the investigation is to confirm or rule out the presence of disease in a rapid and efficient manner. As such, the FADD examines the animals on site and packages the appropriate diagnostic samples for delivery to a state and federal diagnostic laboratory – please refer to the [FAD Investigation Manual](#) and FAD PReP [Disease Response Document](#) for protocols on submission of samples. Information from the investigation is reported to the State Veterinarian who, in consultation with the FADD and the USDA-APHIS-VS Colorado Office, determines the classification and diagnostics sample prioritization (defined below). This decision is critical and determines turnaround times on diagnostic samples and aids in establishing appropriate disease control measures. The priority established will determine where the samples are sent, how they are handled for transportation, and the level of response the lab gives the samples. Operations in the collection, shipping, and management of laboratory samples shall be in accordance with the USDA–APHIS- VS protocol for FAD Investigations.

- **Priority 1:** High Suspicion of FAD and needs rapid or extraordinary methods for sample collection, submission and transport. Testing is conducted immediately upon arrival.
- **Priority 2:** Intermediate Suspicion of FAD and needs rapid methods for sample collection, submission and transport. Testing is conducted as necessary according to business hours.

- **Priority 3:** Low Suspicion of FAD and needs routine methods for sample collection, submission and transport. Testing is conducted in accession order.
- **Priority A:** Intermediate or Low Suspicion of FAD but circumstances of investigation indicate needs rapid methods for collection, submission and transport. Testing conducted immediately upon arrival.

In most cases, preliminary results are available within 24 hours. However, during the investigation, the State Veterinarian may implement certain movement restrictions for swine and semen. Decisions relative to movement controls would be based on the general clinical assessment, morbidity and mortality of the disease outbreak and the risk to other animal facilities. A description of zones, areas, and premises used for restricting movement is located in Section 5.

#### **4.2 Hold Order**

There are three possible outcomes of an FAD Investigation: (1) negative, (2) presumptive positive, or (3) confirmed positive. In the event a FAD is suspected as the initial outcome of the FAD Investigation, the State Veterinarian may issue a hold order as authorized by CRS 35-50-103 to restrict animal movement. CRS 35- 50-103 defines a hold order as “a temporary order issued by the state veterinarian when an infectious disease is suspected in livestock to isolate any specific livestock premises, county, district; and specify sanitary measures, pending completion of testing.” The State Veterinarian may authorize the hold order through accredited veterinarians or through another appointed official.

#### **4.3 Quarantine**

A presumptive positive test result must be confirmed by the National Veterinary Services Laboratories (NVSL). Once the appropriate NVSL laboratory has verified the testing results are a confirmed positive, the State Veterinarian, as the Commissioner of Agriculture’s designee, may place the infected premises under quarantine. CRS 35-50-103 defines quarantine as “an order issued by the commissioner when testing has confirmed the presence of an infectious or contagious disease in livestock, which order isolates specific livestock, premises, counties, districts, or sections of the state; restricts the movement of livestock; and specifies sanitary measures.”

#### **4.4 Response Plan Activation Sequence**

The activation of an emergency plan is at the discretion of the State Veterinarian. Upon confirmation of a presumptive positive test result of a highly contagious animal disease, from the Colorado State University Veterinary Diagnostic Laboratory (CSU-VDL) or NVSL, the State Veterinarian will activate the *CDA Swine Emergency Disease Response Plan*.

The State Veterinarian will immediately contact the Commissioner of Agriculture, Deputy Commissioner, the USDA-APHIS-VS Colorado Office, along with other collaborative response agencies/partners as necessary, and relay all known information on the positive test notification. The State Veterinarian should be prepared to make recommendations with respect to any gubernatorial declarations and/or the need to activate the state EOC and appropriate level of response. Specifically, the State Veterinarian will relay the following information:

- Name and contact information of the verifying laboratory official reporting the

confirmatory test

- Name(s) and location(s) of the infected premises including Global Positioning System (GPS) and USAHERDS Location ID (LID) and/or Federal Premises Identification Number (PIN) if available.
- Type of production facility and number of pigs on the infected premises.

If notification of a presumptive positive or NVSL confirmed positive of a highly contagious animal disease is after normal working hours, on a weekend or holiday, the State Veterinarian will communicate with the Commissioner, Deputy Commissioner, the USDA-APHIS-VS Colorado Office, and the necessary staff of the Animal Health Division of CDA at their afterhours contact numbers. Based on direction from the Commissioner, Deputy Commissioner, and Assistant Director of USDA-APHIS-VS District 6, the State Veterinarian will take appropriate action to activate the response at a level based on incident type. See *Table 1. Response Levels and National Incident Management System Incident Typing System*.

## **5.0 Disease Containment: Quarantine and Movement Control**

Upon confirmation of a suspected or confirmed case of a highly infectious animal disease, the State Veterinarian will implement a series of response actions to control the spread of disease and minimize the impact of an outbreak. Although actions will vary based on the disease agent, the following section presents a series of possible control activities that may be utilized to contain a highly infectious disease in swine.

### **5.1 Movement Restrictions**

Movement restrictions for pigs, semen, vehicles, and possibly people may be used to prevent the further spread of disease. Once an outbreak has been confirmed, the Infected Premises will be placed under quarantine (see Section 4.3 for additional information on livestock quarantines). Diseased or disease exposed pigs will need to remain on the IP until the necessary control measures are determined by the State Veterinarian. A control zone, which includes any contact premises (CP - farms or areas with a connection to the Infected Premises), will be established.

Road blocks and/or check points (see 11.2.3.2 Colorado State Patrol (CSP)) and possibly decontamination stations may be needed at ingress and egress locations in the control zone. Additional zones may be designated to control and monitor the disease. Descriptions and a diagram of Premises, Zones, and Area designations follow in Section 5.2. See Section 9.2 for additional information regarding Controlled Animal Movement.

### **5.2 Premises, Zones, and Area Designations**

The designation of Control Areas and Zones is essential to successful quarantine and movement control activities. The State Veterinarian shall determine premises classification in the event of a presumptive positive or confirmed case of a highly contagious swine disease. He/she shall work with the USDA-APHIS-VS Colorado Office and FADD veterinarians, emergency responder teams, the state EOC, law enforcement, and other local and state agencies/entities to establish area and zone designations that will allow for identification, implementation, and enforcement of quarantine and movement controls. Table 3 and Table 4 summarize designations used in a response. Figure 1 gives a visual representation of the zones and areas described in Table 3 and

Table 4.

**Table 3. Summary of Premises Designations**

Premises	Definition	Zone
Infected Premises (IP)	Premises where a presumptive positive case or confirmed positive case exists based on laboratory results, compatible clinical signs, HPAI case definition, and international standards.	Infected Zone
Contact Premises (CP)	Premises with susceptible animals that may have been exposed to HPAI, either directly or indirectly, including but not limited to exposure to animals, animal products, fomites, or people from Infected Premises.	Infected Zone, Buffer Zone
Suspect Premises (SP)	Premises under investigation due to the presence of susceptible animals reported to have clinical signs compatible with HPAI. This is intended to be a short-term premises designation.	Infected Zone, Buffer Zone, Surveillance Zone, Vaccination Zone
At-Risk Premises (ARP)	Premises with susceptible animals, but none of those susceptible animals have clinical signs compatible with HPAI. Premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. At-Risk Premises seek to move susceptible animals or products within the Control Area by permit. Only At-Risk Premises are eligible to become Monitored Premises.	Infected Zone, Buffer Zone
Monitored Premises (MP)	Premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. Only At-Risk Premises are eligible to become Monitored Premises. Monitored Premises meet a set of defined criteria in seeking to move susceptible animals or products out of the Control Area by permit.	Infected Zone, Buffer Zone
Free Premises (FP)	Premises outside of a Control Area and not a Contact or Suspect Premises.	Surveillance Zone, Free Area
Vaccinated Premises (VP)	Premises where emergency vaccination has been performed. This may be a secondary premises designation.	Containment Vaccination Zone, Protection Vaccination Zone

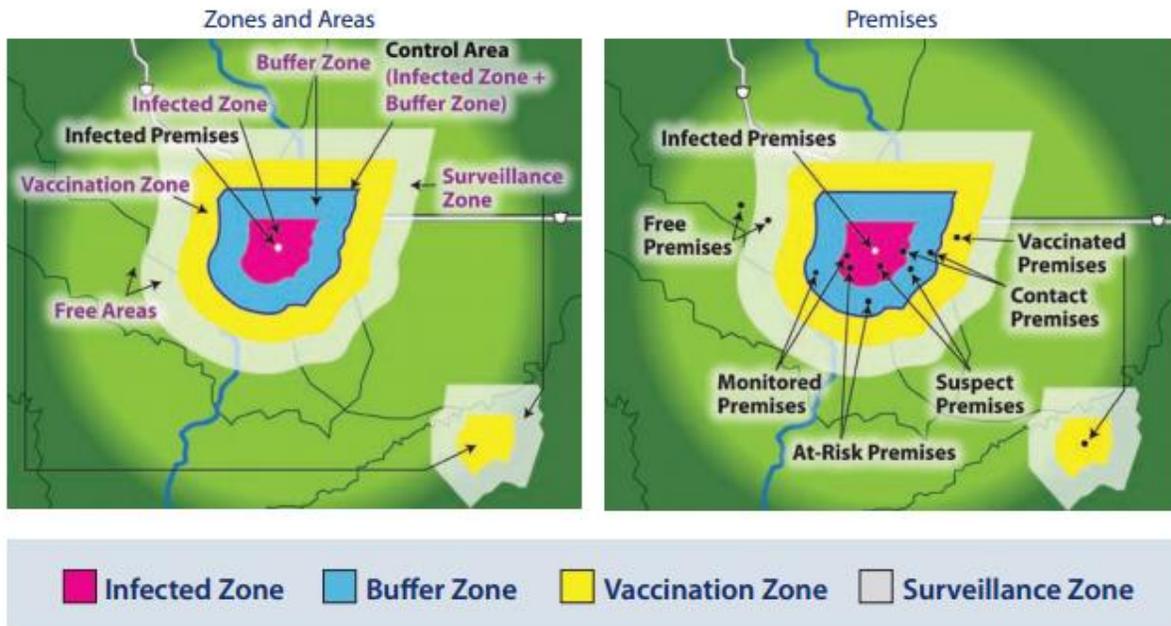
Adapted from the [FAD PRoP Swine Industry Manual](#) March 2011, Section 6.

**Table 4. Summary of Zone and Area Designations**

Zone/Area	Definition
Infected Zone (IZ)	Zone that immediately surrounds an Infected Premises.
Buffer Zone (BZ)	Zone that immediately surrounds an Infected Zone or a Contact Premises.
Control Area (CA)	Consists of an Infected Zone and a Buffer Zone.
Surveillance Zone (SZ)	Zone outside and along the border of a Control Area. The Surveillance Zone is part of the Free Area.
Free Area (FA)	Area not included in any Control Area. Includes the Surveillance Zone.
Vaccination Zone (VZ)	Emergency Vaccination Zone classified as either a Containment Vaccination Zone (typically inside a Control Area) or a Protection Vaccination Zone (typically outside a Control Area). This may be a secondary zone designation.

Adapted from the [FAD PRoP Swine Industry Manual](#) March 2011, Section 6.

**Figure 1. Example of Zones, Areas, & Premises in HPAI Outbreak Response**



Adapted from the [FAD PReP Swine Industry Manual](#) March 2011, Section 6.

### 5.3 Biosecurity and Disease Control Measures

USDA-APHIS-VS defines biosecurity as the use of certain management practices designed to prevent the introduction and spread of disease. Good biosecurity can mitigate the spread of a disease once it has been introduced into a herd or area. Biosecurity target areas for a swine facility are site security and traffic control, isolation of animals, and sanitation. Most swine producers already incorporate biosecurity measures into their daily operations as part of normal swine health and management practices.

Example biosecurity measures for routine operations in swine facilities are located in the [National Secure Pork Supply Plan \(SPS\): Information Manual for Enhanced Biosecurity: Animals Raised Indoors](#); and *Self-Assessment Checklist for Enhanced Pork Production Biosecurity for Animals Raised Indoors*.

During a swine health emergency, the State Veterinarian may prescribe additional biosecurity measures for premises located in defined zones for each of the target areas. Biosecurity measures will be dependent upon the disease and its mode(s) of transmission.

#### 5.3.1 Site Security

Any site that is under investigation as an Infected Premises, a Suspect Premises, or a Contact Premises shall take steps to prevent all non-essential traffic from entering the premises. All traffic should be prohibited except for essential personnel. Essential personnel are defined as having a direct role in the care and feeding of pigs or a direct role in the emergency response. Site security procedures that may be recommended include:

- Establish one ingress and one egress location into and from the facility. All other access points must be blocked or gates locked to prevent unregulated entry or exit from the facility. If possible, the ingress and egress location(s) should be located on a level and solid surface with access to water (by hose or tanker truck) for cleaning and disinfection purposes. Vehicles transporting workers or supplies may need to park at the access gate and shuttle people and supplies in through a safe corridor system or transport on foot – exceptions would be large truck transport vehicles.
- Cease all non-essential work on the farm and restrict access to the facility to essential personnel only. All vehicles and equipment on the premises may be prohibited from leaving the premises unless approved by the State Veterinarian. All vehicles leaving the premises will likely be required to be cleaned and disinfected.
- Require all essential personnel to wear PPE at a level determined necessary to protect or prevent the spread of disease and to mitigate any zoonotic disease potential. Personnel entering the premises will be required to wear disposable or adequately cleaned and disinfected boots, coveralls, gloves, head/hair covering, and possibly masks. The level of protection will be determined by the specific disease agent and area and nature of work individuals are to engage in. PPE must be donned prior to entry onto the premises, or a specified area therein, and must be removed and thoroughly disinfected or disposed of prior to leaving.
- Maintain a log of all movement onto and off of the premises. Verify premises log book is complete. Deliveries for farm essentials shall be by appointment only.

### *5.3.2 Cleaning and Disinfection Procedures for Vehicles and Personnel Leaving an Infected Premises*

Establishing decontamination procedures for vehicles and personnel leaving a premises are designed to prevent the spread of disease from and infected herd and premises. Cleaning and disinfection procedures are essential both during and after an animal disease event. Materials that should be available at the designated entry/exit point on the infected premises includes: brushes, buckets, hoses, water, disinfectant, and a pressure washer. Cleaning and disinfection must be performed on all personnel, equipment, and vehicles leaving the infected premises or control area. A comprehensive [EPA chart of diseases and approved disinfectants](#) is provided on the [USDA-APHIS Animal Health Emergency Management](#) website. Cleaning and disinfection procedures that may be required by the State Veterinarian include:

- Establishing a designated decontamination area/corridor on the premises. This is an area where personnel, vehicles, and equipment will undergo cleaning and decontamination before leaving the premises. This area should be close to the entry/exit point, located on a hard surface, and have access to water.
- Establishing a designated area for personnel to don and doff personal protective equipment and protocols for disposing of or treating contaminated personal protective equipment.
- Establishing a pest, especially rodent, control program.

### 5.3.3 *Wildlife Management*

If an animal disease outbreak has potential wildlife impacts or can be spread by wildlife, the Colorado Parks and Wildlife (CPW) will collaborate and lead all appropriate wildlife response activities. Two important questions to ask are: “Are there sick wildlife?” and “Can wildlife carry this disease to another premises?” Section 11.2 provides additional information on the CPW role in an animal disease outbreak.

### 5.3.4 *Public Health Involvement*

If an animal disease outbreak is identified as a zoonotic disease and has potential public health impacts, the State Veterinarian or other designated representative of the CDA will contact the Colorado Department of Public Health and Environment (CDPHE) to seek assistance to protect the public’s health. An important question to ask is, “Are people with potential exposure to the disease agent getting sick?” If so, CDPHE and/or local public health departments will be involved and will conduct their own epidemiologic investigation. Section 11.2 provides additional information on the CDPHE’s role in an animal disease outbreak.

## **6.0 Surveillance: Develop Surveillance Plan Based on Epidemiologic Investigation**

Surveillance is a critical activity during a disease outbreak. The response goals include: (1) to implement surveillance plans within 48 hours of the confirmation of the outbreak; (2) to implement a surveillance plan that will define the present extent of the disease and detect unknown infected premises quickly; and (3) to develop surveillance plans that can achieve desired outcomes by leveraging available resources, satisfying jurisdictional requirements, and implementing continuity of business plans.

Animal disease surveillance activities involve collecting and interpreting data from animal populations to determine their health status regarding diseases of concern. Surveillance programs are currently in place to assist in rapid detection of an animal disease incursion. Active surveillance techniques are also used in an animal disease response to determine the extent of a disease known to be present, and during the recovery phase of a response to provide the necessary evidence for the elimination of the disease.

Surveillance methods that may be used during a disease outbreak include inspecting animals for clinical signs of the disease and diagnostic testing. Inspection of animals for clinical signs involves observing animals for any clinical presentation of the disease. Surveillance information is also obtained through the collection and testing of various biological samples from all swine herds within a certain distance of an infected premises regardless of clinical appearance. The biological samples required will vary depending on the disease agent. Possible biological samples include: blood, skin scrapings, fecal material, tissue, and necropsy of dead pigs.

The speed at which these actions occur will have a direct effect on the extent and thus the outcome of an outbreak. Once control areas, zones, and premises are identified, a surveillance plan for each area or zone will be developed by the State Veterinarian. The surveillance plan will include information on methods to collect, manage, and analyze animal health data. Since each animal

disease outbreak is unique, the surveillance plan will be tailored to the event and disease agent. Specific guidance on surveillance is available from the following sources:

- [NAHEMS Guidelines: Surveillance, Epidemiology, and Tracing](#)
- [FAD PReP SOP: Surveillance](#)
- [FAD PReP Foot-and-Mouth Disease Response Plan: The Red Book](#)
- [Secure Pork Supply: Active Observational Surveillance](#) and training resources

## **7.0 Epidemiology: Determine the Extent of the Outbreak and/or Confirm Non-Infected Status**

To respond quickly and effectively to an animal disease event, the CDA animal health officials need to know which animals are involved, where they are located, and what other animals might have been exposed. The sooner reliable data is available, affected animals can be located, appropriate response measures can be established, and disease spread can be halted.

### **7.1 Disease Trace-Back and Trace-Forward**

An important component of an animal disease outbreak investigation is to establish trace-forward and trace-backs from the premises to determine both the source of the disease and the risk for disease transmission to other premises with susceptible species. Trace-backs and trace-forwards are usually applied from a minimum of 2 times the maximum incubation period prior to the onset of clinical signs until the time quarantine is imposed.

Trace-backs are conducted to assist in identifying the source of the virus or pathogenic microbes and to help determine how the disease was introduced to the facility. Trace-back procedures include collecting information from producers on the origins of all pigs (and possibly other animals), semen, feed, equipment and vehicles, (livestock trucks, feed trucks, veterinary trucks) and people (sales and feed representatives, visitors and veterinarians) that have visited the farm prior to the outbreak.

