Dairy Emergency Disease Response Plan

August 2010

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CONTENTS

1.0 Introduction 1

1.1 Purpose & Scope 1

1.2 Situation 1

1.3 Assumptions 2

1.4 Plan Maintenance 3

2.0 Concept of Operations 3

2.1 Animal Diseases Significant to Cattle 3

2.2 Colorado Reportable Diseases of Cattle 4

2.3 Incident Command System & Response Levels 5

2.4 Incident Complexity Analysis 7

2.5 Responder Health and Safety Program 9

2.6 Communication Plan 10

3.0 Disease Outbreak Response 10

4.0 Disease Detection – Investigate Suspected Animal Disease and Initiate Movement Restrictions 13

4.1 Foreign Animal Disease Investigation 13

4.2 Hold Order 14

4.3 Quarantine 14

4.4 Response Plan Activation Sequence 14

5.0 Disease Containment – Quarantine Infected and Exposed Premises and Control Movement of Animals 15

5.1 Movement Restrictions 15

5.2 Premises, Zones and Area Designations 15

5.3 Biosecurity and Disease Control Measures 18

6.0 Surveillance -- Develop Surveillance Plan Based on Epidemiological Investigation 21

7.0 Epidemiology -- Determine the Extent of the Outbreak and / or Confirm Non-Infected Status 21

7.1 Trace-Forward & Trace-Back Procedures 21

7.2 Colorado Livestock Security System 23

8.0 Stablization -- Control, Prevent Spread of, and as Possible, Eradicate Disease 24
8.1 Appraisal & Indemnity 24
8.2 Depopulation 24
8.3 Disposal 27
8.4 Milk and Wastewater Disposal 31
8.5 Alternatives to Depopulation 32
9.0 Business Continuity -- Protect Economic Viability and Continuity of Operations 34
9.1 Controlled Animal Movement 34
9.2 Bio-secure Transportation Corridors 35
9.3 Milk Movement 35
10.0 Recovery -- Returning Affected Premises to Normal Business Operations 36
10.1 Surveillance and Monitoring 36
10.2 Restocking 37
11.0 Roles and Responsibilities 37
11.1 Agencies Roles and Responsibilities 37
11.2 Industry's Role in a Disease Outbreak 37

APPENDICES

A List of Acronyms A-1
B Animal Diseases Significant to Cattle B-1
C FADs Present in Animal Milk & OIE Milk Treatment Recommendations C-1
D ICS Organization Structure Chart D-1
E Incident Complexity Analysis Worksheet E-1
F PPE Guidance for Zoonotic and Non-Zoonotic Diseases F-1
G Regulatory Communication Network G-1
H Colorado VMO Territories H-1
I FADI Collection Data Form Sample I-1
J EPA Approved Disinfectants for Highly Pathogenic Diseases J-1
K Local, State, and Federal Agencies Roles and Responsibilities K-1
L Industry's Role in Emergency Response L-1

TABLES

Table 1. Response Levels and National Incident Management System Incident Typing 8
Table 2. Timeline for Disease Control Response Activities 12
Table 3. Factors Used to Determine Control Area Size 18
Table 4. Type and Frequency of Vehicle / Personnel Movement onto Dairy Operations 22
Table 5. Methods of Depopulation Appropriate for Dairy Cattle 25
Table 6. Considerations for Approved Depopulation Methods for Cattle 27
Table 7. Cattle Disposal Methods: Considerations 30

FIGURES

Figure 1. Premises, Zones and Area Designations 17
Figure 2. Barrier Vaccination Examples 33
Figure 3. Target and Area Vaccinated Diagram 33

1.0 Introduction

Potential emergencies facing dairy producers may include an outbreak of a highly contagious animal disease, serious toxic exposures, foreign animal diseases, and natural disasters. 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) *Dairy 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), local emergency management personnel, local and state law enforcement, brand inspectors and dairy industry partners to swiftly detect, control, and eradicate a disease outbreak in dairy cattle.

1.1 Purpose & Scope

The purpose of the CDA *Dairy Emergency Disease Response Pla*n is to provide a framework to ensure a rapid and coordinated response to an outbreak of a highly contagious disease in dairy cattle within the State of Colorado. The goal of this plan is three-fold: to control and eradicate the disease on infected premises as quickly as possible; to help affected facilities to 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 dairy cattle and will be applicable to any highly contagious or economically destructive disease or event that causes significant morbidity or mortality in dairy cattle.

Included in this plan is the management of raw milk located on infected premises. Since not all diseases significant to cattle are passed from the animal to their milk supply, response actions will vary with each disease agent. Appendix C lists diseases significant to cattle and if the disease agent is present in an infected animal's milk. Response actions pertaining to raw milk on infected premises will be made in collaboration with the Colorado Department of Public Health and Environment (CDPHE) and CDA; consultation with the milk cooperatives and Western Dairy Association (WDA) will be an important part of the decision making process.

Natural disasters may also cause devastation in the State's cattle 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 dairy cattle. In such incidents, the *CDA Dairy 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 Situation

The Colorado dairy industry is an important component to the state's economy. As the State's second largest agricultural business, milk production creates roughly 8000 jobs across Colorado and is responsible for generating more than one billion dollars into the economy. Nationally, Colorado dairy cattle rank constantly within the top five states in milk production per cow

(averaging 2700 gallons per cow annually) and produce approximately $300 million dollars worth of milk per year.

Dairy farming in Colorado is a family tradition with all 150 licensed farms in the state being family owned. In early 2010, approximately 115,000 dairy cows resided on Colorado dairy farms producing over 7 million pounds of milk daily or 230 million pounds of milk each month. It is anticipated that numbers in dairy cattle and milk production will increase in 2010 to support new dairy-related industry within the state. The majority of dairy farms in Colorado are located in the northeast portion of the state, North of Interstate 70 and East of Interstate 25. Additionally, the bulk of dairy premises in the state are in a co-op with the Dairy Farmers of America (DFA). Roughly 90% of the milk hauled in the state is transported by DFA haulers; the other 10% of milk is transported by independent haulers. Dairy processing plants within the state produce fluid milk, cheese, cottage cheese, yogurt, and sour cream.

1.3 Assumptions

- Response to an animal disease outbreak will begin at the local level.
- If an animal disease emergency occurs in Colorado's dairy cattle industry, the most probable means of discovery will be by dairy cattle producers, private practice veterinarians and / or trace information from an animal disease investigation in another state. Local livestock experts like brand inspectors and livestock extension agents may be involved in initial local detection and background information about livestock diseases and conditions.
- Private veterinary practitioners will likely be the first responders to any animal disease outbreak.
- A veterinarian is required to immediately notify the State Veterinarian or the USDA Area Veterinarian in Charge (AVIC) of any suspected foreign animal disease.
- An animal disease outbreak may occur through natural pathways or could be introduced as an act of terrorism.
- Diagnosis of a highly contagious 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 positive foreign animal disease (FAD) will be under the jurisdiction of the CDA and carried out by the State Veterinarian or official designee in conjunction with the AVIC of USDA, APHIS. Producer input will be highly valued and integrated into the response.
- The State Veterinarian and the USDA APHIS AVIC 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 recovery.
- Owners losing livestock in an animal disease emergency or persons responding to the situation may require psychological counseling and support.

1.4 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 *Dairy Emergency Disease Response Plan* will be reviewed and updated as required but at least annually in September 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. Additionally, this section provides an overview of the CDA's responder health and safety program and guidance on how the Department will interface with agencies, the livestock industry, media and the public during an emergency response event.

2.1 Animal Diseases Significant to Cattle

Animal diseases found in cattle vary in virulence, ease of transmission, mode of transmission, and host affinity. Diseases of concern are highly contagious diseases that cause significant morbidity and/or mortality in cattle. Such diseases often present similar clinical signs as diseases that do not result in a high level of morbidity and/or mortality. In this scenario, diagnostic testing is required 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 and/or mortality in cattle and trigger activation of this plan are FADs and new and emerging diseases. A list of FADs that cattle are susceptible to is provided in Appendix B. Additional information on disease transmission, vaccine availability and recommended control measures for listed FADs can also be found in Appendix B.