Trace-forward procedures gather similar information on animal, people, and equipment movements off the farm to identify other premises that received potentially infected animals, contaminated animal products, or equipment.

It is recommended that producers maintain up-to-date herd records. Among other advantages, accurate herd records assist in the completion of timely trace-back and trace-forward investigations. The following are some types of records that may be traced during a disease investigation:

- **Herd Inventory:** Herd information, specifically: animal ID, breed, age, species, and origin. Animals that die or are culled from the herd should be identified.
- **Herd Movement:** Animal movement to-and-from the farm logs, such as: date of movement, animal identification, origin, destination, reason, driver, vehicle used, previous owner name, and contact information.
- **Farm Services:** Visitor logs with names, phone number, reason for visit, time since last contact with livestock, and facilities entered. Visitors include all non-employees

(veterinarians, brand inspectors, feed salesman, inseminators, livestock dealers, repairmen, neighbors, etc.). May also include equipment, feed, semen/embryo movement logs (dates, origin, application site, volume, and application method).

- **Animal Health Information:** Vaccination and treatment records, including: animal ID, date, reason for treatment/vaccination, and medication (product used). Records of any postmortem examination and/or testing of any dead stock by the producer or veterinarian should be maintained and made available for review.
- **Farm Employees:** Employee record (name, address, phone number, and does the employee have contact with other livestock).
- **Pets and Animals:** Pets and other animals located on the premises.

## **7.2 USAHERDS Animal Health Information Management System**

USAHERDS is the animal health information management system within the Animal Health Division of the Colorado Department of Agriculture. It is a repository of Colorado livestock premises data, animal IDs, and livestock movement information that can be addressed and utilized during an animal disease outbreak to assist in the tracing of swine and premises. Data for the USAHERDS database is received from swine operations and existing data sources, and integrated into one system that can be accessed by CDA Animal Health officials during an animal disease emergency. USAHERDS enables CDA to respond quickly and to prevent disease at unaffected facilities when a significant disease event may impact a specific production area or a specific species of swine.

## **7.3 Commercial Swine Operations and Traceability**

The highly integrated structure of many commercial swine operations may significantly improve the level of traceability and communication within the swine industry. Such contracts and business arrangements could be utilized to efficiently and effectively improve biosecurity, prevent further spread of the disease, and to mitigate the negative impact to the swine industry. CDA is committed to working with the industry and associations to provide for good business continuity of operations. (See section 9 for further discussion of continuity of operations).

## **8.0 Stabilization: Control, Prevent Spread, and Eradicate Animal Disease**

Elimination, if possible, of a highly contagious disease involves a series of activities that will be implemented by the State Veterinarian in collaboration with USDA-APHIS-VS Colorado Office personnel. Actions taken will be based on the particular circumstances of the outbreak including: the disease agent, epidemiology of the disease, and vaccine and resource availability. Descriptions of possible response actions to eliminate an animal disease (and sources of equipment and materials used to carry out these actions) are described in the following section.

### **8.1 Appraisal and Indemnity**

According to the U.S. Code of Federal Regulations (9 CFR 53.3) a percentage of fair market value will be paid to the owners for livestock that must be depopulated or materials that must be

destroyed to prevent the spread of an animal disease.

Additionally, CRS 35-50-113 grants the CDA Commissioner the authority under certain circumstances, and upon the recommendation of the State Veterinarian, to authorize the payment of indemnity to any livestock owner whose herd is depopulated due to exposure or diagnosis with an infectious or contagious disease although State indemnity funds are extremely limited.

With federal qualifying events, appraisal and indemnification process outlined in 9 CFR 53.3 is the most efficient appraisal process for livestock owners. The process outlined in CRS 35-50-113 can be used in situations where depopulation of livestock is deemed necessary by the Commissioner and the State Veterinarian, but are not federal qualifying events. For both processes, valuation of livestock must be mutually agreed upon by the owner and state or federal official prior to depopulation. Under certain situations this may require physical appraisal of livestock.

In previous highly infectious disease outbreaks, the USDA paid for the cost of euthanasia, carcass disposal, and decontamination. Colorado will follow USDA procedures to request assistance with indemnification of swine producers in response to an eligible disease event.

## **8.2 Depopulation**

CRS 35-50-113 authorizes the State Veterinarian to order euthanasia, mass depopulation, and carcass disposal to mitigate an animal disease in Colorado and is an integral part of a comprehensive response plan. In the event that a highly contagious animal disease in swine is confirmed in the state of Colorado, swine depopulation and carcass disposal may represent the most effective means of disease control and eradication. If deemed necessary by the State Veterinarian to contain a disease outbreak, the CDA will take every measure to ensure rapid and humane depopulation of all pigs affected by the disease outbreak. The State Veterinarian will develop a comprehensive depopulation and disposal plan based on guidance from the American Veterinary Medical Association (AVMA) Guidelines on Euthanasia, National Agriculture Biosecurity Center, Kansas State University, industry capabilities, and other available resources.

The State Veterinarian's depopulation plan will be dependent upon the type of pigs to be depopulated and the numbers of pigs to be depopulated. *Table 5. Methods of Depopulation Appropriate for Swine* provides an overview of the approved methods of depopulation for pigs, it is broken out by the size of the animals involved. *Table 6. Considerations for Approved Depopulation Methods for Swine* provides an overview of the advantages, disadvantages, and considerations for human safety for depopulation methods appropriate for pigs.

It is important to consider depopulation methods in conjunction with carcass disposal options. Carcass disposal will be carried out in collaboration with the CDPHE as defined in the CDA/CDPHE joint Interagency Agreement (IA), Memorandum of Understanding (MOU), state statutes, and state rule/regulations. In the situation when there are mass mortalities of livestock due to a significant livestock disease or natural disaster, CDA is the lead State agency for carcass disposal. CDA will cooperate and collaborate with CDPHE, local public health agencies, and county officials to find the most suitable options for disposal of the mortalities. Additional information on carcass disposal is located in Section 8.3.

The AVMA Guidelines for the Depopulation of Animals is currently under development and will be a useful resource for development of a depopulation plan.

**Table 5. Methods of Depopulation Appropriate for Swine**

	<b>Farrowing Pig</b> Less than 3 wks. up to 12lbs (5.5kg)	<b>Nursery Pig</b> Less than 10 wks. up to 70lbs	<b>Grower Pig</b> Up to 150lbs (68kg)	<b>Finisher Pig</b> Greater than 150lbs (68 kg)	<b>Mature</b> Sow or Boar
<b>Carbon Dioxide</b>	Yes	Yes	Not Practical	Not Practical	Not Practical
<b>Gunshot</b>	No	Yes	Yes	Yes	Yes
<b>Penetrating Captive Bolt</b>	No	Yes	Yes	Yes	Yes
<b>Blunt Trauma</b>	Yes	No	No	No	No
<b>Electrocution (Head to Heart)</b>	Yes for pigs over 10lbs (4.6kg)	Yes	Yes	Yes	Yes
<b>Barbiturates</b>	Yes	Yes	Yes	Yes	Yes

Sources: National Pork Board, *On-Farm Euthanasia of Swine, Recommendations for the Producers*, 2008; American Association of Swine Veterinarians & National Pork Board, *On-Farm Euthanasia of Swine: Options for the Producer*, no date.

**Table 6. Considerations for Approved Depopulation Methods for Swine**

<b>Depopulation Method</b>	<b>Human Safety Risk</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Equipment</b>
<b>Carbon Dioxide</b>	Gases present potential hazardous aspects for humans	<ul style="list-style-type: none"> <li>- Non-invasive</li> <li>- No tissue or blood exposure</li> <li>- Minimizes stress</li> </ul>	<ul style="list-style-type: none"> <li>- Only practical for small pigs</li> <li>- Requires excellent ventilation systems to disseminate gas</li> </ul>	<ul style="list-style-type: none"> <li>- Suitable Chamber</li> <li>- Compress CO<sub>2</sub></li> </ul>
<b>Gun Shot</b>	Bullet poses considerable risk	<ul style="list-style-type: none"> <li>- Recommended for animals that cannot be restrained or are difficult to handle.</li> </ul>	<ul style="list-style-type: none"> <li>- May not kill animal</li> <li>- May present biosecurity risk from leaking body fluids</li> <li>- May preclude evaluation of brain if damaged by shooting</li> </ul>	<ul style="list-style-type: none"> <li>- Skilled and licensed operator</li> <li>- Appropriate firearm and ammunition for swine</li> </ul>
<b>Blunt Trauma</b>	Low	<ul style="list-style-type: none"> <li>- Applicable to small pigs</li> </ul>	<ul style="list-style-type: none"> <li>- Only practical for small pigs</li> </ul>	
<b>Penetrating Captive Bolt</b>	Moderate	<ul style="list-style-type: none"> <li>- Safer for operator than free bullet method</li> <li>- Reduces the need to move animals</li> </ul>	<ul style="list-style-type: none"> <li>- May be a two-step process based on size</li> <li>- Misplaced captive bolt gun may compromise animal welfare</li> <li>- Captive bolt gun must be maintained, cleaned</li> <li>- Several must be used to reduce overheating</li> </ul>	<ul style="list-style-type: none"> <li>- Different sizes of captive bolt guns for different sizes of swine.</li> </ul>

<b>Electrocution</b>	High - requires considerable operator knowledge	<ul style="list-style-type: none"> <li>- No tissue or blood exposure</li> <li>- physically demanding for operator</li> <li>- Requires monitoring to ensure</li> </ul>	<ul style="list-style-type: none"> <li>- Restrain is necessary</li> <li>- Two-step process for large animals</li> </ul>	<ul style="list-style-type: none"> <li>- Electrical supply</li> <li>- Electrodes</li> </ul>
<b>Barbiturates</b>	Low	<ul style="list-style-type: none"> <li>- Humane &amp; rapid killing of animals</li> </ul>	<ul style="list-style-type: none"> <li>- Animals must be restrained</li> <li>- Administered by a trained professional</li> <li>- Limited access to drugs</li> </ul>	<ul style="list-style-type: none"> <li>- Syringes &amp; needles</li> <li>- Drug to be injected</li> </ul>
<b>Sources: American Veterinary Medical Association. <i>AVMA Guidelines on Euthanasia, 2007</i>;</b> <b>National Pork Board, <i>On-Farm Euthanasia of Swine, Recommendations for the Producers, 2008</i>;</b> <b>American Association of Swine Veterinarians &amp; National Pork Board, <i>On-Farm Euthanasia of Swine: Options for the Producers, no date</i>;</b> <b>United States Animal Health Association, <i>Foreign Animal Diseases, 2008</i>.</b>				

### 8.2.1 Carbon Dioxide Gas

Carbon Dioxide (CO<sub>2</sub>) gas is an acceptable agent for euthanasia for pigs. CO<sub>2</sub> replaces oxygen in the body and causes rapid onset of anesthesia with subsequent death due to respiratory arrest.

### 8.2.2 Gunshot

Gunshot to the brain is an AVMA approved method to euthanize swine. The caliber, projectile, and propellant load should be appropriate for the species. Full metal jacket ammunition should never be used. Muzzle energy charts should be used to determine the appropriate caliber and type of ammunition for the type of animal. Appropriate muzzle energy is three hundred foot-pounds of force for animals up to 400 pounds and 1000 foot-pounds of force for animals over 400 pounds.

### 8.2.3 Penetrating Captive Bolt

The AVMA has approved the penetrating captive bolt as a possible form of euthanasia for swine. This is a gun like device that is placed against the skull of the animal and when fired a rod (bolt) in the gun is forced into the skull and into the brain tissue. The rod is attached to the gun and taken out when the skull is penetrated. This is often fatal, but it is strongly recommended that an adjunct measure such as exsanguination or “pithing” be administered to ensure death. This method is practical for numerous animals, and is especially useful for animals over 200 pounds.

### 8.2.4 Blunt Trauma

Blunt Trauma is a quick, firm blow to the top of the head over the brain. Blunt Trauma is only effective for suckling piglets because their skull bones are thin enough for the force to cause depression of the central nervous system and cessation of brain function.

### 8.2.5 Electrocution

This is a two-step process that passes electricity through the brain and stuns the animal. The second step passes electricity through the body and stops the heart. This method is very dangerous to personnel, requires special equipment, and an electrically safe environment in which to conduct such activity.

### 8.2.6 Barbiturates

Barbiturates and pentobarbital combinations are used to depress the central nervous system, causing deep anesthesia that progresses to respiratory and cardiac arrest. This method is considered to be very humane but it does require intravenous injection into the animal and would render carcasses unacceptable for rendering.

### **8.3 Disposal**

**All-Hazards Event:** Large quantities of animal carcasses that result from an all-hazards event (blizzard, flood, tornado, etc.), any disease-related mass deaths of livestock, or an event in which the State Veterinarian determines that depopulation of animals is required, must be managed in a manner that prevents the spread of infection and contamination of soil and ground water. During these events, the CDA is the lead agency and will direct all activities related to management and disposal of carcass wastes. The CDA and CDPHE have a MOU that provides guidance related to the roles and responsibilities associated with a mass mortality or depopulation event. The MOU, *Regarding Storage, Treatment or Disposal of Livestock Carcasses During any All-Hazards Event*, is available on the CDPHE website: <https://www.colorado.gov/cdphe/swguidance>. Agricultural waste such as livestock that died in a natural disaster or disease outbreak are covered within the CDA/CDPHE MOU on disposal of livestock mass mortalities due to an all-hazards event. Such waste is exempted from the CDPHE composting regulations.

**Other Events:** Carcasses that are disposed of due to mortality or disease unrelated to an all-hazards event or that cannot be used for their original intended purpose are considered to be a solid waste and must be managed in compliance with the Colorado Solid Waste Act (30-20-100.5 et.seq., C.R.S.) and its implementing regulations (6 CCR 1007-2, Part 1). Be aware that under these regulations, special requirements apply to animals known or suspected of being contaminated with infectious substances contagious to humans.

**Local Ordinances:** The local or county governments may also have regulations and ordinances regarding the proper management of carcasses. Therefore, contact the local public health department concerning local ordinances for disposal. Inappropriate management of these wastes may spread infection or cause contamination of soil or ground water.

The goal of disposal is to facilitate the decomposition of carcasses and to destroy any pathogenic disease agent present. Proper disposal is an essential component of the eradication of a disease outbreak. Methods utilized should limit the potential for the spread of the disease or exposure of susceptible species to disease and limit any potential adverse environmental impact. Commonly used disposal methods include: burial, composting, incineration, alkaline digestion and rendering (see Table 7).

When applicable, pig carcasses will be disposed of on the infected premises to limit the potential spread of disease. However, factors such as the number, size, and species of livestock, the location of the infected premises, the soil types and groundwater locations, and the particular disease agent will determine the most appropriate method of carcass disposal. The State Veterinarian will collaborate with the USDA-APHIS-VS and the CDPHE Solid and Hazardous Waste Program personnel to determine the location and type of disposal method. Possible methods of carcass disposal are outlined below.



**Table 7. Swine Disposal Methods: Considerations**

<b>Disposal Method</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Required Resources</b>
<b>Mass Burial On-Site</b>	<ul style="list-style-type: none"> <li>- Removal of large amounts of biomass</li> <li>- Facilities can be decontaminated immediately upon removal of livestock</li> <li>- Risk of disease spreading is reduced upon burial of livestock.</li> </ul>	<ul style="list-style-type: none"> <li>- May serve as a containment site rather than decomposing livestock</li> <li>- Requires multi-agency approval</li> <li>- Significant site planning</li> <li>- Public opposition</li> <li>- Potential environmental contamination</li> <li>- Safe management of fluids from decay process</li> </ul>	<ul style="list-style-type: none"> <li>- Excavation equipment</li> <li>- Cover material</li> <li>- Appropriate landscape</li> </ul>
<b>Landfill</b>	<ul style="list-style-type: none"> <li>- Cost/ton is manageable in many instances</li> <li>- Infrastructure is in place to accept large quantities of materials quickly.</li> <li>- Back-up safety and compliance teams exist</li> <li>- Subtitle D liner systems for containment are in place</li> </ul>	<ul style="list-style-type: none"> <li>- Requires transporting carcasses off-site</li> <li>- Permitting process may lead to delay in burial</li> <li>- Operator may refuse to accept materials</li> <li>- Safe management of fluids from decay process</li> <li>- Standard practices are different for each site</li> </ul>	<ul style="list-style-type: none"> <li>- Approved landfill site</li> </ul>
<b>Composting</b>	<ul style="list-style-type: none"> <li>- Removal of large amounts of biomass</li> <li>- Produces a humus-like product containing nutrients and organic matter that can be recycled onto cropland</li> <li>- Cost effective</li> </ul>	<ul style="list-style-type: none"> <li>- Slow carcass decay</li> <li>- Poor odor retention</li> <li>- Leachate production</li> </ul>	<ul style="list-style-type: none"> <li>- Carbon source <i>i.e. sawdust, straw, corn stover</i></li> <li>- Appropriate composting site</li> <li>- Tractor or skid loader</li> <li>- Long stem dial-type composting thermometer</li> </ul>
<b>Incineration</b>			
<i>Fixed Facility</i>	<ul style="list-style-type: none"> <li>- Biosecure</li> </ul>	<ul style="list-style-type: none"> <li>- Fixed capacity</li> <li>- Public Opposition</li> <li>- Expensive to operate</li> <li>- Incinerators are incapable of handling large volumes of carcasses</li> </ul>	<ul style="list-style-type: none"> <li>- Fuel</li> <li>- Incineration facility</li> </ul>
<i>Air-Curtain</i>	<ul style="list-style-type: none"> <li>- Mobile</li> </ul>	<ul style="list-style-type: none"> <li>- Fuel intensive</li> <li>- Logistically challenging</li> </ul>	<ul style="list-style-type: none"> <li>- Fuel</li> <li>- Air-curtain incineration facility</li> </ul>
<b>Alkaline Hydrolysis</b>	<ul style="list-style-type: none"> <li>- Combine sterilization and digestion into one process</li> <li>- Reduction of waste volume and weight by as much 97%.</li> <li>- Complete destruction of pathogens including prions.</li> </ul>	<ul style="list-style-type: none"> <li>- Currently limited capacity for destruction of large volumes of carcasses in US</li> <li>- Potential issues regarding disposal of effluent</li> </ul>	<ul style="list-style-type: none"> <li>- Jacketed stainless steel pressure vessel.</li> <li>- Sodium hydroxide or potassium hydroxide</li> <li>- Water, energy for steam generation</li> </ul>
<b>Rendering</b>	<ul style="list-style-type: none"> <li>- Good biosecurity at rendering plants</li> <li>- High rendering temperatures destroy disease pathogens</li> <li>- Environmentally sound</li> </ul>	<ul style="list-style-type: none"> <li>- Requires transporting carcasses off-site</li> <li>- Cost of transportation to rendering plant</li> <li>- Capacity constraints in handling surges</li> <li>- Some geographic areas not served</li> <li>- Biosecurity as trucks move farm-to-farm</li> </ul>	<ul style="list-style-type: none"> <li>- Rendering Plant</li> </ul>

Sources: National Agricultural Biosecurity Center, Kansas State University, *Carcass Disposal: A Comprehensive Review (2004)*; Council for Agricultural Science and Technology, *Pig Carcass Disposal Options for Routine and Catastrophic Mortality (2008)*.