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

- **Foreign Animal Disease** or exotic animal disease is defined as an important transmissible disease of livestock believed to be absent from the United States and its territories.

- **New or Emerging Diseases** are completely new diseases, or an old disease occurring in new places with new presentations, or 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. In January of 2005, the lists were combined to form a single list with over 130 diseases of interest. Four criteria were used to develop the disease list: international spread, zoonotic potential, 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. **Category A** agents and disease are easily transmitted from person to person, have high mortality rates 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** diseases 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.

2.2 Colorado Reportable Diseases of Cattle

An additional animal disease listing is the Colorado Reportable Disease List. A Colorado reportable disease is defined by Colorado Revised Statues CRS 35-50-103 as infectious or contagious disease or emerging disease of livestock that poses a significant risk to the livestock industry of the state resulting from infectious agents, such as viruses, riskettsia, 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 Cattle are listed below.

- Anaplasmosis (Clinical Disease Only)
- Anthrax
- Brucellosis
- Bovine Spongiform Encephalopathy (BSE)
- Malignant Catarrhal Fever
- Paratuberculosis (Johne's Disease)
- Pseudorabies
- Rabies
- Scabies
- Trichomoniasis
- Tuberculosis

- Tuleremia
- Vesicular Stomatitis
- Vesicular Diseases of all livestock
- All infectious disease or parasites of livestock not previously known to exist in Colorado
- Any disease of unusual morbidity or mortality that does not fit the normal expected clinical picture.
- Any Suspected FAD

2.3 Incident Command System & Response Levels

Since incidents will vary in size and scope, the level of activation will depend on the nature of the outbreak. Not all dairy cattle 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 Veterinarian Medical Officer (VMO). The dairy industry has also invested time and resources in developing plans to deal with their own livestock incidents and situations. It is important to work towards integration of the response planning from private industry, the local community, and from the state/federal plans.

In the event of a highly contagious disease outbreak in dairy cattle, 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. CDA will also manage each incident using 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 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 D for an ICS incident organization chart designed for an animal disease outbreak.

CDA will also follow NIMS incident typing and will respond to an animal health emergency using the following activation levels. NIMS incident typing will assist decision makers in determining resources required for specific incidents. Table 1 CDA Response Levels & 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 likely 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 resource input 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 Industry Division. Level 4 activities will include those identified for Level 5 and also the following additions:

- Elevated animal origin verifications.
- Notification of private practice veterinarians of specific clinical symptoms of the disease(s) in question.
- USDA AVIC is notified of situation.
- Review of the *Dairy Emergency Disease Response Plan* relative to a potential response to the disease in question.
- Notification of dairy 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 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 Colorado Emergency Operations Center (EOC) and deployment of the Eastern Colorado Incident Management Team (ECIMT).

The ECIMT is a Type 3 incident management team (IMT) that 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 proceeding levels and also the following:

- Import/export of affected, potentially affected or possibly all animals from the impacted states will be suspended, pending control and eradication of the disease.
- Relevant state resources will be inventoried and contract mechanisms supporting the logistics portion of a potential response will be reviewed and made ready for use.
- Public relations material will be reviewed, made current, and vetted with key collaborators 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 II 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 to manage large national incidents and other incidents requiring a large number of local, regional, state, national, and federal resources over multiple operational periods.

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 designees 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 E.

Table 1. Response Levels and National Incident Management System Incident (NIMS) Typing [1]

Response Level	NIMS Incident Type	Lead Agency	Emergency Response Actions*	Source of Resources
Level 5– Local Response	Type 5	CO Dept of Ag	- One 12hr. Operational Period - Incident action plan not required* - Emergency Operations Center not activated - Incident Commander position staffed	- Local
Level 4 – Limited State Response	Type 4	CO Dept of Ag	- One 12hr. Operational Period - Incident action plan not required* - Emergency Operations Center not activated - ICS command and general positions activated as needed	- CDA Animal Industry Division
Level 3–State Response	Type 3	Joint Command: - CO Dept of Ag - USDS APHIS VS	- May extend into multiple operational periods - IAP may be required* - ICS some/all command and general positions activated - A Type III IMT like ECIMT will manage incident - State EOC may be activated	- Local (Support) - State - May require regional resources
Level 2 – Multi-State Response	Type 2	Joint or Unified Command National and regional coordination required	- Extends into multiple operational periods - IAP required - ICS some/all command and general positions activated - Rocky Mountain Type II or equivalent IMT will managed the incident. - State EOC activated	- Local (Support) - State - Regional - May require national resources
Level 1 – National Response	Type 1	National Unified Command	- Extends into multiple operational periods - IAP required for each operational periods - ICS all command and general positions activated - Type I IMT will manage incident - State EOC activated	- Local (Support) - State - Regional - National

*** IAPs are required for all HAZMAT incidents regardless of the type of incident.**
[1] 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.

2.5 Responder Health and Safety Program

A fundamental requirement for CDA is ensuring the safety of Department employees involved in responding to a disease outbreak. To meet this obligation, the CDA Homeland Security Director developed the responder health and safety program. The CDA Responder Health and Safety Program is composed of three components: (1) Personal Protective Equipment *GUIDELINES* for CDA Employees – General Guidance Document; (2) CDA – Respiratory Protection Program; and (3) Medical Monitoring and Rehabilitation. Combined, these documents / 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 and 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 environment. The guidance is just that, guidelines that incident commanders, operations section chiefs, Foreign Animal Disease Diagnostician **(**FADD) veterinarians, team or task force leaders or the like can utilize in assessing and deciding upon equipment and procedures they will utilize when conducting their assigned missions. See Appendix F for Personal Protective Equipment (PPE) guidance for zoonotic and non-zoonotic diseases.

Producers or the general public need to realize rather high levels of protection may be utilized initially as the agent at that point may be unknown. Once the agent is identified, levels of protection can be adjusted, generally decreased, to fit specific challenges an agent might pose. It is likely the latter level will be quite 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 can not provide any equipment or certain training to private employees though they may recommend specific levels of PPE be utilized for different operational activities.

2.5.2 Respiratory Protection Program

Whereas disease agents often utilize the respiratory system as a portal of entry and further where the use of chemicals in cleaning and disinfection or those that are inherently present on livestock operations may pose health risks, the department operates a respiratory protection program. Individuals who may be deployed to an incident 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

Individuals who work in emergency response will attest to the hard work and long hours needed to complete tasks that must be done. In so doing, individuals can place themselves at risk for underlying problems that can lead to debilitating injuries or even death such as a preexisting cardiac issue leading to a heart attack under physical stress. 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.

Production workers generally have scheduled breaks to eat or get something to drink. These may need to be extended and rehydration beverages or food provided dependent upon work schedules. Medical monitoring of production employees might possibly be arranged via local public health or emergency medical service departments.

2.6 Communication Plan

External communication during an outbreak will be the responsibility of the State Veterinarian and the CDA Director of Communications. 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 (see Appendix G for the regulatory network's contact information). Additionally, the CDA Communication Director will communicate and collaborate with industry representatives such as DFA, Western Dairy Association (WDA), Colorado Livestock Association (CLA) and Colorado Cattle Association (CCA) and others throughout the incident. The *WDA Crisis Communication Plan* will serve as guide for industry when communicating with the public throughout an animal health emergency. The *WDA Crisis Communication plan* contains key messages, roles and responsibilities and industry contact lists that will serve as an important external and internal communication resource during an incident.

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 will assume the ICS role of Public Information Officer (PIO) upon activation of this plan. Should a Type III or higher ranked IMT assume command, the CDA Director of Communications will become a PIO team member under direction of the Incident Commander (IC). All information gathered and prepared will be vetted by affected parties and approved by the IC and Commissioner of Agriculture or designee prior to release to the media or public.

3.0 Disease Outbreak Response

This section describes the processes and protocols utilized by the CDA during a disease outbreak affecting dairy cattle. 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 dairy cattle-see Table 2 for summary of response actions and timelines. Responding to a disease outbreak in dairy cattle will involve the following actions. A description and timeline of each action phase follows.