### 8.3.1 Rendering

Rendering is a process of both physical and chemical transformation resulting in three end products, carcass meal, melted fat, and water. The main carcass rendering processes include size reduction followed by cooking and separation of fat, water, and protein materials. The resulting carcass meal can often be used as an animal feed ingredient. It is unlikely that rendering will be used as a method of disposal during a highly contagious disease outbreak in swine.

Carcasses may be sent to a licensed rendering plant with the rendering plant operator's prior approval. Contact the plant to make arrangements before sending carcasses. These facilities may have a specific preparation and packaging requirements for the carcasses that must be met before they will accept carcasses for disposal.

### 8.3.2 Composting

Composting involves a multi-phased decomposition of animal carcasses over a period of time. The process involves the breakdown of organic materials by microorganisms such as bacteria and fungi, which results in the release of heat, water, CO<sub>2</sub> and other gases. The heat is a primary process for virus inactivation. The process can be complex and requires an appropriate site, proper management, and a carbon source (such as wood chips, straw, cornstalks or similar products). Often it is vital to have composting subject matter experts (SMEs) on site when constructing windrows. Guidelines and protocols for disposal and virus inactivation can be found in the [FAD PReP SOP: Disposal](#). Windrow composting is often used to for disposal of large animals. There are specific livestock composting contractors within Colorado that may be used as subject matter experts or contracted to do the composting work.

**Off-site:** Carcasses may be sent to an off-site composting facility that is permitted to accept such wastes. Contact the composting facility directly and determine their waste acceptance policies prior to shipping the carcasses.

**On-site:** Composting of carcasses may be allowed on-site. Depending on the specifics of the operation, it may be regulated 1) by the Colorado Department of Agriculture and exempt from Solid Waste regulations; or 2) regulated under dual authority of the CDPHE Solid Waste Program and the local governing authority in accordance with Section 14 of 6 CCR 1007-2. Under option 2, an approved composting plan must be in place before conducting such operations. Composting plan requirements are described in Colorado's solid waste regulations (6 CCR 1007-2, Part 1, Section 14.11). These plans must include, but are not limited to:

- The basis for selecting the composting site, including site conditions that make it appropriate for a composting operation.
- Structures to be used for run-on and runoff controls.
- Odor management.
- A description of the composting operation, including how the compost will be managed and tested, and what will be done with the final product.

### 8.3.3 On-site Burial

Carcasses may be buried on-site once concurrence has been obtained from CDA, CDPHE, and the appropriate local agencies. CDPHE has put forth the following best management practices:

- Layers of lime or quicklime should be applied below and above the carcasses to help accelerate decomposition of the waste. Care should be used in applying lime as it is caustic and can cause severe burns to the skin and eyes.
- Burial pits must be covered with a minimum of two feet of soil.
- Carcasses cannot be placed in any body of water, seasonal creek or pond, or in areas that may carry or hold water such as gullies, ditches, blowouts, or natural depressions.
- To minimize potential impacts to groundwater, large numbers of bigger carcasses (e.g., more than ten cows) should not be limed and buried together.
- Surface water must be diverted from the burial site through the use of berms and other structures.
- All carcasses must be buried at least 150 feet away from any water supply source.
- All carcasses must be buried downgradient from any groundwater supply sources.
- The bottom of the burial pit must be at least five feet above the high point of the uppermost groundwater table to ensure that carcasses do not come into contact with groundwater.
- Burial sites must be located at least one mile away from any residence of any person.
- Burial sites should not be located in areas with fractured or cavernous rock, high seasonal water tables or highly permeable soils.

#### 8.3.4 *Landfill Burial*

The use of permitted landfills for carcass and material disposal may be an option. Some landfills may need a waiver or exemption from the CDPHE to accept livestock carcasses and there may be a limit placed on the landfill concerning the number of carcasses that they may accept for burial. The necessary equipment, personnel, procedures, and containment systems are already in place. Transport of the carcasses to the landfill can pose some risk of disease spread and landfill personnel would have to adhere to additional biosecurity measures.

Carcasses may be sent to a permitted solid waste landfill for disposal with landfill operator's prior approval. Contact the landfill operator first to determine their waste acceptance policies. Many landfills have specific days or times when they will accept carcasses for disposal or may have certain packaging requirements that must be met before they will accept the waste.

#### 8.3.5 *Incineration*

There are three broad categories of incineration: open-air, fixed facility, and air-curtain.

- Open air includes burning carcasses in an open field.
- Examples of fixed facilities are crematoria, small carcass incinerators at veterinary colleges, large waste incineration plants, on-site incinerators, and power plants.
- Air-curtain incineration involves a machine that fan-forces a mass of air through a manifold that accelerates the incineration process generally conducted in an earthen trench. Air-curtain incineration has been used in Colorado to dispose of animals infected with scrapie,

a prion causing chronic wasting disease.

**Off-site:** Carcasses may be sent to an off-site incinerator (for example, a pet crematory) that is permitted and approved by local authorities and/or CDPHE's Air Pollution Control Division to accept such wastes. Contact the facility to see if they have any preparation or quantity limitations prior to transporting the carcasses.

**On-site:** In certain cases, carcasses may be incinerated in an onsite pit. Open burning permits, obtained through CDPHE's Air Pollution Control Division, are required for this process. Pit incineration is generally used when there are several animal mortalities that resulted from disease and there is a risk for disease transmission if the carcasses are transported for disposal offsite. Additional controls, such as plans for disposition of the ash and other remains, must be specified prior to using this process.

### 8.3.6 *Alkaline Hydrolysis*

Alkaline hydrolysis is a process that uses a caustic agent, such as sodium hydroxide and heat to hydrolyze carcasses into a sterile solution and calcium products. The process requires expensive equipment and provides only low volume capacity; therefore, this method has limited application in a disease outbreak situation.

## 8.4 **Alternatives to Depopulation: Vaccination**

In most disease outbreaks, depopulation will be the primary method utilized to stop transmission and spread of the disease agent within affected animals on diseased premises. However, under certain circumstances, additional methods may need to be implemented. The use of emergency vaccination strategies may be considered in an FMD outbreak. The decision will be made by federal and state animal health officials based on the characteristics of the outbreak and other unique factors related to a particular outbreak. An emergency vaccination strategy can help to achieve the goals of an FMD response effort. In order to be effective, vaccines used in an emergency vaccination for FMD must be matched to the specific serotype, and ideally matched with the field strain causing the outbreak

Vaccination is a tool that can be utilized in conjunction with stamping out to alleviate a disease outbreak. Policy frameworks for the use of vaccines during an outbreak include:

- Stamping out with emergency vaccination to kill
- Stamping out with emergency vaccination to slaughter
- Stamping out with emergency vaccination to live
- Emergency vaccination to live without stamping out

The use of emergency vaccination will be determined by the Unified Command, State Veterinarian in collaboration with the USDA-APHIS-VS Deputy Administrator.

Use of vaccines can alter a country's willingness to receive import of livestock and livestock products from the United States and can affect disease-free status as defined by the OIE. Detailed information about vaccination strategies can be found in the [FAD PReP Foot and Mouth Disease Red Book](#).

New technology in vaccine development has resulted in some 'marker' vaccines. This type of

vaccine allows, via serological testing, animal health officials to distinguish vaccinated animals from naturally infected animals. Such a distinction is critical when providing proof of disease free status to world animal health organizations and individual countries.

#### 8.4.1 Vaccination Strategies

Vaccines can be utilized for different purposes during an animal health emergency. Strategies for vaccine use are described below.

**A suppressive vaccination** strategy is used as a disease control measure to reduce the viral shedding of livestock that have been exposed to the disease agent. This type of strategy is more commonly used in situations of intensive farming, usually due to resource constraints, such as constraints on carcass disposal.

**A preventive vaccination strategy** is used for high- risk animals not included in the control area but in close proximity to the infected premises to be considered at risk for exposure. This strategy is an alternative to the traditional stamping-out policy. Numerous factors should be considered prior to implementing this strategy such as: acceptance of vaccine internationally and the effectiveness of the vaccine. A preventive vaccination is also an option for threatened or endangered species that may be considered at risk due to exposure the disease agent.

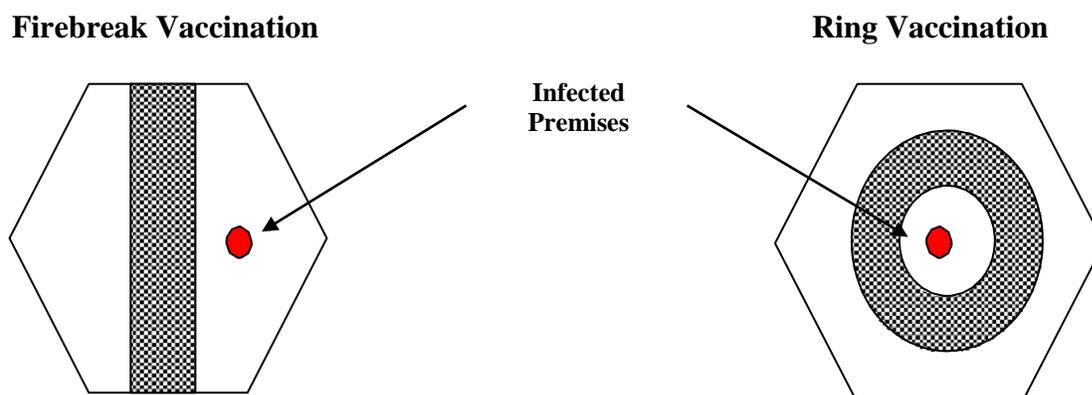
**A barrier vaccination** policy can be used to implement a preventive vaccination strategy. This policy is based on a spatial pattern developed to create a barrier between the infected premises and at risk premises. The intent of barrier vaccination is to inhibit the disease transmission rate by vaccinating all suspected livestock. Common types of vaccination barriers are illustrated below. The area of the barrier will be dependent upon the epidemiology of the pathogen, livestock density, and available resources. See *Figure 2. Barrier Vaccination Examples*.

**A targeted vaccination** policy can also be used preemptively. Targeted vaccination is commonly used to vaccinate livestock in facilities with a high animal density. Targeted vaccination may also be used to protect threatened and endangered species. See *Figure 3. Targeted and Area Vaccination Diagram*.

**Area or Blanketed Vaccination**, also known as a mass vaccination, entails vaccinating all livestock within a delineated geographical area. The defined area may be an isolated area, a large region or a state. Often area vaccinations are used when traditional stamping out methods are not meeting disease control objectives. See *Figure 3. Targeted and Area Vaccination Diagram*.

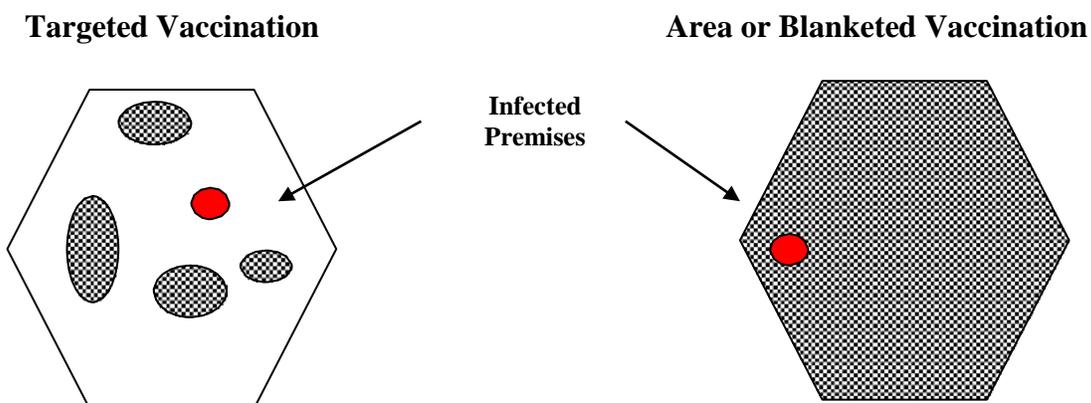
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**Figure 2. Barrier Vaccination Examples**



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**Figure 3. Targeted and Area Vaccination Diagram**



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Vaccination information is based on: Williams, Rob. *Veterinaria Italiana*, 43 (2), 225-235. *The Use of Vaccination in Emergency Animal Disease Responses*.

### 8.5 Cleaning and Disinfection of an Infected Premises

After disposal of infected carcasses is complete and before the facility can be restocked, the infectious organism must be eliminated from the premises. Cleaning and disinfection procedures (also known as virus elimination) require careful planning and coordination to ensure optimum reduction or elimination of the targeted pathogen on the infected premises, to prevent further movement of pathogens between premises, and to ensure the safety of the response personnel, animals, and environment. Selected cleaning and disinfection methods should account for the physical characteristics of the premises and other factors, such as environmental conditions, which may influence the effectiveness of virus elimination.

Pathogens vary in their ability to survive or persist in the environment as well as their susceptibility to disinfection. It is important to be aware of the suspect or confirmed pathogen involved in order to select the most efficacious disinfection method. This will include understanding the general properties of the disease agent, its ability to persist in the environment, its transmission, and its susceptibility to disinfection. For chemical disinfection, see the [EPA chart of diseases and approved disinfectants](#).

Pest control must be completed before cleaning and disinfection can commence. Care must be taken to reduce the generation and dispersal of infective dust and aerosols. If items cannot be adequately cleaned and disinfected, they must be disposed of by other appropriate means determined by the Incident Command.

If available personnel or materials are insufficient, Incident Command can request emergency 3D (depopulation, disposal, and decontamination) contractor support from the National Veterinary Stockpile (see section 8.7).

**Table 8. Cleaning and Disinfection Definitions**

<b>Cleaning</b>	The removal of gross contamination, organic material, and debris from the premises or respective structures, via mechanical means like sweeping (dry cleaning) and/or the use of water and soap or detergent (wet cleaning). The goal is to minimize organic material so disinfection can be effective.
<b>Disinfection</b>	Methods used on surfaces to destroy or eliminate a specific species of infectious microorganism through physical (e.g., heat) or chemical (e.g., disinfectant) means. A combination of methods may be required.
<b>Virus Elimination</b>	Cleaning and disinfection measures conducted with the primary purpose to destroy or eliminate all virus on the premises as cost effectively as possible.

Source: NAHEMS Cleaning and Disinfection Guidelines

Key cleaning and disinfection coordination activities:

- Collaborate with unified Incident Command personnel to develop an effective cleaning and disinfection strategy, including issues such as environmental conditions
- Determine supply requirements and delivery locations, date, and time in collaboration with the Logistics Section
- Arrange facility access and determine personnel requirements with Operations Section
- Prepare for and organize personnel supplies, equipment, and daily accommodations (e.g., food, water, and lodging) with the Logistics Section
- Establish cleaning and disinfection stations that adhere to biosecurity measures, such as vehicle entry and movement control checkpoints with the Animal Biosecurity Group
- Ensure that cleaning and disinfection and disposal processes are properly conducted with the Disposal Group
- Coordinate with the property owner to ensure a smooth process

Cleaning and disinfection activities are coordinated and overseen by the unified Incident Management Team from the Incident Command Post. After a Cleaning and Disinfection Group is established, depending on the incident, the Cleaning and Disinfection Group Supervisor may deploy one or more cleaning and disinfection teams to complete the response activities. These teams may be either Task Force teams or Strike teams depending on the incident requirements.

See the following guidance documents for cleaning and disinfection of premises:

- [FAD PReP SOP: Cleaning and Disinfection](#)
- [NAHEMS Guidelines: Cleaning and Disinfection](#)

The following sections outline different methods used for cleaning and disinfection. Traditionally, facilities have been dry cleaned, followed by power washing and application of a chemical disinfectant. More recently, dry cleaning followed by heat disinfection have been used successfully. There are pros and cons to each method and depend on the type of facility being treated.

### 8.5.1 *Dry Cleaning*

Whether the second step is wet cleaning or heat application, both require a thorough dry cleaning of the facility first. Dry cleaning involves the removal of any gross contamination and organic material (e.g., soil, manure, bedding, feed) from production areas or equipment.

Shovels, manure forks, brooms, and brushes should be used to sweep, scrape, and remove organic material and debris from surfaces. In situations involving highly contagious FADs, moistening the area or item with water may be helpful for controlling dust and minimizing aerosolization of pathogens. Bins may aid in transport of the material to the disposal area. Heavy equipment such as bobcats or tractors may be needed to remove large quantities of manure and bedding. Air blowers should not be used for dry cleaning due to the risk of spreading pathogens.

Disposal of all materials should be in a manner that minimizes further spread of pathogens and that is compliant with federal, state, and local regulations and policies. This may involve the burning, burial, or composting of material. Items that are difficult to clean or are of limited financial value (e.g., wooden gates or bunks, ropes, halters, pallets) should be appraised and disposed.

This process may require considerable time and effort, depending on the size and type of facility, but it is essential as this material can harbor pathogens and reduce the efficacy or inactivate some disinfectants. Surfaces may not necessarily be visibly clean when this step is complete due to organic matter that adheres to the surface.

### 8.5.2 *Wet Cleaning and Chemical Disinfection*

Chemical disinfection has long shown to be an effective method of decontamination. Chemical disinfectants cannot penetrate debris or organic material, so a facility must be thoroughly cleaned and all organic debris prior to application. Environmental conditions such as organic load, surface topography, temperature, pH, water hardness, relative humidity, and the presence of other chemicals can impact the efficacy of disinfection procedures.

There are downsides to chemical disinfection, mostly related to the cleaning processes. Preparation of facilities for chemical disinfection can be very challenging and time consuming. Removal of organic debris must be done by hand, and some areas can be difficult to access. Wet cleaning can damage electrical systems. There are as challenges with preparation for chemical disinfection as the wet cleaning/power washing step can damage clay floors and leave standing water inside.

#### **Wet Cleaning:**

Following the removal of gross contamination (dry cleaning), areas or items should be washed with detergent. The washing helps to further reduce the number of pathogens as well as removing any oil, grease, or exudates that may inhibit the action of disinfection. Washing prior to disinfection is one of the most commonly overlooked steps in the cleaning and disinfection process.

Prior to washing, all electrical equipment should be turned off and removed, or covered tightly with plastic sheeting. An electrician may need to be contacted for the removal of thermostats, timing devices, motor controls, and remote sensing equipment prior to washing. An alternative power supply (e.g., adjacent building, portable generator) may be needed to power electrical washing equipment.

Areas and items with organic material adhered to the surfaces should be pre-soaked for several hours. Soaps or detergents can help disperse and remove organic material; however, the cleaning product used must be compatible with the disinfectant selected. Some disinfectant products may be formulated with a detergent component. Washing with a cleaner or detergent is required for disinfectants that do not contain these components.