- **Disease Detection** -- Investigate Suspected Animal Disease and Initiate Preliminary Control Measures
- **Disease Control** -- Quarantine Infected and Exposed Premises and Control Movement of Animals
- **Surveillance** – Develop a Surveillance Plan based on Epidemiological Investigation
- **Epidemiology** -- Determine the Extent of the Outbreak and/or Confirm Non-Infected Premises
- **Stabilization** -- Control, Prevent Spread of, 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[1]					
Disease Outbreak Response Actions*, †	**12 hours** **Within a confirmed positive case**	**24 Hours** **Within a confirmed positive case**	**48 Hours** **Within a confirmed positive case**	**24 Hours** **Within determination of need**	**72 Hours** **Within determination of need**
Disease Control -- Quarantine Infected and Exposed Premises and Control Movement of Animals					
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.					
Surveillance -- Develop Surveillance Plan Based on Epidemiological Investigation					
Develop a surveillance plan and implement existing diagnostic support.					
Epidemiology -- Determine the Extent of the Outbreak and / Or Confirmed Non-Infected Status					
Implement epidemiological surveillance and diagnostic support plan in at-risk species and notify other states of trace-outs.					
Stabilization -- Control, Prevent Spread of, and, as Possible, Eradicate Disease					
Begin treatment, inoculation, and /or depopulation of animals at identified site.					
Begin decontamination and disposal procedures at identified site.					
Business Continuity -- Protect Economic Viability and Continuity of Operations					
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.					

[1] **Based on Department of Homeland Security, Federal Emergency Management Agency. *Livestock and Poultry Disease Emergencies Capability*, August 2009.**

* **Disease Detection and Recovery Actions are not in the scope of the above timeline.**

† **Communication with neighboring states will be initiated within 4 hours of a confirmed positive case.**

4.0 Disease Detection – Investigate Suspected Animal Disease and Initiate Preliminary Animal Movement Restrictions

4.1 Foreign Animal Disease Investigation

Upon notification of a suspected case of a FAD, the Colorado State Veterinarian or USDA AVIC will dispatch a FADD to conduct a Foreign Animal Disease Investigation (FADI). See Appendix H for VMO territories in Colorado. The investigation is conducted using a standardized format developed by USDA. Information and data collected during the FADI includes a general assessment, gathering site information and samples, and epidemiological data (see Appendix I for an example of a FADI Data Collection Form). In addition, the FADD collects the following information about the facility:

- Premises Identification Number (PIN)
- Species and Newborns of Livestock Present
- 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 (see the Colorado Animal Emergency Response Organization (CO AREO) for Standard Operational Procedures (SOPs). Information from the investigation is reported to the State Veterinarian who in consultation with the FADD and the AVIC determines the potential for the presence of an animal disease is “unlikely”, “potential” or “highly likely”. 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 and 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 Memo 580.4. Initially if the FADD suspects a condition such as FMD he is the IC on site and will confer with the appropriate people but he will be the initial individual to implement the hold order and to immediately start the epidemiological investigation.

In most cases, preliminary results are available within 24-48 hours. However, during the investigation, the State Veterinarian may implement certain movement restrictions for livestock and dairy or other products. 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 4.2.

4.2 Hold Order

There are three possible outcomes of an FADI: negative, presumptive positive, or confirmed positive. In the event a FAD is suspected as the initial outcome of the FADI, 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 preliminary / presumptive positive test result must be confirmed by the National Veterinary Services Laboratories (NVSL). Once the appropriate NVSL lab 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 from the Colorado State University Veterinary Diagnostic Laboratory of a presumptive positive or from NVSL of a presumptive or positive to a highly contagious animal disease the State Veterinarian will activate the *Dairy Emergency Disease Response Plan*.

The State Veterinarian will immediately contact the Commissioner of Agriculture, Deputy Commissioner, the USDA APHIS VS Colorado AVIC, and the CDA Homeland Security Director 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 activation of the state EOC (SEOC) 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 and location of the infected premises including Global Positioning System (GPS) and Colorado Livestock Security System (CLSS) Premises Identification Number (PIN) if available.
- Type of production facility and number of dairy cattle 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 AVIC, and the CDA Homeland Security Director at their afterhours contact numbers. Based on direction from the Commissioner, Deputy Commissioner and AVIC, the State Veterinarian will take appropriate action to activate the response level based on incident type –see Table 1.

5.0 Disease Containment -- Quarantine Infected and Exposed Premises and Control Movement of Animals

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. Though 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 dairy cattle.

5.1 Movement Restrictions

Movement restrictions for dairy cattle, dairy products, 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 animals will need to remain on the premises until the necessary control measures are determined by the State Veterinarian. A control zone, which includes any contact premises (farms or areas with a connection to the Infected Premises), will be established. Road blocks and/or check points 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. Personnel within the Brands Division of CDA will be called upon to establish and enforce animal movement check point or like restrictions. The Colorado Department of Public Safety- Homeland Security Section will aid in coordination of stop movement orders upon roadways within the state. Descriptions and a diagram of Premises, Zones and Area designations follow.

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 livestock disease. He/she shall work with the AVIC and FADD veterinarians, emergency responder teams, and the SEOC to establish area and zone designations that will allow for the targeting, implementation and enforcement of quarantine and movement controls. Factors used to help determine the size of the control area is listed in Table 3, Factors Used to Determine Control Area Size.

Control Area – The Control Area consists of the Infected Zone, a Buffer-Surveillance Zone, and when vaccination is used, a Buffer Vaccination Zone.

Buffer Vaccination Zone – Emergency vaccination (if available) may be used to slow the spread of the highly contagious animal disease. The area where vaccination is being – or has been – practiced will be known as the Buffer Vaccination Zone.

Buffer Surveillance Zone – The Buffer Surveillance Zone immediately surrounds both the Infected Zone and if established, the Buffer Vaccination Zone.

Infected Zone – The Infected Zone encompasses the perimeter of all suspect and infected premises. The Infected Zone also includes contact premises as required by the situation.

Surveillance Zone – The Surveillance Zone is established within the Free Zone, along its border with the Buffer-Surveillance within a Control Area. Surveillance in the Surveillance Zone will focus on premises determined to be at the highest risk of infection.

At-Risk Premises – Premises within the Buffer-Surveillance Zone that have clinically normal susceptible cattle are known as At-Risk Premises. Surveillance on the At-Risk Premises will be appropriate to detect the presence and/or to prove the absence of the disease on the premises.

Contact Premises – Contact premises are those premises with susceptible animals that have been determined to have been exposed directly or indirectly the FAD agent, but on which a highly contagious FAD has not been diagnosed**.**

Infected Premises – Infected premises are premises with the presumed or confirmed animal disease based on clinical signs and/or laboratory results.

Suspect Premises – A suspect premises is a premises on which it is reasonable by virtue of clinical signs of illness, morbidity or mortality to believe that some risk of highly contagious cattle disease may exist.