Mechanical scrubbing and scraping (e.g., brushes) may be necessary to remove oils, grease, or exudates. Rough surfaces should be scrubbed with a wire brush to ensure that they are as clean as possible. Deep cracks, crevices, or other surface irregularities should be given special attention to dislodge accumulated grime.

High pressure water and detergent is very effective in removing the heavy accumulation of urine and feces often present in the environment and for cleaning porous surfaces. However, in cases of highly infectious or zoonotic pathogens, high pressure systems should be avoided or used with caution to avoid further dispersal of the pathogen or risk to the applicator.

### **Rinse and Dry:**

After washing, all surfaces should be thoroughly rinsed, as residues from cleaners and detergent can inactivate certain chemical disinfectants. Rinsing should be done with cold water at a low pressure. Whenever possible, surfaces should be allowed to dry completely (if possible overnight) before application of a disinfectant. Excess moisture may dilute and reduce the efficacy of the disinfectant applied to the surface. In cool or cold weather, drying can be accomplished by heating the building and circulating the air with auxiliary blowers.

### **Disinfection:**

Once surfaces are completely cleaned, rinsed, and dried, application of an appropriate disinfectant can proceed. Application methods may involve spraying, fogging or misting, immersing or wiping or mopping methods. Because products differ in formulation, the directions for use also differ. The specific manufacturer's instructions for effective use of a disinfectant should be followed. Appropriate safety measures should be taken when implementing the disinfection process.

The USDA does not recommend any specific disinfectant, but does require that the one selected be EPA approved: [EPA chart of diseases and approved disinfectants](#).

Regardless of the disinfectant chosen, one of the most important components of the procedure is to allow adequate contact time for the process to have its impact. In some cases, the chemical disinfectant may need to be reapplied to keep the surface wet for the required contact time.

Following the application and subsequent contact time of chemical disinfectants, items and areas should be thoroughly rinsed. Most chemical disinfectants can be harmful to animals and should

be rinsed with potable water and surfaces should be allowed to air dry prior to restocking of the area.

### 8.5.3 Heat Disinfection

An alternative to chemical disinfection is heat. Heat disinfection was recently demonstrated as a cost-effective option as an accepted method of disinfection/virus elimination (in recent HPAI outbreaks in the United States). Heat treatment may not be appropriate in all situations (e.g., older, drafty barns or in the middle of winter in cold areas of the state). The challenge with heat disinfection is primarily maintenance of appropriate temperatures within the facility during treatment.

Preparation for heat disinfection is limited to the dry cleaning step. Heat penetrates surfaces and residual organic debris, and eliminates the need for wet cleaning/power washing. Wet cleaning is not recommended in preparation for heat disinfection due to likelihood of standing water and water pooling.

Current policy guidance (only developed for HPAI) states that barns/houses must be heated to between 100°F and 120°F for a total of 7 days; with at least 3 consecutive days (of the 7 days) of heating continuously to within this temperature range. To avoid damage to structures and fixtures, temperatures should not exceed 120°F.

#### **Transport Vehicle Heat Disinfection:**

Heat disinfection (also known as thermos-assisted drying and decontamination) has successfully been used in swine operations to decontaminate transport vehicles. For example, [PEDV](#) has been inactivated by heating trailers to 160°F for 10 minutes and [PRRSv](#) has been inactivated by heating trailers to 160°F for 20+ minutes.

This should be considered as an option for transport vehicles in an emergency disease outbreak if appropriate facilities are available.

#### **General information on heat treatment:**

Heat can be applied under moist (e.g., autoclave, steam) or dry (e.g., flame, baking) conditions. Moist heat can be effectively applied through steam, boiling, or pasteurization. Steam under pressure (e.g., autoclaving) is the most efficient since it can achieve temperatures above the boiling point of water, which may be necessary when dealing with thermally resistant bacterial spores. Dry heat applications involve incineration (i.e., flaming) or hot air (i.e., baking). It can be useful for disinfection of heat-resistant materials, such as glass or metals.

Most vegetative bacteria inactivated at moist-heat temperatures of 131-149°F. Rapid destruction can occur at higher temperatures (e.g., less than 20 seconds at 161°F or within seconds at temperatures above 176°F). Many viruses are labile at temperatures close to 158°F. Bacterial endospores require temperatures of 250°F or more for at least 15 minutes for destruction. Prions, such as those that cause BSE, exhibit exceptional thermal stability.

## **8.6 Evaluation of Cleaning and Disinfection of an Infected Premises**

Evaluation of a site following cleaning and disinfection should ensure all tasks detailed on the premises assessment have been performed. Factors to be addressed should include the following:

- All grossly contaminated areas have been identified and properly cleaned and disinfected
- All personnel are aware of and are implementing cleaning and disinfection measures for themselves and their equipment (e.g., PPE, tools, instruments).
- Gross debris (e.g., manure, unused feed, or bedding) has been removed and properly disposed of.
- Any contaminated wood or items difficult to disinfect have been appraised, removed, and disposed of in a manner that minimized the spread of pathogens (e.g., burned, composted, buried).
- All fixtures and fittings have been dismantled, cleaned, and disinfected.
- All infected or suspected areas have been properly washed, rinsed, and disinfected. Visual inspection should be conducted to ensure surfaces are clean and no organic material has been left behind.
- An EPA-registered or exempted disinfectant that is efficacious against the target microorganism was used at the appropriate concentration.
- The necessary contact time for the disinfectant was allowed.
- Effluent from the C&D procedures has been handled in a manner to minimize or avoid environmental impact.

Final inspection of the premises should be conducted by experienced personnel. If there is any doubt or sign of inadequate procedures, the disinfection measures must be repeated. Once final inspection of the premises has occurred, any and all personnel should proceed through the cleaning and disinfection site before leaving the premises.

## **8.7 National Veterinary Stockpile**

The National Veterinary Stockpile (NVS) is the Nation's repository of vaccines and other critical veterinary supplies and equipment. The NVS is designed to augment state and local resources in the fight against dangerous animal diseases that could potentially devastate American agriculture, seriously affect the economy, and threaten the public's health. Homeland Security Presidential Directive 9 (HSPD-9) established the NVS in 2004. The Directive requires APHIS to be able to deploy the NVS to the site of a dangerous animal disease outbreak within 24 hours. To accomplish this critical mandate, the NVS defined agents of greatest interest to animal health and has prioritized its resources accordingly. The NVS currently holds or has systems in place to provide:

- Personal protective equipment (PPE) for 310 responders for 10 days in a high-risk environment.
- Further PPE to protect 3,000 responders for 40 days
- Anti-viral medications for 3,000 responders for 6 weeks
- Satellite data and voice transmission equipment that is portable and capable of

establishing temporary command posts

- Decontamination supplies
- Vaccines and other supplies

More information on the National Veterinary Stockpile can be found in the [Colorado National Veterinary Stockpile and Agricultural Logistics Plan \(2012\)](#).

## **9.0 Business Continuity: Protect Economic Viability and Continuity of Operations**

Maintaining business continuity and the movement of livestock and animal food products that are unaffected by a disease outbreak is a critical component of the CDA *Swine Emergency Disease Response Plan*. The movement of livestock and pork products will be at the discretion of the State Veterinarian in collaboration with the USDA-APHIS-VS officials and will be based on the epidemiology of the disease agent.

Guidance on managed movement of pigs and semen during a disease outbreak is found in the Secure Pork Supply Plan and covers biosecurity and testing requirements prior to movement. The goal of the Secure Pork Supply Plan is to develop procedures that pork producers, processors, and Federal and State agencies all agree are feasible to allow for the safe movement of animals from farms in an FAD Control Area to harvest channels or other production sites as long as they have no evidence of disease.

The following are additional resources that provide guidance on movement control and permitting:

- [Secure Pork Supply](#)
- [Foot-and-Mouth Disease Response Plan: The Red Book](#)
- [Classical Swine Fever Disease Response Plan: The Red Book](#)
- [FAD PReP Swine Industry Manual](#)
- [FAD PReP Manual 6-0: Permitted Movement](#)
- [NAHEMS Guidelines: Quarantine and Movement Control](#)

### **9.1 Background: Swine Production Movement**

There are approximately 65 million head of hogs on 68,000 operations in the United States. The size of the hog operations and management practices vary widely. Extensive movement of pigs, estimated at 1,000,000 animals per day, occurs between different stages of production, and to slaughter. 39.8 million swine are shipped into a new state each year (often across multiple state lines). This includes approximately 6 million swine from Canada. Slaughter facilities process approximately 400,000 to 500,000 hogs, sows, and boards each weekday, which equates to an average of 32.7 billion pounds of pork products produced each year.

### **9.2 Controlled Animal Movement**

Initially, during a disease outbreak, the State Veterinarian may issue livestock movement controls for all livestock or those species involved in transmission of the disease, as well as finding an

acceptable destination for any truckloads of livestock in transit. Once the outbreak has been characterized, a system will be set up to restart the movement of swine, feed, and other livestock under permit from the State Veterinarians Office and appropriate biosecurity.

State Animal Health Officials have the authority to approve movement of swine entering their state and within their state, and the disposition of animals in transit. Agreement on an approach to controlled swine movement ahead of the outbreak will decrease confusion and inconsistent approaches to standstill implementation in the first hours and days of an outbreak.

By restricting the movement of infected animals, animal products, and contaminated fomites, quarantine and movement control can be a powerful tool in controlling and containing a FAD outbreak. Movement control is accomplished through a permit system that allows entities to make necessary movements without creating an unacceptable risk of disease spread. Operational staff members need to strictly adhere to movement control procedures, which are based on the best scientific information available at the time. See the Secure Pork Supply Plan: [Factors to Consider in Implementing Controlled Movement of Swine in the U.S. to Reduce the Transmission and Impact of a FMD Outbreak](#).

During a disease outbreak, producers should be prepared to manage their pig premises without being allowed to move animals for several days to weeks if they are located in a regulatory Control Area. This will give time to conduct surveillance to demonstrate a lack of evidence of disease and more confidence that a movement does not present a significant risk for disease spread.

Once the extent of the outbreak can be reasonably estimated, appropriate movement permitting systems will be established. In order for a permit to be issued, minimal criteria must be met. These are subject to change, depending on the disease, extent of the outbreak, and the best science- and risk-based information available. See Tables 11, 12, and 13 in Section 9.5.

#### *9.1.1 Movement to Slaughter within a Control Area*

Permits to move to slaughter (for human food use) or processing can be issued if (a) the pigs meet the requirements of USDA's Food Safety and Inspection Service for food use; and (b) the pigs are eligible for a permit for movement from premises to premises or for movement directly to slaughter.

#### *9.1.2 Movement Out of an Infected Zone*

No susceptible livestock species or products posing a risk of disease transmission may leave the infected zone unless they are going directly to slaughter at an approved slaughter facility established in the buffer surveillance zone or meet the criteria described on a permit. No materials posing risk of disease transmission may leave the infected zone except by permit.

#### *9.1.3 Movement within an Infected Zone*

During the initial phase of an incident, susceptible animal species or products should not be allowed to move within an infected zone except at the discretion of the State Veterinarian.

#### *9.1.4 Movement within the Buffer Surveillance Zone*

Susceptible animal species or products posing a risk, may be moved within the buffer surveillance

zone under permit if they are known not to be infected with or exposed to the disease agent and animals show no signs of other communicable diseases.

#### *9.1.5 Movement Out of the Buffer Surveillance Zone*

Susceptible animal species or products may be allowed to leave the control area if a risk assessment deems such movement to be appropriate. Movement will require a permit as prescribed by the State Veterinarian. Decontamination of such animals may be required.

#### *9.1.6 Movement of Non-Susceptible Livestock*

Movement of non-susceptible livestock out of the control area requires a permit as prescribed by the State Veterinarian. Decontamination of such animals may be required.

### **9.3 Bio-secure Transportation Corridors**

As mentioned, allowing unaffected animals and animal food products to move during an animal disease outbreak is essential to maintaining industry business continuity. Thus, movement of pigs and other livestock that are deemed disease-free will take place along bio-secure corridors.

Bio-secure corridors are transportation routes located outside of the quarantine area that will allow livestock and animal food products to travel safely without risk of exposure to an animal disease. Identifying bio-secure corridors will be the responsibility of the CDA with assistance from the Colorado State Patrol, CDOT, and local law enforcement agencies. Livestock associations and the trucking industry will be essential in the effective implementation of livestock movement corridors.

### **9.4 Secure Pork Supply: Permitted Movements**

The Secure Pork Supply (SPS) Plan covers Continuity of Business Permits (secure food supply permits) for At-Risk and Monitored Premises only.

#### *9.4.1 SPS Biosecurity*

Stringent biosecurity measures will be essential to prevent entry of virus into each herd. Producers must review and implement the items in the “Self-Assessment Checklist for Enhanced Pork Production Biosecurity for Animals Raised Indoors,” including developing a site-specific biosecurity plan. The Biosecurity checklists, Biosecurity Information Manuals, and materials for training employees are available on the SPS website: [www.securepork.org](http://www.securepork.org). The SPS emphasizes four concepts that all pork production sites must implement to help protect their animals from endemic diseases and to be prepared in the event of an FAD outbreak in the U.S.:

- A Biosecurity Manager
- A written site-specific biosecurity plan
- A defined Perimeter Buffer Area
- A defined Line of Separation

#### *9.4.2 SPS Surveillance*

During an FAD outbreak, it is not possible to prove that an animal or herd is free of infection. It is only possible to establish that there is lack of evidence of infection. An animal can be infected with FAD before it shows clinical signs or is positive by laboratory testing. The surveillance

component of the SPS Plan recommends allowing animal movement during an outbreak through laboratory testing as well as animal observation.

**Observational Surveillance:** Clinical signs of an FAD in the herd will rapidly become apparent to anyone inspecting the herd, or receiving animals from the herd. Swine farm personnel should be trained to look for signs of FADs. Training materials are available on the Secure Pork Supply website. [Active Observational Surveillance](#) (AOS) should be initiated on all premises in the Control Area at the beginning of an outbreak and conducted daily. Incident Command may also inspect swine herds and/or request to review the daily log of AOS kept by the Herd Health Monitor who has been trained to look for clinical signs and correctly record their observations.

**Diagnostic Surveillance:** Designated individuals should be trained to collect oral fluid and nasal swab samples. A herd veterinarian should lead this training. Training materials are available on the Secure Pork Supply website. The premises manager/owner should know how to submit samples to the CSU Veterinary Diagnostic Laboratory which is an approved diagnostic laboratory within the National Animal Health Laboratory Network. Having these individuals trained and ready to collect and submit samples will enable the premises to start surveillance sampling as soon as they find themselves in a Control Area or are required to submit samples to obtain movement permits.

#### 9.4.3 *Establishment of Permitting Teams*

Once the extent of the outbreak can be reasonably estimated, appropriate movement permitting systems will be established. A permitting team will be established under the Operations Section of the Incident Command Structure (ICS). The Permitting Team will be responsible for collecting relevant and required information for each permitted movement request using available resources and the USAHERDS animal health information management database.

A USDA-APHIS National Permitting Unit may also be established. This unit’s purpose is to coordinate and facilitate intrastate and interstate movements and to maintain a national database for all permits issued during an outbreak. This unit would integrate with CDA’s permitting team within the ICS structure of the State. Authority to approve permitted movement into and out of control areas in Colorado remains with the State Veterinarian.

#### 9.4.4 *To Request a Permit for Movement during an Outbreak*

The CDA will set up an online information sharing center and provide public information news releases for producers, stakeholders, and the public at the start of and during an FAD outbreak which will allow the CDA to better control the disease. There will be multiple ways for swine producers to request a movement permit: via telephone, through an internet link to access an online form, or by contacting the animal health field personnel providing service to that premises. Producers will be required to provide the following information when requesting a permit:

**Table 9. Information Required for Permitted Movement**

<b>Information to be provided</b>	<b>Description</b>
Permit class	Where products are moving in relation to the Control Area
Permit reason	Why products are moving

Origin premises	Premises, including LID and/or PIN, entered in USAHERDS
Destination premises	Premises, including LID and/or PIN, entered in USAHERDS
Item permitted	Category of product being moved (feed, pigs, manure, etc.)
Item class	Specifically what is moving (e.g. boars to slaughter)
Duration/span of permit	First movement date, and expected duration of movements

Adapted from Secure Pork Supply Plan

Producers should be prepared to have the following information available upon request prior to issuance of movement permit:

- A completed copy of the epidemiology questionnaire (if applicable)
- A completed copy of the Biosecurity Checklist and site-specific biosecurity plan
- Written assurance of compliance with the Biosecurity Checklist
- Information demonstrating normal health status for the animals on the production site involved (e.g., herd health monitoring documents and/or certificate of veterinary inspection signed by an Accredited Veterinarian)
- Laboratory results from samples tested, if required for movement
- For animal movements to another production site, the site of destination must include that they understand the risks associated with accepting the animals

#### 9.4.5 Colorado Permitting Process:

When a request for a permit is received by the permitting team, they will evaluate the following:

**Table 10. Summary of Movement Permit Guidance for Pigs or Semen within a Control Area during an FMD, CSF, or ASF Response**

<b>Permitting Guidance for Movement of Pigs or Semen</b>	<b>Condition Met? Yes or No</b>
1. Biosecurity Measures listed in the Biosecurity Checklist <sup>2</sup> in place	Yes
2. Traceability Information available (PIN, USAHERDS Location ID (LID), GPS Coordinates, information on type and number of animals moved)	Yes
3. Epidemiology Questionnaire <sup>3</sup> data acceptable	Yes
4. Destination premises and state willing to accept the animals or semen	Yes
5. No evidence of infection based on surveillance	Yes
6. Permit Guidance to move pigs or semen if all above responses are “Yes”	Consider issuing MOVEMENT PERMIT

Adapted from Secure Pork Supply Plan - Summary

<sup>2</sup> The Biosecurity Checklist is the ‘[Self-Assessment Checklist](#)’ from the Secure Pork Supply Plan

<sup>3</sup> See Appendix I in the [FMD Response Plan: The Red Book](#) for an example Epidemiology Questionnaire

Once a permit is issued by the CDA and documented in USAHERDS, a copy of the permit will be forwarded to the national permitting unit or incident command personnel will enter the information into EMRS (the federal emergency management response system tracking database).

If the permit is for a movement out of state, the Permitting Team will email (or fax) the permit and required/requested additional information to the state of destination for approval. If the permitting information is immediately entered into EMRS, the destination state may approve the movement from that location.

If the permit is approved, the producer will receive the approved permit (likely as an electronic PDF) from the appropriate official with the CDA or Incident Command. The permitted movement must comply with all requirements on the permit; all subsequent permitted movements associated with that permit must be submitted to and recorded in USAHERDS and/or EMRS.

## **9.5 Movement Tables**

The following tables are from the FMD Red Book and provide useful guidance on movement of products during an FMD outbreak.

- [Table 11. Movement into a Control Area from outside a Control Area](#)
- [Table 12. Movement within a Control Area](#)
- [Table 13. Movement from inside a Control Area to outside a Control Area](#)

**Table 11. Movement into a Control Area from outside a Control Area**

Item moving into a Control Area to a/an...	Infected Premises	Suspect Premises <sup>^</sup>	Contact Premises <sup>^</sup>	At-Risk Premises	Monitored Premises
Susceptible animals	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Permit for movement must be approved by the IC with appropriate biosecurity measures.	Permit for movement must be approved by the IC with appropriate biosecurity measures.
Susceptible animal products	See continuity of business plans for information on susceptible animal products, or guidance and processes as determined by the IC. Please see Section 5.10.5 which contains OIE FMD-specific guidance for inactivating FMD.				
Other animals (non-susceptible) from premises <b>with</b> susceptible species	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Allowed with appropriate biosecurity measures. IC may require a permit for movement depending upon FMD epidemiology and characteristics of destination premises.	Allowed with appropriate biosecurity measures. IC may require a permit for movement depending upon FMD epidemiology and characteristics of destination premises.
Other animals (non-susceptible) from premises <b>without</b> susceptible species	IC will determine movement restrictions based on FMD epidemiology and characteristics of destination premises.	IC will determine movement restrictions based on FMD epidemiology and characteristics of destination premises.	IC will determine movement restrictions based on FMD epidemiology and characteristics of destination premises.	Allowed with appropriate biosecurity measures. IC may require a permit for movement depending upon FMD epidemiology and characteristics of destination premises.	Allowed with appropriate biosecurity measures. IC may require a permit for movement depending upon FMD epidemiology and characteristics of destination premises.
Equipment, vehicles, and other fomites from premises <b>with</b> susceptible species	Allowed with appropriate biosecurity measures.	Allowed with appropriate biosecurity measures.	Allowed with appropriate biosecurity measures.	Allowed with appropriate biosecurity measures.	Allowed with appropriate biosecurity measures.
Semen, embryos from susceptible animals	Prohibited.	Prohibited.	Prohibited.	Allowed with appropriate biosecurity measures.	Allowed with appropriate biosecurity measures.

Note: Movement control and permit processes will change over time depending on situational awareness and operational capabilities.

<sup>^</sup> Contact Premises and Suspect Premises are intended to be short-term premises designations. Ideally these Premises should be re-designated before movements occur.

Source: Foot-and-Mouth Disease Response Plan: The Red Book

**Table 12. Movement within a Control Area**

Item moving within a Control Area to a/an...	Infected Premises	Suspect Premises <sup>^</sup>	Contact Premises <sup>^</sup>	At-Risk Premises	Monitored Premises
Susceptible animals	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Prohibited, except under certain circumstances as determined by the IC, such as slaughter.	Allowed to move by permit approved by the IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.	Allowed to move by permit approved by the IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.
Susceptible animal products	See continuity of business plans for information on susceptible animal products, or guidance and processes as determined by the IC. Please see Section 5.10.5 which contains OIE FMD-specific guidance for inactivating FMD.				
Other animals (non-susceptible) from premises <b>with</b> susceptible species	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Allowed to move by permit approved by the IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.	Allowed to move by permit approved by the IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.
Other animals (non-susceptible) from premises <b>without</b> susceptible species	n/a (Infected Premises have susceptible species)	n/a (Suspect Premises have susceptible species)	n/a (Contact Premises have susceptible species)	n/a (At-Risk Premises have susceptible species)	n/a (Monitored Premises have susceptible species)
Equipment, vehicles, and other fomites from premises <b>with</b> susceptible species	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Prohibited unless specific permit granted by IC and appropriate biosecurity measures.	Allowed by permit approved by IC and appropriate biosecurity measures.	Allowed by permit approved by IC and appropriate biosecurity measures.
Semen, embryos from susceptible animals	Prohibited.	Prohibited.	Prohibited.	Allowed by permit approved by IC and appropriate biosecurity measures.	Allowed by permit approved by IC and appropriate biosecurity measures.

<sup>a</sup> Movement control and permit processes will change over time depending on situational awareness and operational capabilities.

<sup>^</sup> Contact Premises and Suspect Premises are intended to be short-term premises designations. Ideally these Premises should be re-designated before movements occur.

Source: Foot-and-Mouth Disease Response Plan: The Red Book

**Table 13. Movement from inside a Control Area to outside a Control Area**

Item moving out of a Control Area from a/an...	Infected Premises	Suspect Premises <sup>^</sup>	Contact Premises <sup>^</sup>	At-Risk Premises	Monitored Premises*
Susceptible animals	Prohibited, except under certain circumstances as determined by the IC.	Prohibited, except under certain circumstances as determined by the IC.	Prohibited, except under certain circumstances as determined by the IC.	At-Risk Premises must become Monitored Premises to move susceptible livestock out of a Control Area.	Allowed to move by permit approved by IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.
Susceptible animal products	See continuity of business plans for information on susceptible animal products, or guidance and processes as determined by the IC. Please see Section 5.10.5 which contains OIE FMD-specific guidance for inactivating FMD.				
Other animals (non-susceptible) from premises <b>with</b> susceptible species	Prohibited unless specific permit approved by IC and appropriate biosecurity measures and risk-assessment.	Prohibited unless specific permit approved by IC and appropriate biosecurity measures and risk-assessment.	Prohibited unless specific permit approved by IC and appropriate biosecurity measures and risk-assessment.	Allowed to move by permit approved by IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.	Allowed to move by permit approved by IC; surveillance, negative diagnostic tests, premises biosecurity, and risk-assessment may be required for permit.
Other animals (non-susceptible) from premises <b>without</b> susceptible species	n/a (Infected Premises have susceptible species)	n/a (Suspect Premises have susceptible species)	n/a (Contact Premises have susceptible species)	n/a (At-Risk Premises have susceptible species)	n/a (Monitored Premises have susceptible species)
Equipment, vehicles, and other fomites from premises <b>with</b> susceptible species	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Prohibited unless permit approved by IC and appropriate biosecurity measures.	Allowed by permit approved by IC and appropriate biosecurity measures.	Allowed by permit approved by IC and appropriate biosecurity measures.
Semen, embryos from susceptible animals	Prohibited.	Prohibited.	Prohibited.	At-Risk Premises must become Monitored Premises to move semen, embryos from susceptible livestock out of a Control Area.	Monitored Premises only allowed by permit approved by IC and appropriate biosecurity measures.

Note: Movement control and permit processes will change over time depending on situational awareness and operational capabilities.

<sup>^</sup> Contact Premises and Suspect Premises are intended to be short-term premises designations. Ideally these Premises should be re-designated before movements occur.

\* Continuity of business plans may apply.

Source: Foot-and-Mouth Disease Response Plan: The Red Book

## **10.0 Recovery: Returning Affected Premises to Normal Business Operations**

The actions taken during the recovery period are focused on restoring the situation to normal or near normal as quickly as possible. Issues to consider are repopulation of production facilities, financial considerations, re-establishing public trust and consumer confidence, and review of risk reduction measures. It is important to note that the recovery phase of an incident may last an extended length of time.

### **10.1 Release of Control Area Restrictions**

Quarantine and movement controls will be maintained until at least two incubation periods have elapsed since the decontamination of all confirmed infected premises and negative results of surveillance activities. The State Veterinarian and Incident Command need to plan for the release of quarantine prior to or during the issuance of quarantines and movement controls. Such a plan would specify procedures by which quarantined premises will be evaluated for disease freedom and how the quarantine will be released (by sections, by risk, or in its entirety).

### **10.2 Repopulation**

**Restocking guidance:** Following appropriate cleaning and disinfection procedures, infected premises will remain vacant for a period of time (fallow period) before restocking susceptible animals onto premises. The fallow period should be a minimum of two disease incubation periods or other appropriate time period determined by the State Veterinarian. If it is not possible to carry out full cleaning and disinfection procedures, the premises must remain vacant for a longer period of time to be determined by the Incident Commander. It is critically important that in restocking, the IC consider the likelihood of disease survival based on environmental conditions, the execution of cleaning and disinfection procedures, and specific circumstances of the outbreak.

The producer should, in collaboration with Incident Command, come up with a restocking plan, including details of the susceptible species, number of animals, and locations of sentinel animals (if used). Once introduced to the previously infected premises, no animals may leave until all locations on that premises have been restocked and serological diagnostics are negative.

**Testing Requirements for Restocking:** These guidelines will vary depending on the disease agent. Animals may be subject to clinical inspection and diagnostic sample collection and submission.

For example, with FMD virus, during restocking animals will be subject to clinical inspection every 3 days for the first 14 days (one OIE incubation period), and once per week thereafter up to 28 days (two OIE incubation periods). At 28 days after the last animals are introduced, each animal must be clinically examined by a veterinary inspector and samples tested for the presence of FMD antibodies.

**Approved Sources of Livestock:** Introduced livestock must come from areas not subject to quarantine and movement control measures. Depending on the disease agent, animals may be required to test negative prior to introduction.

For example, with FMD virus, all livestock must test negative before introduction. A 24-hour pre-movement clinical inspection is also required. Animals must originate on and come from premises

on which there has not been a confirmed case of FMD within 6.2 miles (10 kilometers) for at least 30 days.

**Sentinel Restocking:** The alternative to fully restocking is to use a small number of sentinel animals. Serologically negative sentinel animals are introduced to a facility to determine if pathogens are still present and viable. Sentinel animals may be retained for at least two specific pathogen incubation periods (to be determined by the State Veterinarian). They will be monitored for clinical signs of the disease and biological samples tested. In the event that sentinels become infected or test positive for the disease, the sentinels will be depopulated and the cleaning and disinfection process will be repeated. The same holds true for facilities that restock with normal herd numbers.

After the sentinel restocking, monitoring, and testing process is complete and the premises is determined to be free of disease, it is released and livestock may be purchased to repopulate the ranch.

**Written Consent:** Producers must have written consent from the State Veterinarian and USDA-APHIS-VS official to begin the restocking process. If producers choose to restock without explicit permission from the State Veterinarian or USDA-APHIS-VS officials, do not follow the restocking surveillance and testing requirements, and subsequently become re-infected, they may not be eligible to receive indemnity.

### **10.3 Recovery of Free Status**

There are separate requirements (e.g., time and surveillance) for the recovery of free status in previously disease free countries. These requirements are based on the disease agent and can be found in the [OIE Terrestrial Animal Health Code \(2016\)](#).

## **11.0 Roles and Responsibilities**

Responding to an outbreak of a highly contagious animal disease outbreak will require the coordination of multiple agencies, industry representatives, and stake holders. A list of local, state, and federal agencies and their possible role in an outbreak response are listed in section 11.2.

### **11.1 Industry's Role in a Disease Outbreak**

Industry will play an important role both in preventing a disease outbreak and in response to such an event. Communication and between government agencies and industry will be essential to effective disease response activities and for timely return to normal swine production. It is vital for each swine operation to have the following in place prior to an outbreak.

- A biosecurity plan with written SOPs and appropriate training for employees
- A depopulation plan with written SOPs and a list of equipment needed, a plan or contracts in place to obtain supplies, and resources if equipment isn't already in hand.

### **11.2 Local, State and Federal Agencies Roles and Responsibilities**

Responding to a highly contagious animal disease outbreak will require the coordination of multiple agencies. A list of local, state, and federal agencies and their possible role in an outbreak response are listed below.

### *11.2.1 Roles and Responsibilities of the LEAD AGENCY – Colorado Department of Agriculture (CDA)*

The CDA, Animal Health Division is the lead agency in any livestock health related emergency occurring in Colorado. CDA will respond by using the NIMS protocol. The specific components will be under the joint command of the State Veterinarian and USDA APHIS Veterinary Services (USDA-APHIS-VS) officials. Their overall responsibility will encompass command and management of the disease event, overseeing the management and dissemination of resources, establishing a communication and information management system and securing supporting technologies. The State Veterinarian and USDA-APHIS-VS officials may use any or all of the following action steps to control and/or eradicate the disease encountered in the event.

- Assign an emergency response level to the incident.
- In consultation with USDA-APHIS-VS officials, determine the scope and level of initial response, and initiate a task force.
- In consultation with USDA-APHIS-VS, determine the location and size of hold/quarantine areas.
- Establish quarantine area(s) and issue quarantine orders as needed.
- In consultation with USDA-APHIS-VS officials and other agency personnel, strategically assign duties and areas of responsibility to state, deputy-state and federal veterinarians, members of the Colorado Veterinary Response Team, livestock inspectors, and animal health technicians.
- Determine appropriate movement restrictions for animals, people, equipment, feed, commodities, and conveyances.
- Prepare information for dissemination to the public, producers, processors, and other concerned groups through the Joint Information System or Center. Development of this information will be a collaboration between the CDA, USDA-APHIS-VS, and/or the Incident Management Team (EMT) and the Public Information Officer (PIO).
- Notify Colorado Division of Homeland Security and Emergency Management (HSEM) when a swine disease sample is being sent to the Foreign Animal Disease Diagnostic Lab (NVSL or FADDL - Plum Island, NY) for analysis and is likely to be a highly contagious or infectious disease or agent of concern.
- Coordinate with HSEM, USDA, Colorado Department of Transportation (CDOT), Colorado State Patrol (CSP), local jurisdictions, and other agencies as needed to enforce stop movement orders.
- Conduct livestock disease assessments at the site of the event to determine needs and priorities.
- Coordinate state-level livestock disease emergency response and recovery activities.
- Prioritize activities and areas of greatest urgency for state response and personnel in the field.

- Coordinate with USDA-APHIS-VS, and provide liaison between other federal, state and local organizations when required.
- With consultation from CDPHE, will develop protocols for worker protection related to incident-specific health and safety site plans, risk (hazard/exposure) assessments, and PPE.
- Direct disease investigations, epidemiological investigations, and trace outs to determine source of disease and scope of disease outbreak.
- Identify contaminated feed, pork, and agricultural products that must be destroyed and disposed of or decontaminated.
- Identify and approve, in collaboration with CDPHE, animal carcass disposal sites.
- Identify and approve, in collaboration with CDPHE, sites for disposal of, contaminated feed, or other items that are contaminated.
- Identify and approve, in collaboration with CDPHE, temporary waste disposal sites for effluent from cleaning and disinfecting stations.
- Coordinate with appropriate organizations for the deployment of inspectors and veterinarians for agricultural response and recovery.
- Establish and/or coordinate appropriate regulatory controls.
- In collaboration with the CDA PIO provide advisories and related public information.
- Coordinate with CSP, county, and local law enforcement for site security and related issues.
- Maintain ongoing animal agriculture surveillance of affected communities in order to rapidly identify and address disease-related problems.
- Notify CPW of any wildlife disease threat or involvement.
- Work in close collaboration with the Colorado Brand Board and livestock industry groups as well as the major pork producer associations and local producers.

### *11.2.2 Roles and Responsibilities of SUPPORT AGENCIES – Local government*

Since all emergency response begins at the local level, local emergency management officials will be actively involved in the response and will be a key provider of resources for operational missions. Each county has a comprehensive emergency management plan which provides the framework for the jurisdiction's response to emergencies and disasters. Counties, through their assets of County Commissioners, County Extension Offices and their networks, will utilize their resources and provide an additional line of communication with local farmers, industry groups and the community. Additionally, as part of a coordinated response, local law enforcement officers with assistance from Brand Inspectors and Bureau of Animal Protection Agents (BAP) may:

- Assist in identifying clean transportation corridors for moving unaffected livestock and animal food products safely during an animal health incident.
- Provide security in implementing a hold or quarantine for the infected area.
- Assist in the conduct of a criminal investigation.

- Provide site security and conflict resolution as needed to ensure the safety of veterinarians, inspectors, all other responders and the general public should any conflicts arise.

### *11.2.3 Roles and Responsibilities of SUPPORT AGENCIES - State Agencies*

State agencies have diverse roles within the state government and may contribute essential aspects of an emergency response to large-scale animal disease outbreaks. Depending on location and scale, certain smaller outbreaks may not require all of these agencies to be involved.

#### *11.2.3.1 Colorado Division of Homeland Security and Emergency Management (DHSEM)*

Colorado Division of Homeland Security and Emergency has many resources to address emergencies and experiences with all hazard responses. Their support and involvement would be to:

- Activate the State Emergency Management Plan and state EOC to support CDA.
- Support the CDA by providing statewide coordination for logistical support, security, biosecurity, support personnel, procurement of supplies, equipment, vehicles, food, lodging, and administrative support during livestock disease emergency response and recovery. Coordinate with CDA for the provision of biosecurity training to support agencies and provide biosecurity training to agency personnel designated for operations in the affected area.
- Deployment of State Incident Management Teams (IMTs) to manage incidents such as the Eastern Colorado IMT with whom CDA has entered into a memorandum of understanding (MOU).

#### *11.2.3.2 Colorado State Patrol (CSP)*

Colorado State Patrol's (CSP) support and involvement would be to:

- Quickly respond to, diligently investigate, coordinate with, and take direction from the CDA to prevent the introduction of or spread of a FAD, such as FMD.
- Be the primary agency for controlling vehicles carrying agricultural products. The State Patrol will work closely with the CDA, the Colorado Division of Homeland Security and Emergency Management (DHSEM), Colorado Department of Transportation (CDOT), local law enforcement, and other support agencies in the operation of road closures and the diversion of vehicles carrying agricultural products.
- Provide law enforcement support and coordination with conducting traffic checkpoints and roadblocks, enforcing controlled movement orders (CMOs) for animals and animal products, and securing quarantined areas and related sites during animal disease emergencies.

#### *11.2.3.3 Colorado Department of Public Health and Environment*

The CDPHE will likely be involved in the response if a zoonotic potential condition exists. Their roles and responsibilities would be to:

- Coordinate with CDA if a zoonotic condition exists.
- Support public information efforts.

- Consult with CDA and USDA-APHIS-VS regarding bio-security issues related to zoonotic diseases.
- Provide veterinary and epizootologic support.
- Assist and collaborate with CDA on subjects such as carcass disposal, cleaning and disinfection, and other issues that may affect humans through potential contamination of soil, water and air quality.
- Liaison with Environmental Protection Agency (EPA) to address issues that may arise.
- Provide laboratory emergency response and/or surge support.
- Colorado Human Services Department may provide or coordinate mental health staff to assist in crisis counseling efforts.

#### 11.2.3.4 *Colorado Parks and Wildlife*

Parks and Wildlife will work with CDA to provide the following services:

- Provide disease surveillance in free-ranging wildlife and wildlife in zoos, parks, and other natural areas.
- Survey for and/or dispose of contaminated items and wild animals.
- Conduct wild animal inventories in the area of a disease event to identify susceptible species.
- In collaboration with the State Veterinarian, collect wildlife specimens and samples for disease testing to determine presence or absence of disease or transmission of the disease agent or impact of disease on wildlife.
- Provide field personnel to assist in swine disease response, control, and recovery efforts.
- Depending on the disease outbreak and the transmission characteristics, it may affect hunting. CPW would inform hunters on the changes and provide education to hunters. Wildlife and livestock are often susceptible to the same pathogens, so close collaboration between CDA and CPW would be important. Hunters depend on landowners and livestock producers for full enjoyment of their sport.
- In the event that wildlife are involved in the FAD outbreak in domestic livestock, hunting and other activities, such as field trials, should be identified to determine the risk. Wildlife personnel and any wildlife or wildlife product physically transported by personnel must adhere to the quarantine and movement control guidance provided by Incident Command.