Figure 1. Premises, Zones and Area Designations

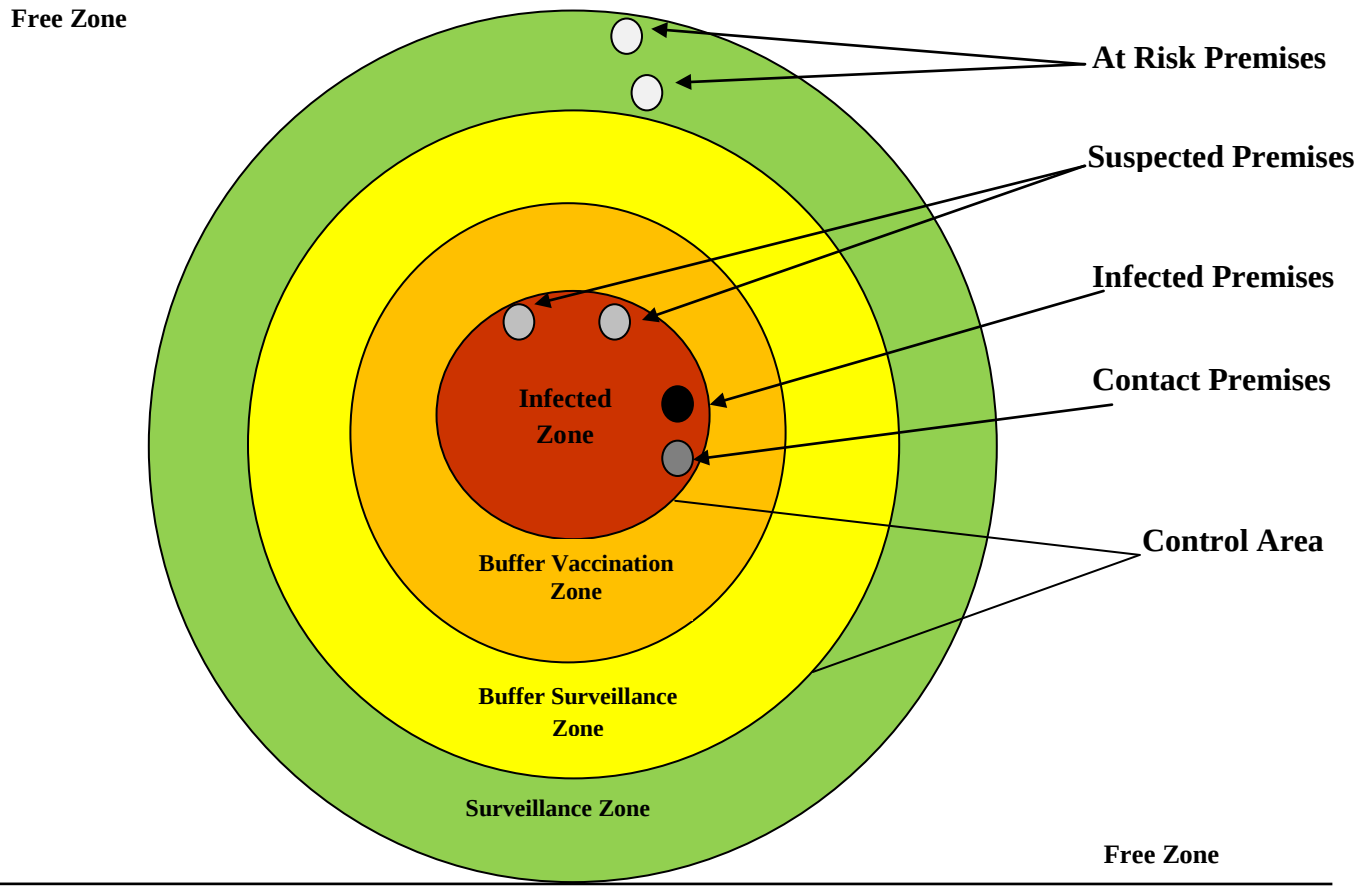

Table 3. Factors Used to Determine Control Area Size	
Factors	**Additional Details**
Jurisdictional Areas	- Effectiveness and efficiency of administration - Multi-jurisdictional considerations: Local, State, Tribal and multi-State
Physical Boundaries	- Areas defined by geography - Areas defined by distance between premises
Disease Epidemiology	- Reproductive rate - Incubation period - Ease of transmission - Infectious dose - Species susceptibility - Modes of transmission (fecal-oral, droplet, aerosol, vectors) - Survivability in the environment - Ease of diagnosis (pathognomonic or diagnostic laboratory testing) - Age of lesions
Infected Premises Characteristics	- Number of Contacts - Transmission pathways and transmission risk --Amount of animal movement --Number of animals --Species of animals --Age of animals --Movement of traffic and personnel to and from premises (fomite spread) - Biosecurity measures in place at time of outbreak
Contact or Contiguous Premises Characteristics	- Number and types of premises - Susceptible animal populations and population density - Animal Movements - Movement of traffic and personnel to and from premises (fomite spread). - Biosecurity measures in place at time of outbreak
Environment	- Types of premises in area or region - Land use in area or region - Susceptible wildlife and population density - Wildlife as vectors - Wildlife as fomites
Climate (for Aerosol Spread Diseases)	- Prevailing winds - Humidity
General Area, Region, or Agricultural Sector Biosecurity	- Biosecurity practices in place at time of outbreak - Biosecurity practices implemented at time of outbreak
Number of Backyard or Transitional Premises	- Types of premises, animal movements and network or animal and fomite movements
Business Continuity Requirements	- Business continuity, movement and marketability, or compartmentalization plans and practices in place at time of outbreak

Source: USDA APHIS FAD PReP Dairy Industry Manual, Foreign Animal Disease Preparedness & Response Plan. Draft July 2010.

5.3 Biosecurity and Disease Control Measures

USDA APHIS defines biosecurity as the use of certain management practices designed to prevent the introduction and spread of disease. Also, biosecurity helps to mitigate the effects of the disease once it has been introduced into a herd or area. Biosecurity target areas for a dairy facility are site security and traffic control, isolation of animals, and sanitation. Dairy producers incorporate biosecurity measures into their daily operations as part of cattle health and management practices. Biosecurity measures for routine operations in dairy facilities are located in Appendix L.

During a health emergency in dairy cattle, 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 unless directly involved in the care and feeding of cattle, milk transport or involved in the emergency response. Additional site security procedures that may be recommended include:

- Establish one ingress and one egress location into 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 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.
- All non-essential work on the farm shall cease and access to the facility will be restricted to essential personnel. Essential personnel are defined as having a direct role in the care of the animals or in response. All vehicles and equipment on the premises may be prohibited from leaving the premises unless approved by the State Veterinarian. Cleaning and disinfection may be required of such vehicles.
- All essential personnel are required to wear PPE 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 diseases, area and nature of work individuals are to engage in. These items must be put on prior to entry onto the premises, or a specified area therein, and must be removed and thoroughly disinfected or disposed of prior to leaving.

- Verify premises log book is complete. Deliveries for farm essentials shall be by appointment only.

5.3.2 Cleaning & Disinfection Procedures

Cleaning and disinfection is a means to control the spread of disease by attempting to eliminate targeted disease causing microorganisms and prepare the premises for the reintroduction of livestock. Cleaning and disinfection procedures are essential both during and after an animal disease event. Cleaning and disinfection materials that should be available at 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. Protocols for cleaning and disinfecting milking equipment and dairy tanker trucks are provided in Appendix L. Listed in Appendix J is a list of disinfectants approved by EPA for specific diseases. Specific 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, 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.
- Implementing a shower in/shower out policy for all essential personnel coming in direct contact with cattle and areas where cattle are housed.
- 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 Division of Wildlife (DOW) will collaborate and lead all appropriate wildlife response activities. Appendix K provides additional information on the DOW role in an animal disease outbreak. An important question to ask would be: “Are there wildlife on or near the premises and are they affected by the disease?”

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 the CDA will contact the Colorado Department of Public Health and Environment (CDPHE) to seek assistance in the response to protect affected livestock personnel and the public’s health. Appendix K provides additional information on the CDPHE’s role in an animal disease outbreak. An important question to ask would be “Are there sick people?” In severe zoonotic disease outbreaks such as endemic or pandemic influenza, CDPHE may assume the lead in response with CDA addressing livestock components of the outbreak.

6.0 Surveillance -- Develop Surveillance Plan Based on Epidemiological Investigation

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. 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 clinical testing. Inspection of animals for clinical signs involves observing animals for any clinical presentation of the disease. For example, cattle infected with contagious bovine pleuropneumonia (CBPP) show signs of a high fever, decreased appetite, loss of milk production and painful and difficult breathing. Surveillance information is also obtained through the collection and testing of animal blood (serological testing), tissue, or skin scrapings. 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 disease agent. OIE surveillance recommendations for animal diseases are located in Appendix B.

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 Trace-Forward & Trace-Back Procedures

An important component of an animal disease outbreak investigation is to establish trace-forward and trace-backs from premises to determine both the source of the disease and the risk for disease transmission to other premises with susceptible species. Trace-backs are conducted to assist in identifying the source of the virus 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 dairy cattle (and possibly other animals), dairy products, feed, equipment and vehicles, (livestock trucks, feed trucks, veterinary trucks) and people (sales and feed representatives, visitors, veterinarians and brand inspectors) that have visited the farm prior to the outbreak. Table 4. Type and Frequency of Vehicle/Personnel Movement Onto Dairy Operations lists the types of personnel on to a dairy operation during normal business operations.

Trace-backs are usually applied for a minimum of 2 times the maximum incubation period of the diagnosed disease before the onset of clinical signs.

Table 4. Type and Frequency of Vehicle / Personnel Movement onto Dairy Operations			
Daily	**Weekly**	**Monthly**	**Seasonal/Variable**
Employees	Veterinarian	Veterinarian	Milk equipment repair personnel
Milk hauler	Feed delivery	Nutritionist	Feed, equipment, seed and pharmaceutical sales personnel
Calf pick up	Calf pick up	Heifer delivery	Hoof trimmers
Reproduction technician (artificial insemination)	Reproduction technician (artificial insemination)	Dairy cooperative field representative	Embryo transfer
	Cull cattle buyer	Cull cattle buyer	Manure removal
	Rendering	Diesel fuel delivery	Propane
	Supply delivery (towels, dips, milk liners, vaccines)	Garbage pick up	
		Utility meter reader	
Source: USDA APHIS FAD PReP Dairy Industry Manual, Foreign Animal Disease Preparedness & Response Plan. Draft July 2010.			

Trace-forward procedures gather similar information on animal, people, and equipment movements off the farm to identify other premises that possibly received infected animals, animal products or contaminated equipment or personnel. Trace-forward is usually applied up to the time quarantine is imposed. OIE tracing recommendations for FADs significant to cattle are located in Appendix B.

It is recommended that producers maintain herd records on a regular basis to assist in both trace-forward and trace-back procedures when needed. The following are 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. Cull animals/steers sold number, date, and location.

- **Milk Movement**
  Milk movement logs (date, batch identification, origin, destination, driver, tankers used)
  Tanker information including driver, tanker used, dates, origins, and destinations.

- **Raw Milk Samples**
  Records of off-site milk testing laboratories that have received raw milk samples including the method of transport and disposal of sample waste.

- **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, health inspection personnel, 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. Effluent disposal information if moved off-site may also be traced.

- **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, does the employee have contact with other livestock?)

- **Pets and Animals**
  Pets and other animals located on the premises

Additionally, it may be required that producers participate in an animal identification system such as the CLSS.

7.2 Colorado Livestock Security System

The CLSS is currently under development by the CDA. The CLSS is a repository of Colorado livestock ownership data that can be accessed and utilized during an animal disease outbreak to

assist in the tracing of animals and premises. Data for the CLSS are pulled from existing data sources and integrated into one system that can be accessed by CDA animal health officials during an animal emergency. CLSS enables CDA to inform producers quickly when a disease or natural disaster event may impact their area or the species of animals that they own or house.

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8.0 Stabilization -- Control, Prevent Spread of, and as Possible, 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 the USDA AVIC. Actions taken will be based on the particular circumstances of the outbreak including: the disease agent, epidemiology of the disease, magnitude of the outbreak, vaccine availability and resource availability. Descriptions of possible response actions to eliminate an animal disease are described in the following section.

8.1 Appraisal & Indemnity

According to the U.S. Code of Federal Regulations 9CFR53.3 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.

With qualifying events, appraisal and indemnification process outlined in 9CFR53.3 is the most efficient appraisal process for livestock owners. The process outlined in CRS 35-50-113 is a cumbersome and often time-consuming procedure used in situations where depopulation of livestock is deemed necessary by the Commissioner and the State Veterinarian. For both processes, fair market value of livestock must be mutually agreed upon by the owner and state or federal officials prior to depopulation. Valuation is generally based upon prevailing market value of the class of livestock and their stage or production. Under certain situations, such as with genetic seedstock animals, a physical appraisal may be required to establish value.

In previous highly infectious disease outbreaks, the cost of euthanasia, carcass disposal and decontamination were paid for by the USDA. Colorado will follow USDA procedures to request assistance with indemnification of dairy 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 dairy cattle is confirmed in the state of Colorado, dairy cattle 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 dairy cattle 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 Agricultural Biosecurity Center, Kansas State University, or other resources.

The State Veterinarian's depopulation plan will be dependent upon the type, number, and size of cattle to be depopulated. Table 5 provides an overview of the approved methods of depopulation for cattle and is broken out by the size of the dairy cattle involved. Table 6 provides an overview of the advantages, disadvantages and considerations for human safety for depopulation methods appropriate for cattle. Carcass disposal will be carried out in collaboration with the CDPHE as defined in the CDA/CDPHE joint Interagency Agreement (IA) state statute, and state rule/regulations. Additional information on carcass disposal is located in Section 8.3.

8.2.1 Gunshot

Gunshot to the brain is an AVMA approved method to euthanize cattle. 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 size and 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.

Table 5. Methods of Depopulation Appropriate for Dairy Cattle [1,2]

	Calf	Heifer	Dairy Cow	Bull
Gun Shot	Yes	Yes	Yes	Yes- requires specialized gun
Penetrating Captive Bolt	Yes	Yes	Yes	Yes-requires specialized captive bolt gun
Electrocution (Head to Heart)	Yes	Yes	Yes	Yes
Barbiturates	Yes	Yes	Not Practical	Not Practical

[1] **American Veterinary Medical Association.** *AVMA Guidelines on Euthanasia*, 2007.
[2] **American Association of Bovine Practitioners,** *Practical Euthanasia of Cattle: Considerations for the Producer, Livestock Market Operator, Livestock Transporter, and Veterinarian*, 1999.

8.2.2 Penetrating Captive Bolt

The AVMA has approved the penetrating captive bolt as a possible form of euthanasia for cattle. 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 exsanguinations or "pithing" be administered to ensure death. This method is practical for numerous animals, and is especially useful for animals over 200 pounds.

8.2.3 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. For cattle, electrocution as a depopulation method should only be applied using specialized slaughter plant equipment that applies a minimum of 2.5 amp across the brain. A 120 volt electrical cord does **not** apply sufficient amperage to induce unconsciousness.

8.2.4 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 the carcasses unacceptable for rendering.

Table 6. Considerations for Approved Depopulation Methods for Dairy Cattle [1,2,3]

Depopulation Method	Human Safety Risk	Advantages	Disadvantages	Equipment
Gun Shot	Bullet poses considerable risk	Recommended for animals that cannot be restrained or are difficult to handle.	- May not kill animal - May present biosecurity risk from leaking body fluids - May preclude evaluation of brain if damaged by shooting	- Skilled and licensed operator - Appropriate firearm and ammunition for cattle - .22 caliber long rifle" for calves
Penetrating Captive Bolt	Moderate	- Safer for operator than free bullet method - Reduces the need to move animals	- May be a two-step process based on size - Misplaced captive bolt gun may compromise animal welfare - Captive bolt gun must be maintained, cleaned - Several must be used to reduce over heating	- Different sizes of captive bolt guns for different size cattle.
Electrocution	High – requires considerable operator knowledge	- No tissue or blood exposure - physically demanding for operator - Requires monitoring to ensure	- Restrain is necessary - Two-step process for large animals	- Electrical supply - Electrodes
Barbiturates	Low	- Humane & rapid killing of animals	- Animals must be restrained - Administered by a trained professional - Limited access to drugs	- Syringes & needles - Drug to be injected

[1] **American Veterinary Medical Association.** ***AVMA Guidelines on Euthanasia,*** **2007.**
[2] **American Association of Bovine Practitioners,** ***Practical Euthanasia of Cattle: Considerations for the Producer, Livestock Market Operator, Livestock Transporter, and Veterinarian,*** **1999.**
[3] **United States Animal Health Association,** ***Foreign Animal Disease*** **, 2008**

8.3 Disposal

An essential component in eradicating a disease is the proper disposal of livestock carcasses. The goal of carcass disposal is to facilitate the decomposition of carcasses and the destruction of any pathogenic disease agent present. 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. When applicable, cattle 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 AVIC 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. Additional information on each option is located in Table 7. Cattle Disposal Methods: Considerations.

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.

8.3.2 Composting

Composting involves a 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_2 and other gases. 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.

Windrow composting technique takes place in a static pile. The site is usually built in open spaces with no walls or roofs and not protected from weather. Windrow composting is often used for disposal of large animals.

Bin composting is the simplest form of a contained composting method, where carcasses and composting material are confined within a structure built from any materials that are structurally adequate to confine the compost pile material.