#### 11.2.3.5 *Colorado Department of Transportation (CDOT)*

CDOT's roles and responsibilities during a disease outbreak would be to:

- Assist in the movement of state resources during livestock disease emergencies.
- Provide traffic control and routing assistance, barricades, and road monitoring.
- Provide equipment and operators to assist with animal disposal.

#### 11.2.3.6 *Colorado State University (CSU)*

Colorado State University's College of Veterinary Medicine and Biomedical Sciences (CVMBS) is involved in programs related to livestock diseases, from providing surveillance

testing to providing educational materials to the community. During a major disease outbreak, their responsibilities would be to:

- Provide veterinary support and expertise throughout the emergency as requested by CDA.
- Colorado State University Veterinary Diagnostic Laboratory may provide appropriate diagnostic support services as requested by CDA.
- Colorado State University Extension may provide, communication, and liaison between Incident Command, affected industry groups and local communities during emergencies.

#### *11.2.4 Roles and Responsibilities of SUPPORT AGENCIES – United States Department of Agriculture (USDA)*

There are multiple federal agencies that have the potential to be involved during a disease outbreak depending on areas affected and size and scope of the outbreak. There is great need for cooperation and interagency support to accomplish all of the processes involved with mitigating and eradicating a significant infectious disease. These federal agencies will work collaboratively with each other, CDA, and the state and local agencies discussed above.

##### *11.2.4.1 Animal and Plant Health Inspection Service (APHIS)*

USDA-APHIS Veterinary Services (VS) is the primary federal agency in charge of significant animal disease outbreaks of concern. Across the nation, APHIS-VS collaborates daily with each State Veterinarian's office to monitor for foreign animal diseases (FADs), emerging infectious diseases, and to administer programs to eradicate diseases such as tuberculosis and brucellosis.

APHIS-VS maintains a group of national IMTs, each one composed of 20 – 30 VS employees, ready to deploy and assist with containing and eradicating disease outbreaks of concern. During an outbreak, Colorado's State Veterinarian may request the assistance of APHIS-VS's national IMT to deploy and help with all aspects of the response:

- Assist in everything from quarantine, evaluation and indemnification of livestock, slaughter, disposal, cleaning and disinfecting, epidemiology, and trace-backs, to facilitating permitting for pigs and semen movement.
- Assist in acquiring appropriate contractors to conduct various response activities such as those listed above.
- Consult with state and local authorities regarding eradication proceedings.
- Collect, analyze, and disseminate technical and logistical information.
- Define training requirements for temporary employees or support agencies involved in eradication operations.
- Issue a declaration of extraordinary emergency.
- Coordinate with state and local agencies to define quarantine and buffer zones.
- Prepare information for dissemination to the public, producers, processors, and other concerned groups through the Joint Information Center (JIC).

- Allocate funding for indemnifying to the owner(s) of depopulated animals or related property loss.
- Allocate funding for activities related to depopulation, disposal and virus elimination.
- Define restrictions on interstate commerce.

#### 11.2.4.2 *APHIS Wildlife Services (APHIS-WS)*

Wildlife Services (WS) is a division of APHIS and its mission is to resolve wildlife conflicts to allow people and wildlife to co-exist. During a disease outbreak in pigs, WS will assist in surveillance of wildlife populations for the disease of concern. As part of APHIS, WS employees may also be deployed to work within the incident as members of the IMT.

#### 11.2.4.3 *USDA Food Safety Inspection Service (FSIS)*

FSIS is charged with protecting the Nation's food supply by providing inspectors and veterinarians in meat and pork product plants to prevent, detect, and act in response to food safety emergencies. FSIS has developed the infrastructure needed to confront new biosecurity challenges. FSIS may assist state and local authorities in disease eradication activities and/or food-borne illness emergency investigations.

#### 11.2.4.4 *USDA Customs and Border Protection*

Shall inspect and regulate movement of at risk people, agricultural products, or product containers or the likely at ports-of entry (such as Denver International Airport) to prevent, detect or act in response to agricultural emergencies.

### *11.2.5 Roles and Responsibilities of SUPPORT AGENCIES – other federal agencies*

Under Emergency Support Function (ESF-11) federal regulations, the USDA is responsible for response to animal disease emergencies. However, other federal agencies outside of the USDA may also have jurisdiction in a disease outbreak response.

#### 11.2.5.1 *Food and Drug Administration (FDA)*

One of FDA's mandates is to protect the public health by assuring the safety of our nation's food supply. FDA also has an important role in prevention and control of contaminated animal feed. FDA may assist state and local authorities in disease eradication activities and/or food-borne illness emergency investigations.

#### 11.2.5.2 *Federal Bureau of Investigation (FBI)*

The FBI is the agency responsible for investigating cases of bio-terrorism or agro-terrorism a part of the mission of a Joint Terrorism Task Force (JTTF). When food animals are the target of a terrorists attack and evidence suggests a foreign animal disease may have been intentionally introduced or threatened, CDA will notify the CIAC who in turn will coordinate activities with the JIFF within the Denver Office of the FBI.

#### 11.2.5.3 *Environmental Protection Agency (EPA)*

The federal agency that may collaborate with CDPHE & CDA on decisions of carcass disposal, cleaning and disinfection, and their effect on soil, air, and water or the environment in general.

### **11.3 Stakeholders: Local Livestock Industry Groups**

Serve as liaison on matters relating to livestock industries affected by an animal disease outbreak.

- Identify individuals who may be qualified to assist in disease control efforts.
- Develop a list of qualified appraisers.
- Provide assistance to families affected by an animal disease outbreak.
- Provide support for disease control and eradication activities.
- Provide appropriate information for dissemination to industries and public (through close coordination with CDA or the IMT public information officer).
- Support response and recovery with all available resources.

### **11.4 Roles and Responsibilities of Local Swine Producers and Practicing Veterinarians**

Pork producers and practicing veterinarians will be the first to encounter an emerging disease or foreign animal disease outbreak. It is imperative that they report to the State Veterinarian's Office or USDA-APHIS-VS Colorado Office any situations in which pigs are experiencing a high morbidity or mortality rates, cases with clinical signs consistent with foot and mouth disease, or any new or emerging disease and any cases of unknown cause or unusual clinical signs. Early detection and diagnosis is the key to mitigating losses to the pork producers!

Another key responsibility of pork producers is to implement proper biosecurity protocols. Good biosecurity can greatly reduce the introduction of infectious diseases into a herd. Pig owners and producers should create plans for responding to disease outbreaks in their herds. By having SOPs in advance for depopulation and disposal, they can greatly reduce response times and decrease the potential for spread to other facilities.

## **12.0 Conclusion**

The introduction of a highly contagious disease or a swine incident resulting from an all-hazards event could have devastating effects on Colorado's swine industry. Planning and preparation is vital to limiting the scope of a disease outbreak, which depends on rapid detection and eradication. These plans for response to disease eradication can be easily applied to all-hazard events such as wildfires, flooding and tornados, or economically destructive disease that causes significant morbidity or mortality in swine.

The Colorado Department of Agriculture (CDA) *Swine Emergency Disease Response Plan* provides the response actions that will be implemented by the CDA in collaboration with the USDA-APHIS-VS and swine industry partners. Execution of the plan will allow swift detection, control and eradication of a swine disease outbreak.

## **Appendix A: Foreign Animal Disease Investigation Action Steps by Animal Health Officials upon Report of Suspected Foreign Animal Disease**

The Colorado State Veterinarian or USDA-APHIS-VS personnel will dispatch a Foreign Animal Disease Diagnostician (FADD) to initiate an investigation within 24 hours of the initial notification.

The FADD will set up an appointment to visit the premises to assess the disease situation, collect and submit laboratory samples. If the FADD has a high suspicion for an FAD, a hold order may be placed. The FADD will file a report with the State Veterinarian and USDA-APHIS-VS. The State Veterinarian and USDA- APHIS-VS officials will assign a priority level to the laboratory submissions, which will govern the response of the federal lab(s).

Further actions may be taken at the discretion of the State Veterinarian in collaboration with USDA-APHIS-VS officials and in consultation with the FADD that investigated the case along with other veterinary staff.

Laboratory results will be reported to the State Veterinarian and USDA-APHIS-VS officials who will notify the appropriate staff and the FADD of the case. The FADD, in consultation with the State Veterinarian and USDA-APHIS-VS, will then notify the practitioner and the owner/manager of the facility. See Ready Reference Guide for a visual representation of the steps outlined above.

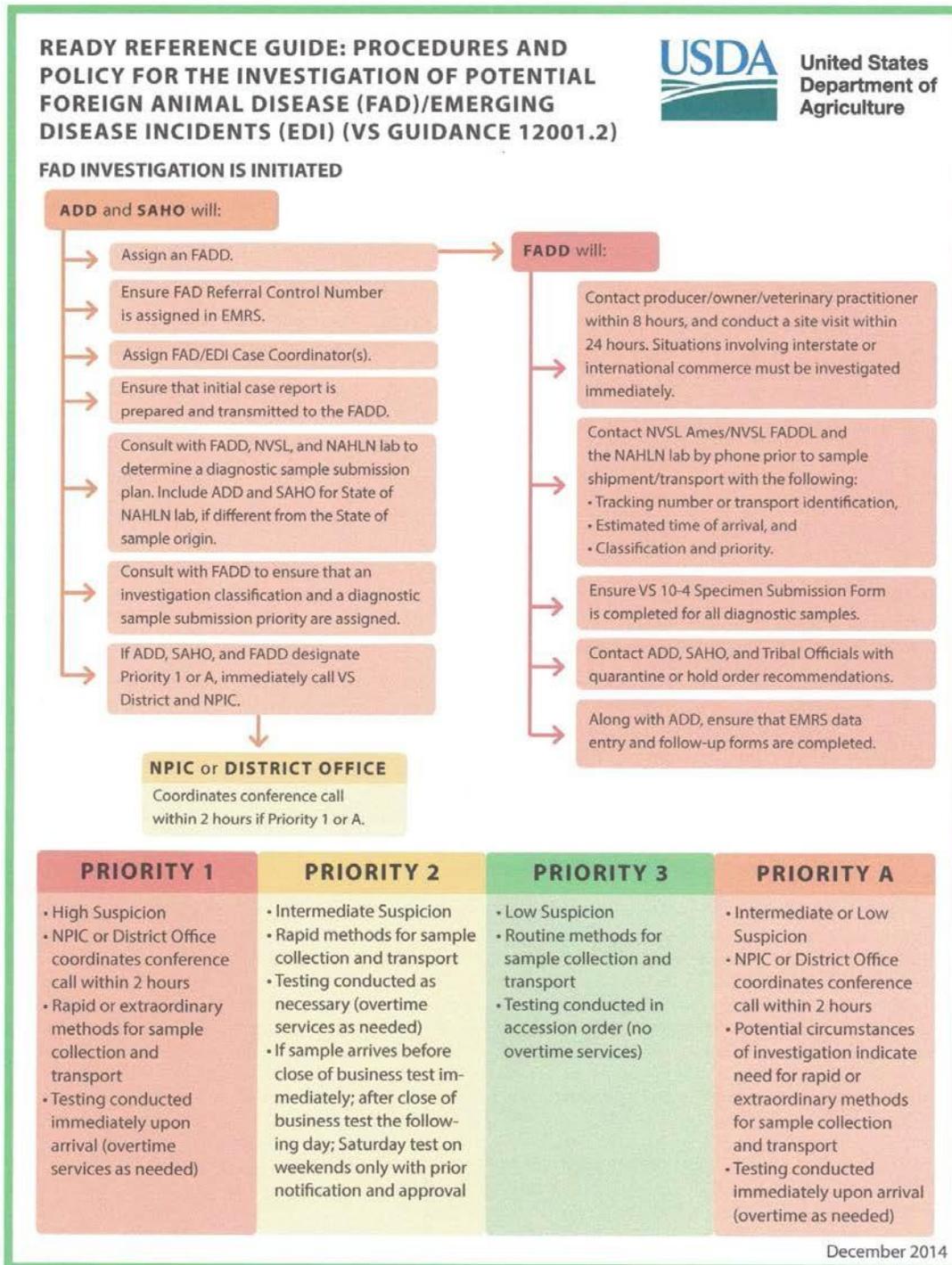
Information collected during a Foreign Animal Disease Investigation:

- Name and Address of Owner/Manager
- Physical location of the affected premises
- Type of operation being investigated
- Number and type of animals on premises
- Movement of animals on and off premises and date of movement
- Location of animals prior to arriving on premises
- Location of animals after leaving premises
- Number of sick and dead animals
- Physical examinations of the affected animals
- Results of postmortem examinations
- Number and types of samples taken
- Name of suspected disease

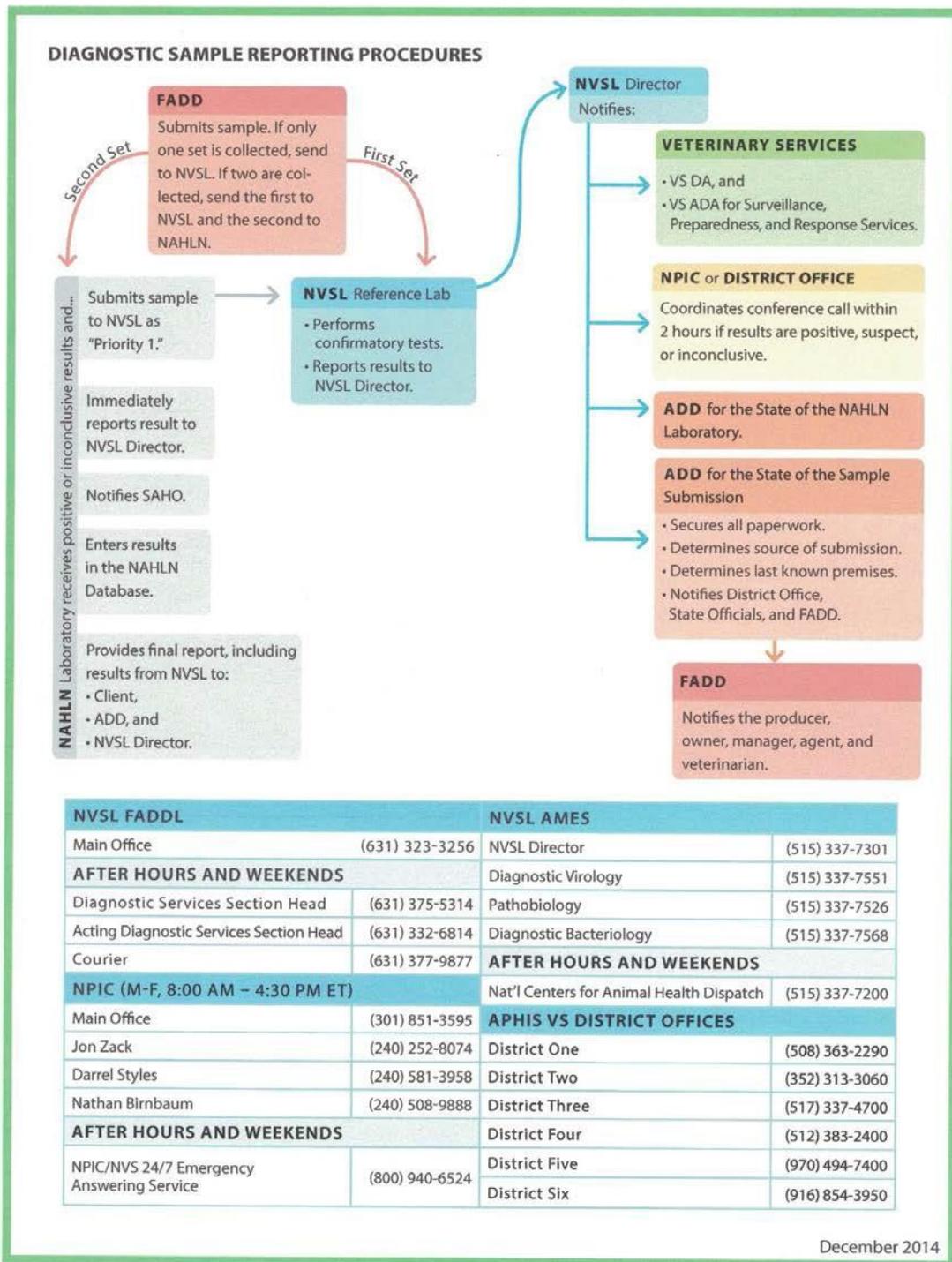
Contacts for a suspected FAD:

- Colorado State Veterinarian's Office at the Colorado Department of Agriculture (CDA)  
- Animal Health Division: (303) 869-9130
- USDA-APHIS-VS-SPRS District 6 – Colorado Field Office: (303) 231-5385

# Ready Reference Guide: Procedures and Policy for Investigation of Potential FAD Incidents



**Ready Reference Guide: cont.**



NVSL FADDL		NVSL AMES	
Main Office	(631) 323-3256	NVSL Director	(515) 337-7301
<b>AFTER HOURS AND WEEKENDS</b>		Diagnostic Virology	(515) 337-7551
Diagnostic Services Section Head	(631) 375-5314	Pathobiology	(515) 337-7526
Acting Diagnostic Services Section Head	(631) 332-6814	Diagnostic Bacteriology	(515) 337-7568
Courier	(631) 377-9877	<b>AFTER HOURS AND WEEKENDS</b>	
<b>NPIC (M-F, 8:00 AM – 4:30 PM ET)</b>		Nat'l Centers for Animal Health Dispatch	(515) 337-7200
Main Office	(301) 851-3595	<b>APHIS VS DISTRICT OFFICES</b>	
Jon Zack	(240) 252-8074	District One	(508) 363-2290
Darrel Styles	(240) 581-3958	District Two	(352) 313-3060
Nathan Birnbaum	(240) 508-9888	District Three	(517) 337-4700
<b>AFTER HOURS AND WEEKENDS</b>		District Four	(512) 383-2400
NPIC/NVS 24/7 Emergency Answering Service	(800) 940-6524	District Five	(970) 494-7400
		District Six	(916) 854-3950

December 2014

## Appendix B: List of Acronyms

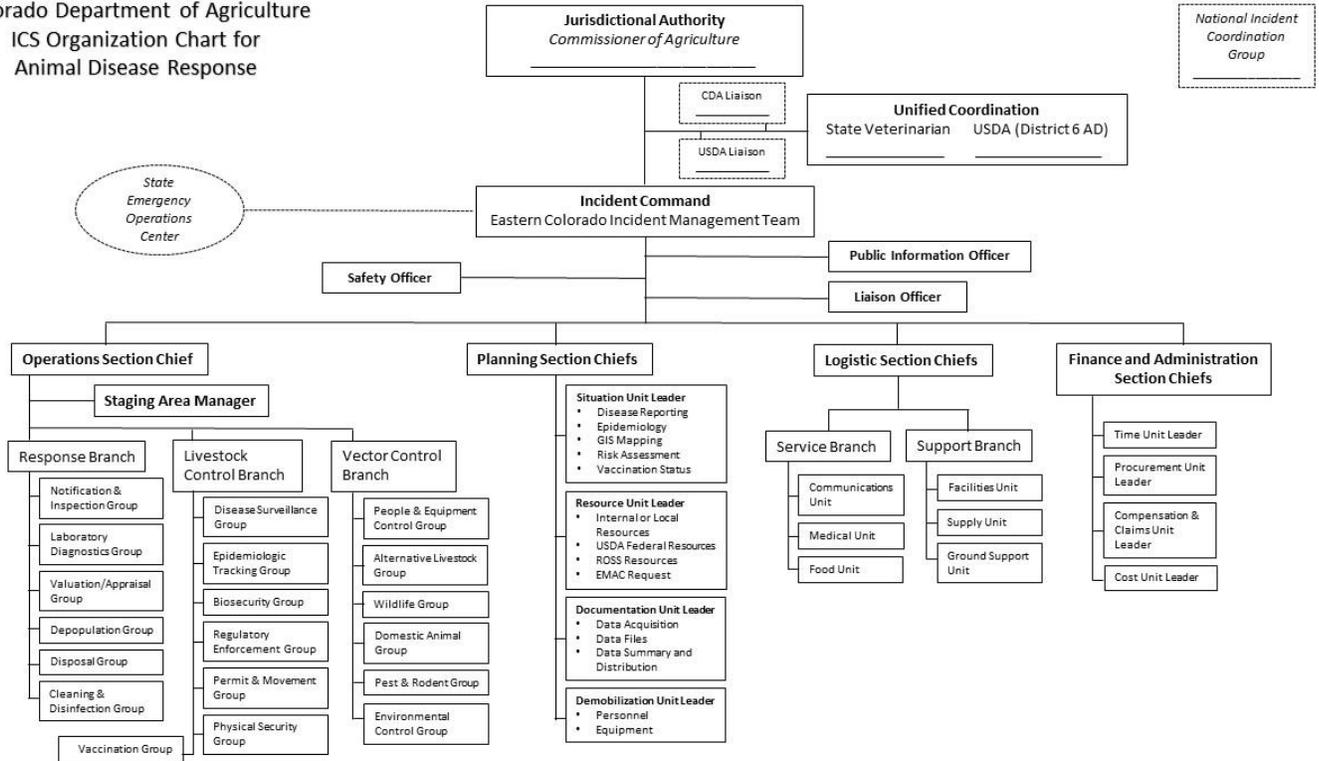
APHIS	Animal and Plant Health Inspection Service	FDA	Food and Drug Agency
AVMA	American Veterinary Medical Association	FSIS	Food Safety Inspection Service
CCR	Code of Colorado Regulations	GPS	Global Positioning System
CDA	Colorado Department of Agriculture	HSEM	Division of Homeland Security and Emergency Management
CDC	Centers for Disease Control and Prevention	HSPD	Homeland Security Presidential Directive
CDHSEM	Colorado Division of Homeland Security and Emergency Management	IA	Interagency Agreement
CDPHE	Colorado Department of Public Health and Environment	IAP	Incident Action Plan
CDOT	Colorado Department of Transportation	ICS	Incident Command System
CFR	Code of Federal Regulations	IMT	Incident Management Team
CIAC	Colorado Information Analysis Center	JTTF	Joint Terrorism Task Force (within FBI)
CO <sub>2</sub>	Carbon Dioxide	MOU	Memorandum of Understanding
CRS	Colorado Revised Statutes	NIMS	National Incident Management System
CSP	Colorado Safety Patrol	NVSL	National Veterinary Service Laboratories
CSU	Colorado State University	OIE	World Organization of Animal Health (previously Office of Internationale des Epizooties)
CVMBS	College of Veterinary Medicine and Biomedical Sciences	OSHA	Occupational Safety and Health Association
CPW	Colorado Parks and Wildlife	PIN	Premises Identification Number
ECIMT	Eastern Colorado Incident Management Team	PIO	Public Information Officer
EOC	Emergency Operation Center	PPE	Personal Protective Equipment
EPA	Environmental Protection Agency	SEOC	State Emergency Operations Center
ESF	Emergency Support Function	SOP	Standard Operating Procedure
FAD	Foreign Animal Disease	USDA	United States Department of Agriculture

**Appendix B cont.**

FADD	Foreign Animal Disease Diagnostician	VMO	Veterinary Medical Officer
FADDL	Foreign Animal Disease Diagnostic Lab	VS	Veterinary Services
FBI	Federal Bureau of Investigation		

# Appendix C: Organization Chart

Colorado Department of Agriculture  
ICS Organization Chart for  
Animal Disease Response



## Appendix D: All Hazard Incident Complexity Analysis

<b>Incident Name:</b>	<b>Date:</b>	
<b>Incident Number:</b>	<b>Time:</b>	
This Complexity Analysis is weighed based on the relevance to Life Safety, Incident Stabilization, and Property Conservation.		
<b>Complexity Factors</b>		<b>Check if Pertinent</b>
<b>Impacts to Life, Property, and the Economy</b>		
Urban interface; structures, developments, recreational facilities, or potential for evacuation.		
<b>Community and Responder Safety</b>		
Performance of public safety resources affected by cumulative fatigue		
Overhead overextended mentally and/or physically		
Communication ineffective with tactical resources or dispatch		
Incident action plans, briefings, etc. missing or poorly prepared		
Resources unfamiliar with local conditions and tactics		
<b>Potential Hazardous Materials</b>		
Potential of Hazardous Materials		
<b>Weather and other Environmental Influences</b>		
Unique natural resources, special-designation areas, critical municipal watershed, protected species habitat, cultural value sites		
<b>Likelihood of Cascading Events</b>		
Variety of specialized operations, support personnel or equipment		
<b>Potential Crime Scene (including Terrorism)</b>		
Potential crime scene		
Potential of terrorism		
<b>Political Sensitivity, External Influences, and Media Relations</b>		
Sensitive political concerns, media involvement, or controversial policy issues		
<b>Organizational Performance Values and Product Development</b>		
Non-IAP Products not being developed or deficient.		
<b>Area Involved, Jurisdictional Boundaries</b>		
Incident threatening more than one jurisdiction and potential for unified command with different conflicting management objectives.		
<b>Availability of Resources</b>		
Operations are at the limit of span of control.		
Unable to property staff air operations.		
Limited local resources available for initial attack/response		
Heavy commitment of local resources to logistical support.		
Existing forces worked 12 hours without success.		
<b>Percentage Score</b>		<b>%</b>
If 10% or lower look at going to or staying at Type 4 Team.		
If 10 % to 20% maintain or go to Type 3 Team		
If greater than 20% increase to Type 2 Team or additional overhead		
<b>Prepared By</b>	<b>Date:</b>	<b>Time:</b>

## Appendix E: Personal Protective Equipment Guidelines for Colorado Department of Agriculture Employees

Zoonotic Animal Disease Incident																		
Environment	Zoonotic Disease Diagnosed in the United States																	
	Zoonotic Disease not Diagnosed in the U.S.		Confirmed Zoonotic Disease Diagnosis – Emergency Response Activities															
Suspect Disease Outbreak Investigation			General Operations Areas Surveillance		Near or Contact Premises Surveillance		Biological Control Area Surveillance		Biological Control Area Activity									
			Routine Surveillance	Suspect Disease Outbreak Investigation	Routine Surveillance	Environment		Environment						Environment		Environment	Outdoor	Indoor
Coveralls, Work Uniforms, etc.	X																	
Tyvek Coveralls		X	X			X	X	X		X		X	X					
Tychem Coveralls															X	X	X	
Exam gloves (heavy Disposable)	X	X	X	X	X	X	X	X	X	X plus X	X plus X	X plus X	X plus X	X plus X	X plus X	X plus X	X plus X	X plus X
Rubber Gloves (heavy duty)										X	X	X	X	X	X	X	X	X
N-95 or N-100 Filtering Face piece*		X	X	X	X plus X or X	X	X	X plus X or X	X plus X or X	X plus X							X plus X or X	
Goggles (indirect vented)**				+/-	X		+/-	X	X	X							X	
Full-face APR with N-100 Canister					X			X	X	X	X	X	X	X	X	X	X	X
SCBA (Self-contained breathing apparatus)														X				
Boot Covers (Disposable)	+/- or X	+/- or X	+/- or X			+/- or X	+/- or X											
Rubber Boots	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

\* Examples of zoonotic disease with higher transmission risk would include influenza in poultry or other non-avian species, anthrax, plague and tularemia, among others.

\*\*A separate table has been developed for avian influenza. See HPAI PPE Guidelines.

**Appendix E (cont.): Personal Protective Equipment Guidelines for Colorado Department of Agriculture Employees  
Non- Zoonotic Animal Disease Incident**

Environment		Suspect Disease Diagnosed in the United States								
		Suspect Disease not Diagnosed in the U.S.		Suspect Disease Outbreak Investigation	Confirmed Diagnosis of Suspect Disease – Emergency Response Activities					
Equipment	Routine Surveillance				Suspect Disease Outbreak Investigation	Routine Surveillance	General Operations Areas Surveillance	Near or Contact Premises Surveillance	Biological Control Area Surveillance	Biological Control Area Activity
		Routine Surveillance Operations	Routine Surveillance Operations	Routine Surveillance Operations			Indoor Depopulation Preparation	Indoor Depopulation Re-Entry CO <sub>2</sub> & CO <sub>2</sub> Level Testing	Routine Surveillance Operations	Any Cleaning and/or Disinfection Activity
Coveralls, Work Uniforms, etc.	X									
Tyvek Coveralls		X	X	X	X	X	X	X		
Tychem Coveralls									X	X
Exam gloves (heavy Disposable)	X	X	X	X	X	X plus	X plus	X plus	X plus	X plus
Rubber Gloves (heavy duty)						X	X	X	X	X
N-95 or N-100 Filtering Face piece*		X	X	X	X	X	X		X	X plus X or X
Goggles (indirect vented)**										
Full-face APR with N-100 Canister										X
SCBA (Self-contained breathing apparatus) ***								X		+/-
Boot Covers (Disposable)	+/- or	+/- or	+/- or	+/- or						
Rubber Boots	X	X	X	X	X	X	X	X	X	X

\* Filtering face pieces are recommended to avoid transmission of a disease agent to other physical locations via the responder's respiratory system as can occur with agents such as the Foot and Mouth Disease (FMD) virus.

\*\* Goggles /full race piece maybe considered for dust control in any location /activity and should routinely be used in cleaning and disinfection activities.

\*\*\* SCBA should be used in altered environments such as gas euthanasia or high risk confined space such as manure pits.

## Appendix F: County Emergency Management Offices of Colorado

Current as of Feb 2017			
Colorado County	Website	Phone Number (24-Hour)	Fax Number
Adams	<a href="#">Adams County website</a>	720-521-2182 (pager)	720-523-6150
Alamosa	<a href="#">Alamosa County website</a>	719-589-5807 (dispatch)	719-587-5207
Arapahoe	<a href="#">Arapahoe County website</a>	303-795-4711 (dispatch)	720-874-4158
Archuleta	<a href="#">Archuleta County website</a>	970-731-4799	970-731-4800
Baca	<a href="#">Baca County website</a>	719-523-4511(dispatch)	719-523-6776
Bent	<a href="#">Bent County website</a>	719-456-1365	719-456-0476
Boulder	<a href="#">Boulder County website</a>	303-441-4444 (dispatch)	303-441-3884
Broomfield	<a href="#">Broomfield County website</a>	303-438-6400	720-887-2001
Chaffee	<a href="#">Chaffee County website</a>	719-207-2730	719-539-7442
Cheyenne	<a href="#">Cheyenne County website</a>	719-767-5633 (sheriff)	719-346-8542
Clear Creek	<a href="#">Clear Creek County website</a>	303-679-2393 (dispatch)	303-679-2438
Conejos	<a href="#">Conejos County website</a>	719-589-5804	719-376-5661
Costilla	<a href="#">Costilla County website</a>	719-672-3302 (dispatch)	719-672-3003
Crowley	<a href="#">Crowley County website</a>	719-267-5555 x1 (dispatch)	719-267-3114
Custer	<a href="#">Custer County website</a>	719-783-2270	719-783-2410
Delta	<a href="#">Delta County website</a>	970-874-2015 (dispatch)	970-874-2027
Denver	<a href="#">Denver County website</a>	720-865-5500	720-865-7691
Dolores	Dolores County website	970-677-2500	970-677-2880
Douglas	<a href="#">Douglas County website</a>	303-660-7500 (dispatch)	303-814-8790
Eagle	<a href="#">Eagle County website</a>	970-479-2201	970-328-8694
Elbert	<a href="#">Elbert County website</a>	303-660-7500	303-805-6159
El Paso	<a href="#">El Paso County website</a>	719-575-8422	719-575-8591
Fremont	<a href="#">Fremont County website</a>	719-792-6411	719-276-7304

**Colorado Department of Emergency Management. Feb 2017.**  
<http://www.coemergency.com/p/local-info-sources.html>

**Appendix F (Cont.): County Emergency Management Offices of Colorado  
Current as of Feb 2017**

<b>Colorado County</b>	<b>Website</b>	<b>Phone Number (24-Hour )</b>	<b>Fax Number</b>
Garfield	<a href="#">Garfield County website</a>	970-625-8095	970-945-6430
Gilpin	<a href="#">Gilpin County website</a>	303-582-5500 (dispatch)	
Grand	<a href="#">Grand County website</a>	970-725-3311	970-887-1698
Gunnison	<a href="#">Gunnison County website</a>	970-641-8000	970-641-7693
Hinsdale	<a href="#">Hinsdale County website</a>	970-641-8201 (dispatch)	970-944-2630
Huerfano	<a href="#">Huerfano County website</a>	719-738-1044 (dispatch)	
Jackson	<a href="#">Jackson County website</a>	970-723-4242 (dispatch)	970-723-4706
Jefferson	<a href="#">Jefferson County website</a>	303-277-0211 (dispatch)	303-271-4905
Kiowa	<a href="#">Kiowa County website</a>	719-456-1363 (dispatch)	719-438-5503
Kit Carson	<a href="#">Kit Carson County website</a>	(719) 343-0911 (office)	719-349-8542
Lake	<a href="#">Lake County website</a>	719-486-1249	719-486-0139
La Plata	<a href="#">La Plata County website</a>	970-385-2900	970-382-6272
Larimer	<a href="#">Larimer County website</a>	303-656-3214 (cell)	970-498-9203
Las Animas	<a href="#">Las Animas County website</a>	719-846-2211 (sheriff)	719-846-4111
Lincoln	<a href="#">Lincoln County website</a>	719-743-2426 (sheriff)	719-743-2815
Logan	<a href="#">Logan County website</a>	970-520-0991 (cell)	970-521-0632
Mesa	<a href="#">Mesa County website</a>	970-242-6707	
Mineral	<a href="#">Mineral County website</a>	719-658-2600 (sheriff)	719-658-2764
Moffat	<a href="#">Moffat County website</a>	970-824-6501	970-826-2423
Montezuma	<a href="#">Montezuma County website</a>	970-565-8441	970-565-3991
Montrose	<a href="#">Montrose County website</a>	303-435-4637	970-249-7761
Morgan	<a href="#">Morgan County website</a>	970-867-8531	970-867-7344
Otero	<a href="#">Otero County website</a>	719-384-5941 (dispatch)	719-384-2272

Colorado Department of Emergency Management. Feb 2017.  
<http://www.coemergency.com/p/local-info-sources.html>

**Appendix F (Cont.): County Emergency Management Offices of Colorado  
Current as of Feb 2017**

<b>Colorado County</b>	<b>Emergency Manager</b>	<b>Phone Number</b>	<b>Fax Number</b>
Ouray	<a href="#">Ouray County website</a>	970-318-1271	970-325-0452
Park	<a href="#">Park County website</a>	719-839-1602	719-836-3273
Phillips	<a href="#">Phillips County website</a>	970-854-3644 (dispatch)	970-854-3811
Pitkin	<a href="#">Pitkin County website</a>	970-920-5300 (sheriff)	970-920-5307
Prowers	<a href="#">Prowers County website</a>	719-336-3977	719-336-4883
Pueblo	<a href="#">Pueblo County website</a>	719-583-6250 (dispatch)	719-583-6218
Rio Blanco	<a href="#">Rio Blanco County website</a>	970-878-9620	970-878-3127
Rio Grande	<a href="#">Rio Grande County website</a>	719-657-4000 (sheriff)	
Routt	<a href="#">Routt County website</a>	970-846-1552 (cell)	970-870-5561
Saguache	<a href="#">Saguache County website</a>	719-655-2525 (dispatch)	
San Juan	<a href="#">San Juan County website</a>	970-387-5531 (sheriff)	970-387-0251
San Miguel	<a href="#">San Miguel County website</a>	970-728-1911(dispatch)	970-728-9206
Sedgwick	<a href="#">Sedgwick County website</a>	970-474-3355 (sheriff)	970-474-2607
Southern Ute Indian Tribe	<a href="#">Southern Ute Indian Tribe website</a>	970-563-4853	970-563-0215
Summit	<a href="#">Summit County website</a>	970-423-8907 (office)	970-453-7329
Teller	<a href="#">Teller County website</a>	719-492-6508 (cell)	719-686-7900
Ute Mountain Ute Indian Tribe	<a href="#">Ute Mountain Ute Indian Tribe website</a>	970-564-5441 (office)	970-564-5443
Washington	<a href="#">Washington County website</a>	970-345-2244 (sheriff)	970-345-2701
Weld	<a href="#">Weld County website</a>	970-304-4015 x2700	970-336-7242
Yuma	<a href="#">Yuma County website</a>	970-848-0464	970-848-0160

**Colorado Department of Emergency Management. Feb 2017.**  
<http://www.coemergency.com/p/local-info-sources.html>

## Appendix G: County Sheriff's Offices of Colorado

Current as of March 2016		
Colorado County	Sherriff's Office Website	Phone Number**
Adams	<a href="#">Sherriff's Office Website</a>	303-288-1535
Alamosa	<a href="#">Sherriff's Office Website</a>	719-589-6608
Arapahoe	<a href="#">Sherriff's Office Website</a>	720-874-3600
Archuleta	<a href="#">Sherriff's Office Website</a>	970-264-8430
Baca	<a href="#">Sherriff's Office Website</a>	719-523-4511
Bent	<a href="#">Sherriff's Office Website</a>	719-456-0796
Boulder	<a href="#">Sherriff's Office Website</a>	303-441-3650
Broomfield*	<a href="#">Chief of Police Website</a>	303-438-6400
Chaffee	<a href="#">Sherriff's Office Website</a>	719-539-2596
Cheyenne	<a href="#">Sherriff's Office Website</a>	719-767-5633
Clear Creek	<a href="#">Sherriff's Office Website</a>	303-679-2376
Conejos	<a href="#">Sherriff's Office Website</a>	719-376-2196
Costilla	<a href="#">Sherriff's Office Website</a>	719-672-0673
Crowley	<a href="#">Sherriff's Office Website</a>	719-267-5555
Custer	<a href="#">Sherriff's Office Website</a>	719-783-2270
Delta	<a href="#">Sherriff's Office Website</a>	970-874-2000
Denver*	<a href="#">Sherriff's Office Website</a>	720-913-2000
Dolores	<a href="#">Sherriff's Office Website</a>	970-677-2257
Douglas	<a href="#">Sherriff's Office Website</a>	303-660-7505
Eagle	<a href="#">Sherriff's Office Website</a>	970-328-8500
Elbert	<a href="#">Sherriff's Office Website</a>	303-621-2027
El Paso	<a href="#">Sherriff's Office Website</a>	719 390-5555
Fremont	<a href="#">Sherriff's Office Website</a>	719-276-5555
Garfield	<a href="#">Sherriff's Office Website</a>	970-945-0453