8.3.3 On-Site Burial

Burial of deceased livestock can take place onsite or in an approved landfill. Both burial methods are subjected to Code of Colorado Regulation (CCR) 6 1007 Parts 2-3, which lists the following requirements:

- Every part of all dead animals must be buried by at least two feet of soil.
- No dead animals shall be placed in any body of water or seasonal creek or pond.
- Surface water should be diverted from the pit utilizing an up gradient diversion berm or other method.
- All dead animals must be buried at least 150 feet down gradient from any groundwater supply source.
- In no case should the bottom of the burial pit be closer than five feet to the ground water table.
- Burial sites should be located more than one mile from any residence.

8.3.4 Landfill Burial

The use of permitted landfills for carcass and material disposal may be an option. 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.

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 a prion that causes chronic wasting disease.

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.

Table 7. Cattle Disposal Methods: Considerations [1,2]

Disposal Method	Advantages	Disadvantages	Required Resources
Mass Burial On Site	-- Removal of large amounts of biomass -- Facilities can be decontaminated immediately upon removal of livestock -- Risk of disease spreading is reduced upon burial of livestock.	-- May serve as a containment site rather than decomposing livestock -- Requires multi-agency approval -- Significant site planning -- Public opposition -- Potential environmental contamination -- Safe management of fluids from decay process	-- Excavation equipment -- Cover material -- Appropriate landscape
Landfill	-- Cost /ton is manageable in many instances -- Infrastructure is in place to accept large quantities of materials quickly. -- Back up safety and compliance teams exist -- Subtitle D liner systems for containment are in place	-- Requires transporting carcasses off-site -- Permitting process may lead to delay in burial -- Operator may refuse to accept materials -- Safe management of fluids from decay process -- Standard practices are different for each site	-- Approved landfill site
Composting	-- Removal of large amounts of biomass -- Produces a humus-like product containing nutrients and organic matter that can be recycled onto cropland -- Cost effective	-- Slow carcass decay -- Poor odor retention -- Leachate production	-- Carbon source ie- sawdust, straw, corn stover -- Appropriate composting site -- Tractor or skid loader -- Long stem dial-type composting thermometer
Incineration **Fixed Facility**	-- Biosecure	-- Fixed capacity -- Public Opposition -- Expensive to operate -- Incinerators are incapable of handling large volumes of carcasses	-- Fuel -- Incineration facility
Air-Curtain	-- Mobile	-- Fuel intensive -- Logistically challenging	-- Fuel -- Air-curtain incineration facility
Alkaline Hydrolysis	-- Combine sterilization and digestion into one process -- reduction of waste volume and weight by as much 97%. -- Complete destruction of pathogens including prions.	-- Currently limited capacity for destruction of large volumes of carcasses in US -- Potential issues regarding disposal of effluent	-- Jacketed stainless steel pressure vessel. -- Sodium hydroxide or potassium hydroxide -- Water, energy for steam generation
Rendering	-- Good biosecurity at rendering plants -- High rendering temperatures destroy disease pathogens -- Environmentally sound	-- Requires transporting carcasses off-site -- Cost of transportation to rendering plant -- Capacity constraints in handling surges -- Some geographic areas not served	-- Rendering Plant

[1] **National Agricultural Biosecurity Center, Kansas State University, *Carcass Disposal: A Comprehensive Review* (2004)**
[2] **Council for Agricultural Science and Technology, *Ruminant Carcass Disposal Options for Routine and Catastrophic Mortality* (2009)**

8.4 Milk and Wastewater Disposal

It is recommended for dairy producers to have procedures in place for disposal of small and large amounts of milk and wastewater. Considerations for milk and waste water disposal are: herd size, milking equipment, disinfectants / cleansers used, milk holding tank size, on-farm treatment options and local, state and federal environmental statutes.

8.4.1 Milk Disposal Options[1]

In the event that an infected premises is required to dispose of contaminated raw milk, the State Veterinarian will work with the producer to determine the appropriate disposal method. Options for milk disposal are provided below.

Land Application

The rate at which milk is applied to land will be based on soil type, vegetation cover and soil moisture. Avoid spreading milk near field edges to prevent spill over on to roads and ditches.

Manure Lagoon

Milk disposed in a well operated manure lagoon should be slightly agitated to assist bacterial population to adjust to the different nutrient loading. Disposing of milk in manure lagoons may increase odors if the lagoon is lacking diluted water.

Liquid Manure Storage Structure

Similar to disposing of raw milk in a manure lagoon, it is recommended to slightly agitate milk when disposing of it in a liquid manure storage structure to prevent killing beneficial bacteria.

Municipal Sewage Treatment Plant

In certain areas, disposing of milk at a permitted wastewater treatment plant may be an option for dairy producers. Since milk would be transported off-site, this option may not be an appropriate option for certain diseases.

Burial Pit

Large quantities of contaminated milk can pumped into a shallow fenced-off pit. Milk may need to be decontaminated prior to burial.

8.4.2 Milk Decontamination[1]

Depending on the mode of transmission of the disease agent, the State Veterinarian may require dairy producers to treat infected milk prior to disposal. The following protocols are methods available to producers to decontaminate milk.

- Mixing milk with acid or hypochlorite and allowing it to sit for one hour.
- 2% solution of citric acid: Mix 200 grams of citric acid in 10 liters of milk.
- Acetic acid: Add 200 milliliters acetic acid to 10 liters of milk

[1] **Dr. Sandra Amass, *Dairy Industry Facilities Manual (Draft 8/03)* National Biosecurity Resource Center**

- 2-3% calcium hypochlorite (pool chlorine): Add one kilogram of calcium hypochlorite to 30 liters of milk.
- Sodium hydroxide can be used to alkalize milk by slowly adding 600 milliliters of concentrated solution (50 per cent w/w, SG + 1.53) to 100 liters milk until pH above 11 is reached.

8.5 Alternatives to Depopulation

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 to achieve full eradication of the disease or when stamping out is not possible. At this point, alternatives such as vaccination and controlled animal movements may be implemented by the State Veterinarian in collaboration with the AVIC.

8.5.1 Vaccination

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

- Using vaccines as a primary disease control strategy without stamping out.
- Using vaccines in conjunction with a stamping out strategy to assist in eliminating a disease agent.
- Using vaccines during a long-term campaign to eradicate a well established disease.
- Not using a vaccine in disease response efforts due to: 1) unavailability; 2) does not meet safety/s standards; and, 3) additional reasons involving trade and marketing.

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 to world animal health organizations which regulate disease free status that has implications for world trade of livestock and livestock products.

8.5.2 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.

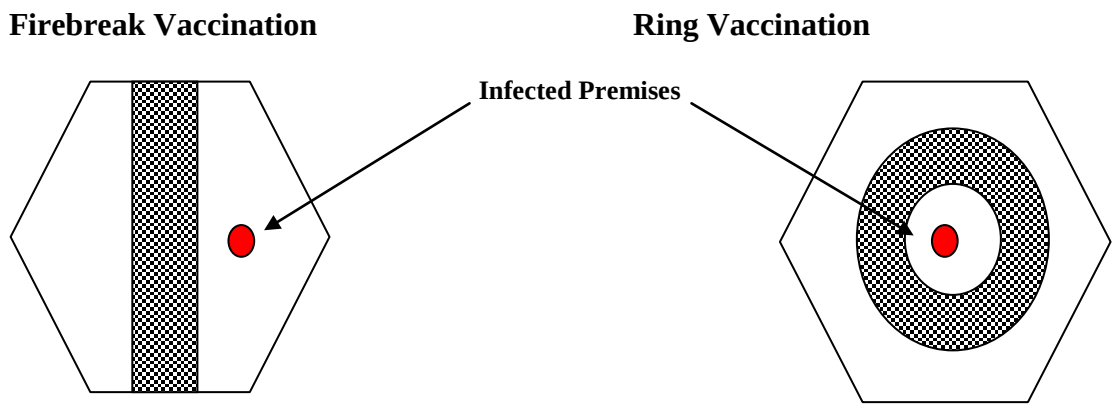
A preventive vaccination strategy is used for high- risk animals not included in the control area but in close proximity to the infected premises to be considered at risk for exposure. This strategy is an alternative to the traditional stamping-out policy. Numerous factors should be

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

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.