County Sheriffs of Colorado. <http://www.csoc.org/counties.asp>. March 2016  
 \*Chief of Police for Broomfield and Denver Counties; \*\*Non-emergency number

## Appendix G (Cont.): County Sheriff's Offices of Colorado

Current as of March 2016

Colorado County	Sheriff	Phone Number**
Gilpin	<a href="#">Sherriff's Office Website</a>	303-582-1060
Grand	<a href="#">Sherriff's Office Website</a>	970-725-3343
Gunnison	<a href="#">Sherriff's Office Website</a>	970-641-1113
Hinsdale	<a href="#">Sherriff's Office Website</a>	970-944-2291
Huerfano	<a href="#">Sherriff's Office Website</a>	719-738-1600
Jackson	<a href="#">Sherriff's Office Website</a>	970-723-4242
Jefferson	<a href="#">Sherriff's Office Website</a>	303-277-0211
Kiowa	<a href="#">Sherriff's Office Website</a>	719-438-5411
Kit Carson	<a href="#">Sherriff's Office Website</a>	719-346-8934
Lake	<a href="#">Sherriff's Office Website</a>	719-486-1249
La Plata	<a href="#">Sherriff's Office Website</a>	970-247-1157
Larimer	<a href="#">Sherriff's Office Website</a>	970-498-5100
Las Animas	<a href="#">Sherriff's Office Website</a>	719-846-2211
Lincoln	<a href="#">Sherriff's Office Website</a>	719-743-2846
Logan	<a href="#">Sherriff's Office Website</a>	970-522-2578
Mesa	<a href="#">Sherriff's Office Website</a>	970-244-3500
Mineral	<a href="#">Sherriff's Office Website</a>	719-658-2600
Moffat	<a href="#">Sherriff's Office Website</a>	970-824-4495
Montezuma	<a href="#">Sherriff's Office Website</a>	970-565-8452
Montrose	<a href="#">Sherriff's Office Website</a>	970-249-7755
Morgan	<a href="#">Sherriff's Office Website</a>	970-542-3445
Otero	<a href="#">Sherriff's Office Website</a>	719-384-5941
Ouray	<a href="#">Sherriff's Office Website</a>	970-325-7272
Park	<a href="#">Sherriff's Office Website</a>	719-836-2494
Phillips	<a href="#">Sherriff's Office Website</a>	970-854-3144

County Sheriffs of Colorado. <http://www.csoc.org/counties.asp>. March 2016

\*\*Non-emergency number

**Appendix G (Cont.): County Sheriff's Offices of Colorado**  
**Current as of March 2016**

<b>Colorado County</b>	<b>Sheriff</b>	<b>Phone Number**</b>
Pitkin	<a href="#">Sherriff's Office Website</a>	970-920-5300
Prowers	<a href="#">Sherriff's Office Website</a>	719-336-8050
Pueblo	<a href="#">Sherriff's Office Website</a>	719-583-6125
Rio Blanco	<a href="#">Sherriff's Office Website</a>	970-878-9620
Routt	<a href="#">Sherriff's Office Website</a>	970-879-1090
Saguache	<a href="#">Sherriff's Office Website</a>	719-655-2525
San Juan	<a href="#">Sherriff's Office Website</a>	970-387-5531
Sedgwick	<a href="#">Sherriff's Office Website</a>	970-474-3355
Summit	<a href="#">Sherriff's Office Website</a>	970-453-2232
Teller	<a href="#">Sherriff's Office Website</a>	719-687-9652
Washington	<a href="#">Sherriff's Office Website</a>	970-345-2244
Weld	<a href="#">Sherriff's Office Website</a>	970-356-4015
Yuma	<a href="#">Sherriff's Office Website</a>	970-332-4805

County Sheriffs of Colorado. <http://www.csoc.org/counties.asp>. March 2016  
 \*\* Non-emergency number

## Appendix H: Colorado County Extension Offices

Current as of Feb 2017		
Colorado County	Phone Number	Address
Adams	(303) 637-8100	9755 Henderson Road, Brighton, CO 80601
Alamosa	(719) 852-7381	1899 E. Hwy 160, Monte Vista, CO 81144
Arapahoe	(303) 730-1920	6934 South Lima St, Suite B, Centennial, CO 80112
Archuleta	(970) 264-5931	344 Highway 84, Pagosa Springs, CO 81147
Baca	(719) 523-6971	700 Colorado St., Springfield, CO 81073
Bent	(719) 456-0764	1499 Ambassador Thompson Blvd, Las Animas, CO 81054
Boulder	(303) 678-6238	9595 Nelson Road, Longmont, CO 80501
Broomfield	(720) 887-2286	One DesCombes Drive., Broomfield, CO 80020
Chaffee	(719) 539-6447	10165 County Road 120, Salida, CO 81201
Cheyenne	(719) 767-5716	425 South 7th W., Cheyenne Wells, CO 80810
Clear Creek	(303) 679-2424	111 Rose St, Gerogetown, CO 80444
Conejos	(719) 852-7381	1899 E. Hwy 160, Monte Vista, CO 81144
Costilla	(719) 852-7381	1899 E. Hwy 160, Monte Vista, CO 81144
Crowley	(719) 267-5243	613 Main Street, Ordway, CO 81063
Custer	(719) 783-2514	205 South 6 <sup>th</sup> , Westcliffe, CO 81252
Delta	(970) 874-2195	525 Dodge Street, Delta, CO 81416
Denver	(720) 913-5270	888 E. Iliff Avenue, Denver, CO 80210
Dolores	(970) 677-2283	409 North Main Street, c/o Courthouse, Dove Creek, CO 81324
Douglas	(720) 733-6930	410 Fairgrounds Road, Castle Rock, CO 80104
Eagle	(970) 328-8630	441 Broadway, Eagle CO 81631
El Paso	(719) 520-7690	17 N Spruce St., Colorado Springs, CO 80905
Elbert	(303) 621-3162	95 Ute Avenue, Kiowa, CO 80117
Fremont	(719) 276-7390	615 Macon Avenue, Canon City, CO 81212
Garfield	(970) 625-3969	Fairgrounds, 1001 Railroad Avenue, Rifle, CO 81650
Colorado State University Extension, <a href="http://extension.colostate.edu/staff-directory/">http://extension.colostate.edu/staff-directory/</a> Feb 2017		

## Appendix H (Cont.): Colorado County Extension Offices

Current as of Feb 2017

Colorado County	Phone Number	Address
Gilpin	(303) 582-9106	230 Norton Drive, Blackhawk, CO 80422
Grand	(970) 724-3436	210 11th Street, Extension Hall, Fairgrounds, Kremmling, CO 80459
Gunnison	(970) 641-1260	275 South Spruce, Gunnison, CO 81230
Huerfano	(719) 738-2170	928 Russell Ave, Walsenburg, CO 81089
Jackson	(970) 723-4298	312 5th Street, Walden, CO 80480
Jefferson	(303) 271-6620	15200 W Sixth Ave, Unit C, Golden, CO 80401
Kiowa	(719) 438-5321	County Courthouse, 1305 Goff, Eads, CO 81036
Kit Carson	(719) 346-5571	817 156th Street, Burlington, CO 80807
La Plata	(970) 382-6463	2500 Main Ave., Durango CO 81301
Larimer	(970) 498-6000	1525 Blue Spruce Drive, Ft Collins, CO 80524
Las Animas	(719) 846-6881	2200 North Linden Ave, Trinidad, CO 81082
Lincoln	(719) 743-2542	326 8 <sup>th</sup> Street., Hugo, CO 80821
Logan	(970) 522-3200	508 South 10 <sup>th</sup> Ave, Sterling, CO 80751
Mesa	(970) 244-1834	2775 Highway 50, Grand Junction, CO 81503
Mineral	(719) 852-7381	1899 E. Hwy 160, Monte Vista, CO 81144
Moffat	(970) 824-9180	539 Barclay Street, Craig CO 81625
Montezuma	(970) 565-3123	109 West Main Street, Cortez, CO 81321
Montrose	(970) 249-3935	1001 North 2 <sup>nd</sup> , St. Montrose, CO 81401
Morgan	(970) 542-3540	914 E. Railroad Ave, Fort Morgan, CO 80701
Otero	(719) 254-7608	411 North 10 <sup>th</sup> St., Rocky Ford, CO 81067
Park	(719) 836-4296	880 Bogue St., Fairplay, CO 80440
Phillips	(970) 854-3616	22505 US Highway 385, Holyoke, CO 80734
Prowers	(719) 336-7734	1001 S. Main St., Lamar, CO 81052
Pueblo	(719) 583-6566	701 Court Street, Suite C, Pueblo, CO 81003

Colorado State University Extension, <http://extension.colostate.edu/staff-directory/> Feb 2017

**Appendix H (Cont'd): Colorado County Extension Offices**  
**Current as of Feb 2017**

<b>Colorado County</b>	<b>Phone Number</b>	<b>Address</b>
Rio Blanco	(970) 878-9490	779 Sulphur Creek Road, Meeker, CO 81641
Rio Blanco-Western Annex	(970) 878-9495	17497 Highway 64, Rangely, CO 81648
Rio Grande- Saguache	(719) 852-7381	1899 E. Hwy 160, Monte Vista CO 81144
Routt	(970) 879-0825	136 6 <sup>th</sup> St. Steamboat Springs, CO 80477
San Luis Valley Area	(719) 852-7381	1899 E. Hwy 160 Monte Vista, CO 81144
San Miguel	(970) 327-4393	1120 Summit, Norwood CO 81423
Sedgwick	(970) 474-3479	315 Cedar, Julesburg, CO 80737
Summit	(970) 668-3595	37 Peak One Dr., CR1005, Frisco, CO 80443
Teller	(719) 686-7961	800 Research Dr, Ste 230, Woodland Park, CO 80863
Washington	(970) 345-2287	181 Birch Avenue, Akron, CO 80720
Weld	(970) 400-2066	525 North 15 <sup>th</sup> Ave., Greeley CO 80631
Yuma	(970) 332-4151	310 Ash Street, Wray, CO 80758

Colorado State University Extension, <http://extension.colostate.edu/staff-directory/> Feb 2017

## **Appendix I: Resources and Links**

The following resources and links can provide the most up to date information for livestock disease emergency response. It is by no means comprehensive, but can provide a starting point to locate the most recent standard operating procedures (SOPs).

### **Foreign Animal Disease (FAD) Investigation forms**

The most current forms can be found on the APHIS-VS [Laboratory Information and Services](#) website. The most common submission form is the [VS Form 10-4](#)

### **World Organisation for Animal Health (OIE)**

OIE List of Reportable Diseases is a unified list of reportable diseases maintained by The World Organization for Animal Health. For several years the OIE created two lists (A and B) with different reporting obligations, but combined them into a single unified list of reportable diseases in 2005. The list has over 130 different diseases and is developed and revised periodically (<http://www.oie.int/animal-health-in-the-world/>). The four criteria used to develop the list are: potential for international spread, potential for zoonotic transmission, potential for significant spread within a naïve population and emerging diseases.

### **APHIS-VS Response Plans (Red Books) and SOPs**

The 2014 Redbooks review in detail Veterinary Services' (VS) response plan is reviewed in detail in the 2013 [Classical Swine Fever](#) and 2014 [Foot and Mouth Disease](#) Red Books. The standard operating procedures (SOPs) have been posted on a separate website to allow easier access and faster updates to individual plans. These SOPs are found on the [FAD PReP](#) website.

### **Secure Food Supply Plans**

The [Secure Food Supply](#) Plans are designed to maintain business continuity during a disease outbreak. There are plans for various animals and animal products. The plan that addresses pigs and semen is the [Secure Pork Supply](#) Plan.

The Secure Pork Supply Plan is the result of a multi-year collaborative effort by industry, state, federal, and academic representatives. The project is funded by USDA-APHIS National Preparedness and Incident Coordination Center (NPIC).

### **APHIS-VS List of EPA Approved Disinfectants for Selected Foreign Animal Diseases**

The United States Environmental Protection Agency (EPA) approved disinfectants for use against foreign animal diseases in farm settings. A comprehensive [chart detailing diseases and approved disinfectants](#) is provided on the [USDA-APHIS Animal Health Emergency Management](#) website. The chart was last revised in 2016.

## Appendix J: CDPHE Animal Carcass Disposal Guidelines



## Animal Carcass Disposal November 2015

### All-Hazards Events

Large quantities of animal carcasses that result from an all-hazards event (blizzard, flood, tornado, etc.), any disease-related mass deaths of livestock, or an event in which the state veterinarian determines that depopulation of animals is required, must be managed in a manner that prevents the spread of infection and contamination of soil and ground water. During such events, the Colorado Department of Agriculture is the lead agency and will direct all activities related to management and disposal of carcass wastes. The Memorandum of Understanding (MOU) between the Department of Agriculture and the Colorado Department of Public Health and Environment (we, us, our) called "Regarding Storage, Treatment or Disposal of Livestock Carcasses During Any All-Hazards Event" is available on our website at [colorado.gov/cdphe/swguidance](http://colorado.gov/cdphe/swguidance). This agreement provides guidance related to the roles and responsibilities associated with a mass mortality or depopulation event. Emergency preparedness and response plans for control and mitigation of livestock disease outbreaks can be found in the Animal Health Division of the Department of Agriculture's website ([colorado.gov/aganimals](http://colorado.gov/aganimals)) under the Animals tab.

### Other Events

Carcasses that are disposed of due to mortality or disease unrelated to an all hazards event or that cannot be used for their original intended purpose are considered to be a solid waste and must be managed in compliance with the Colorado Solid Waste Act (30-20-100.5 et.seq., C.R.S.) and its implementing regulations (6 CCR 1007-2, Part 1). Be aware that under these regulations, special requirements apply to animals known or suspected of being contaminated with infectious substances contagious to humans.

The local or county governments may also have regulations and ordinances regarding the proper management of carcasses. Therefore, you should contact your local public health department concerning local ordinances for disposal. Inappropriate management of these wastes may spread infection or cause contamination of soil or ground water.

In general, the following best management practices may be used for the safe disposal of carcasses that are not contaminated with infectious substances contagious to humans.

### Disposal at a Permitted Landfill

Carcasses may be sent to a permitted solid waste landfill for disposal with the landfill operator's prior approval. You will need to contact the landfill operator first to determine their waste acceptance policies. Many landfills have specific days or times when they will accept carcasses for disposal or may have certain packaging requirements that must be met before they will accept the waste.

## Rendering

Carcasses may be sent to a licensed rendering plant with the rendering plant operator's prior approval. You should contact the plant to make arrangements before sending the carcasses. Again, these facilities may have specific preparation and packaging requirements for the carcasses that must be met before they will accept carcasses for disposal.

## Off-site Incineration

Carcasses may be sent to an off-site incinerator (for example, a pet crematory) that is permitted and approved by local authorities and/or our Air Pollution Control Division to accept such wastes. You should contact the facility to see if they have any preparation or quantity limitations prior to transporting the carcasses.

## Composting

Carcasses may be sent to an off-site composting facility that is permitted to accept such wastes. You will need to contact the composting facility directly and determine their waste acceptance policies prior to shipping the carcasses.

Composting of carcasses may be allowed on your own property. Depending on the specifics of your operation, it may be regulated 1) by the Colorado Department of Agriculture and exempt from Solid Waste regulations; or 2) regulated under dual authority of our Solid Waste Program and the local governing authority in accordance with Section 14 of 6 CCR 1007-2. Under Option 2 above, you will need to have an approved composting plan in place before you may conduct such operations. Composting plan requirements are described in Colorado's solid waste regulations (6 CCR 1007-2, Part 1, Section 14.11). These plans must include, but are not limited to:

- The basis for selecting the composting site, including site conditions that make it appropriate for a composting operation.
- Structures to be used for run-on and runoff controls.
- Odor management.
- A description of the composting operation, including how the compost will be managed and tested, and what will be done with the final product

## Pit Incineration

In certain cases, carcasses may be incinerated in an onsite pit. Open burning permits, obtained through our Air Pollution Control Division, are required for this process. Pit incineration is generally used when there are several animal mortalities that resulted from disease and there is a risk for disease transmission if the carcasses are transported for disposal offsite. Additional controls, such as plans for disposition of the ash and other remains, must be specified prior to using this process.

## On-Site Burial

Carcasses may be buried on-site once concurrence has been obtained from this department and the appropriate local agencies. If you bury your carcasses on your own property, you should follow these best management practices:

- Layers of lime or quicklime should be applied below and above the carcass to help accelerate decomposition of the waste. Care should be used in applying lime as it is caustic and can cause severe burns to the skin and eyes.
- Burial pits must be covered with a minimum of two feet of soil.
- Carcasses cannot be placed in any body of water, seasonal creek or pond, or in areas that may carry or hold water such as gullies, ditches, blowouts or natural depressions.
- To minimize potential impacts to groundwater, large numbers of bigger carcasses (e.g., more than ten cows) should not be limed and buried together.
- Surface water must be diverted from the burial site through the use of berms or other structures.
- All carcasses must be buried at least 150 feet away from any water supply source.
- All carcasses must be buried downgradient from any groundwater supply sources.
- The bottom of the burial pit must be at least five feet above the high point of the uppermost groundwater table to ensure that carcasses do not come into contact with groundwater.
- Burial sites must be located at least one mile away from any residence of any person.
- Burial sites should not be located in areas with fractured or cavernous rock, high seasonal water tables or highly permeable soils.

Other disposal practices, including alkaline hydrolysis and mobile incineration, may be used with prior approval.

If you have a large number of animal mortalities due to disease, including Avian Flu, contact the Colorado Department of Agriculture or State Veterinarian's Office for further guidance on controlling livestock and poultry disease. The Department of Agriculture will determine if the mortalities should be managed as an all-hazards event.

#### For more information, contact:

Colorado Department of Public Health and Environment  
Hazardous Materials and Waste Management Division  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

Customer Technical Assistance  
303-692-3320  
[www.colorado.gov/cdphe/hm](http://www.colorado.gov/cdphe/hm)  
[comments.hmwmd@state.co.us](mailto:comments.hmwmd@state.co.us)