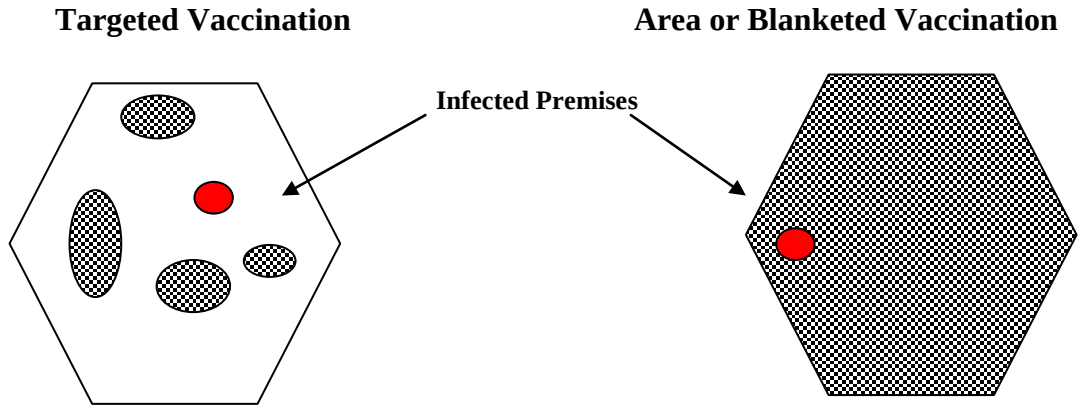
A barrier vaccination policy can be used to implement a preventive vaccination strategy. This policy is based on a spatial pattern developed to create a barrier between the infected premises and at risk premises. The intent of a barrier vaccination is to inhibit the disease transmission rate by vaccinating 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.

Figure 2. Barrier Vaccination Examples



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

Figure 3. Targeted and Area Vaccination Diagram



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

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 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).

8.5.3 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 equipment that is portable and capable of establishing temporary command posts
- C & D equipment
- Vaccines and other supplies.

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 *Dairy Cow Emergency Disease Response Plan*. The movement of livestock and animal food products will be at the discretion of the State Veterinarian in collaboration with the USDA AVIC and will be based on the epidemiology of the disease agent. Guidance on the movement of dairy cattle and dairy products during a disease outbreak is described in Sections 9.1 and 9.2.

9.1 Controlled Animal Movement

During a disease outbreak, the State Veterinarian may issue an official permit for movement of dairy cattle and dairy products and other livestock that would allow their movement from a premises or geographic area within a quarantine order. Permits to move dairy cattle or other affected animals from premises to premises within a control area can be issued if the follow criteria are met. Types of permits that maybe authorized are listed below.

- No dairy cattle or other livestock on that premises have shown clinical signs of the disease agent for a determined amount of days and disease free status has been verified within 24 hours prior to movement.

- No susceptible species were added to the premises of origin for an appropriate amount of time as determined by the State Veterinarian.
- The premises of origin is not an infected premises, contact premises, or suspect premises and there is no detectable evidence of the disease agent.
- Transport conveyances for cattle and livestock product meet acceptable biosecurity standards.

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 dairy or dairy products meet the requirements of USDA's Food Safety and Inspection Service for food use; and (b) the livestock or products 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, cattle or dairy 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.

9.2 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 cattle 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 and local law enforcement agencies.

9.3 Milk Movement[1]

A proactive approach is needed to address the need to move large volumes of dairy milk off non-infected premises during a disease outbreak. Safe, efficient milk movement on disease-free dairy farms is necessary for the following reasons.

- If the normal procurement and distribution channels for marketing and processing of fluid raw milk are disrupted beyond 72 hours, significant milk shortages could occur.
- Large volumes of fluid raw milk move daily in large bulk milk tankers to many different interstate locations for pasteurization and/or further processing.
- Milk destroyed on non- infected dairy farms will result in an immediate indemnification situation in addition to the treatment, disposal and potential environmental pollution control issues associated with disposing of raw milk.
- Pasteurization, cleaning and disinfection control capabilities exist at processing facilities, where added biosecurity controls can be instituted to prevent disease spread from milk tankers.
- Appropriate implementation of biosecurity controls at the dairy production facility, during tanker transit and at the milk pasteurization or cheese processing plants minimizes the risk of disease spreading.

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 period of time.

10.1 Surveillance and Monitoring

Once the mandatory down time requirements are met for all affected dairy premises serologically negative sentinel cattle may be introduced to determine if pathogens are still present and viable. Sentinel cattle may be retained for at least two specific pathogen incubation periods (to be determined by the State Veterinarian) and monitored for clinical signs of the disease. In the event that a sentinel becomes infected or tests serologically positive for the disease, the sentinel will be depopulated and the cleaning and disinfection process will be repeated.

[1] **Dr. Sandra Amass, *Dairy Industry Facilities Manual (Draft 8/03)* National Biosecurity Resource Center**

10.2 Restocking

Once all premises affected by the outbreak are cleaned and disinfected and there are no new reports of the disease agent, restocking will be permitted by the State Veterinarian. A moratorium on restocking will be in place for a minimum of 30 days or other appropriate time period determined by the State Veterinarian after depopulation and after the completion of an approved cleaning and disinfection process of the entire premises. OIE recommendations for restocking by disease agent are listed in Appendix B.

Purchasing restock cattle from herds of known health status is strongly recommended, Additional recommendations include isolating stock for a minimum of 30 days before introduction to the herd addition, holding veterinarian-to-veterinarian pre-conferences and testing animals before purchase, on arrival and before exiting isolation.

11.0 Roles and Responsibilities

Sections 11.1 and 11.2 outline the roles and responsibilities of agencies and producers when responding to an animal disease outbreak.

11.1 Agencies Roles and Responsibilities

Responding to an outbreak of 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 in Appendix K.

11.2 Industry's Role in a Disease Outbreak

Industry will play an important role both in preventing a disease outbreak and in response and recovery efforts of such an event. Appendix L offers recommendations and actions to improve Continuity of Operations plans for the dairy industry.

Appendices

A List of Acronyms **A-1**

B Animal Diseases Significant to Cattle **B-1**

C FADs Present in Animal Milk & OIE Milk Treatment Recommendations **C-1**

D Incident Command System Organization Structure Chart **D-1**

E Incident Complexity Analysis Worksheet **E-1**

F PPE Guidelines Zoonotic and Non-Zoonotic Diseases **F-1**

G Regulatory Communication Network **G-1**

H Colorado VMO Territories **H-1**

I FADI Collection Data Form Sample **I-1**

J EPA Approved Disinfectants for Highly Pathogenic Diseases **J-1**

K Local, State, and Federal Agencies Roles and Responsibilities **K-1**

L Industry's Role in Emergency Response **L-1**

- Foreign Animal Disease Investigation Action Steps
- Flow Chart of a Foreign Animal Disease Investigation
- Developing a Site Plan
- Biosecurity Measures for Dairy Producers
- Dairy Farmers of America Farm Visitor's Guide
- Dairy Farmers of America Dairy Operation Emergency Contact List
- An Example of Cleaning Procedures for Milking Equipment
- Milk Tanker Cleaning and Disinfecting Recommendations
- List of FADs Diseases Significant to Cattle
- Disease Specific Biosecurity Measures

Appendix A List of Acronyms

APHIS	Animal and Plant Health Inspection Service
AVIC	Area Veterinary In Charge
AVMA	American Veterinary Med. Association
BSE	Bovine Spongiform Encephalopathy
CBPP	Contagious bovine Pleuropheumonia
CCR	Code of Colorado Regulations
CDA	Colorado Department of Agriculture
CDC	Centers for Disease Control and Prevention
CDEM	Colorado Department of Emergency Management
CDPHE	Colorado Department of Public Health and Environment
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
CIAC	Colorado Information Analysis Center
CLSS	Colorado Livestock Security System
CO_2	Carbon Dioxide
CO AERO	Colorado Animal Emergency Response Organization
CRS	Colorado Revised Statutes
CSP	Colorado Safety Patrol
CSU	Colorado State University
CVMBS	College of Veterinary Medicine and Biomedical Sciences
DFA	Dairy Farmers of America
DOW	Department of Wildlife
ECIMT	Eastern Colorado Incident Management Team
EDEN	Extension Disaster Emergency Network
EMAC	Emergency Management Assistance Compact
EOC	Emergency Operation Center
EPA	Environmental Protection Agency
ESF	Emergency Support Function
FAD	Foreign Animal Disease
FADD	Foreign Animal Disease Diagnostician
FADDL	Foreign Animal Disease Diagnostic Lab
FADI	Foreign Animal Disease Investigation
FBI	Federal Bureau of Investigation
FDA	Food and Drug Agency
FSIS	Food Safety Inspection Service
GPS	Global Positioning System
HSPD	Homeland Security Presidential Directive
HTST	High Temperature Short Time
IA	Interagency Agreement
IAP	Incident Action Plan
ICS	Incident Command System
IMT	Incident Management Team
JTTF	Joint Terrorism Task Force (within FBI)
NIMS	National Incident Management System
NVLS	National Veterinary Services Laboratory
NVS	National Veterinary Stockpile
OSHA	Occupational Safety and Health Association
PIN	Premises Identification Number
PIO	Public Information Officer
PPE	Personal Protective Equipment
ROSS	
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedures
USDA	United States Department of Agriculture
VMO	Veterinarian Medical Officer
VS	Veterinary Services
WDA	Western Dairy Association

Appendix B Animal Diseases Significant to Cattle

Animal Diseases Significant to Cattle Table I

Animal Disease / Classification[1,2]	Mode of Transmission[1,5]	Recommended Quarantine and Movement Controls[1,3,4]	Treatment Options and Vaccine Availability[5]
Contagious Bovine Pleuropneumonia (CBPP) 6 months incubation period	**Aerosol** - Cough from infected cow **Direct Contact** - Cattle-to-Cattle (saliva, urine or (reproductive tissues or fluids)	- Infected zone should extend (3 km) from Infected premise - Suspected premises should be placed in quarantine for six months - Stop movement for all suspected animals except official approval to slaughter	- Vaccine is available (only in countries with endemic CBPP) - No effective treatment available - Depopulation of all infected and in-contact cattle - Regular serological testing of at-risk cattle, slaughter cattle that test positive
Foot and Mouth Disease	**Aerosol** **Direct Contact** - Cattle-to-Cattle (saliva, milk, urine, reproductive tissues or fluids, tears, blood and feces) **Oral** - Ingesting infected product Fomites	- Strict quarantine controls - Infected zone should extend a minimum of 6.2 miles (10km) beyond the presumptive or confirmed infected premise.	- Depopulation of all infected and in contact Animals - Vaccine is available, must be repeated in intervals - Barrier or ring vaccination is recommended with stamping out infected and at risk cattle
Rift Valley Fever (RVF) 30 days infective period	**Vector** - Mosquito	- RVF virus has been found in raw milk and semen - Infection zone should extend a minimum of 10 km from infected premises. Other factors determining infection zone include livestock concentrations, the weather and prevailing winds - Suspected cattle should be quarantine until trace backs are completed	- Vaccine is available (only in countries with endemic CBPP) - No effective treatment available - Destruction of all susceptible animals on an IP is likely only on the index farm.
Rinderpest 21 days incubation period	**Direct Contact** - Cattle-to-Cattle (saliva, milk, urine, reproductive tissues or fluids, tears, blood and feces) **Fomites** (Limited) - i.e. Feed troughs and watering tanks	- A control area CA will form a buffer zone of at least 6.2 miles (10 km) between the infected and free areas, and movement into and out of the area will be controlled	- No effective treatment available - Depopulation of all infected and in contact Animals - Vaccine is available, must be repeated in intervals - Barrier or ring vaccination is recommended with stamping out infected and at risk cattle

[1] Center for Food Security and Public Health, Iowa State University, *Animal Disease Index*, 2008.
[2] The World Organization for Animal Health, *Terrestrial Animal Health Code*, 20098. http://www.oie.int/eng/normes/Mcode/en_sommaire.htm
[3] AUSVETPLAN Australian Veterinary Emergency Plan, Disease Strategies, http://www.animalhealthaustralia.com.au/aahc/programs/eadp/ausvetplan/disease-strategies.cfm.
[4] United States Animal Health Association, Committee on Foreign and Emerging Diseases. *Foreign Animal Diseases*, 2008.
[5] USDA, APHIS *Publications* http://www.aphis.usda.gov/publications/animal_health/index_ah_c.shtml.

Appendix B Animal Diseases Significant to Cattle

Animal Diseases Significant to Cattle Table II				
Animal Disease [2]	**Tracing Recommendations**[1]	**Decontamination Recommendations**[1,2] **(See Appendix J for Approved Disinfectants)**	**Restocking / Surveillance Recommendations**	**Wildlife / Vector Control**
Contagious Bovine Pleuropneumonia (CBPP) 6 months incubation period	- Trace backs should extend back 6 months from first signs of disease - All suspected cattle one year or older should be individually identified	- Building used to house livestock, dairies, yards should be decontaminated. - Household bleach is an effective disinfectant CBPP. - All surfaces should be cleaned. - Remove manure, bedding and feed.	- Suspected species serological tested on two occasions at 2 and 8 weeks - Slaughter cattle that test positive	N/A
Foot and Mouth Disease 14 days incubation period	- Trace-backs minimum of 14 days from first appearance of clinical signs - Trace-forward 21 days before first case to time of quarantine.	- Premises equipment, materials & buildings Should be cleaned and disinfected. - Road surfaces and yards adjacent and within The infected premises should be sprayed - If decontamination can't occur quickly and effectively, then equipment, materials should be destroyed. - Steps should be taken to prevent generation and dispersal of infective dusts and aerosols.	- Sentinel cattle restocked 30 days after decontamination, contact with all parts of premises and objects. Inspected by Vet every 3 days. - Sentinel cattle maintained on Premises for 60 days	Rodent Controls Feral Pigs
Rift Valley Fever (RVF) 30 days infective period	- Trace backs should extend back 30 days - Tracing should include: cattle products-milk, semen, blood and embryos, and people.	- Building used to house livestock, dairies, yards should be decontaminated - Fumigation of enclosed premises with paraformaldehyde. - Particular care should be taken to decontaminate blood-contaminated areas.	- Use of sentinel animals is dependent on transovarial transmission of vector-in absence of this, 6 weeks after decontamination should be sufficient. - Once restocking occurs, serological Monitoring at monthly intervals for 1 year and quarterly for the next 2 years.	Vector Control
Rinderpest 21 days incubation period	- Trace-back of animals, people and equipment should extend back 21 days before detection of first clinical case on the IP. - Trace-forward 21 days before first case to time of quarantine.	- Premises, equipment and clothing be cleaned on infected premise. - Decontaminated follows using sodium or calcium hypochlorite, or sodium hydroxide or sodium carbonate. - Feces and effluents should be treated with sodium carbonate, before they are burned or or buried.	- Restocking of cattle 150 days after decontamination and cleaning of IP. - Random sampling of IP 1 month after restocked and then 2 mont hs later.	If found in feral animals, a policy of search and depopulation will be recommended.

[1] Center for Food Security and Public Health, Iowa State University, *Animal Disease Index*, 2008.
[2] The World Organization for Animal Health, *Terrestrial Animal Health Code*, 2008. http://www.oie.int/eng/normes/Mcode/en_sommaire.htm
[3] AUSVETPLAN Australian Veterinary Emergency Plan, Disease Strategies, http://www.animalhealthaustralia.com.au/aahc/programs/eadp/ausvetplan/disease-strategies.cfm
[4] United States Animal Health Association, Committee on Foreign and Emerging Diseases. *Foreign Animal Diseases*, 2008.
[5] USDA, APHIS *Publications* http://www.aphis.usda.gov/publications/animal_health/index_ah_c.shtml

Appendix C FADs Present in Animal Milk & OIE Milk Treatment Recommendations

The following table lists the following: USDA listed FADs, if the disease agent is present in raw milk, and OIE treatment recommendations for raw milk prior to feeding to livestock.

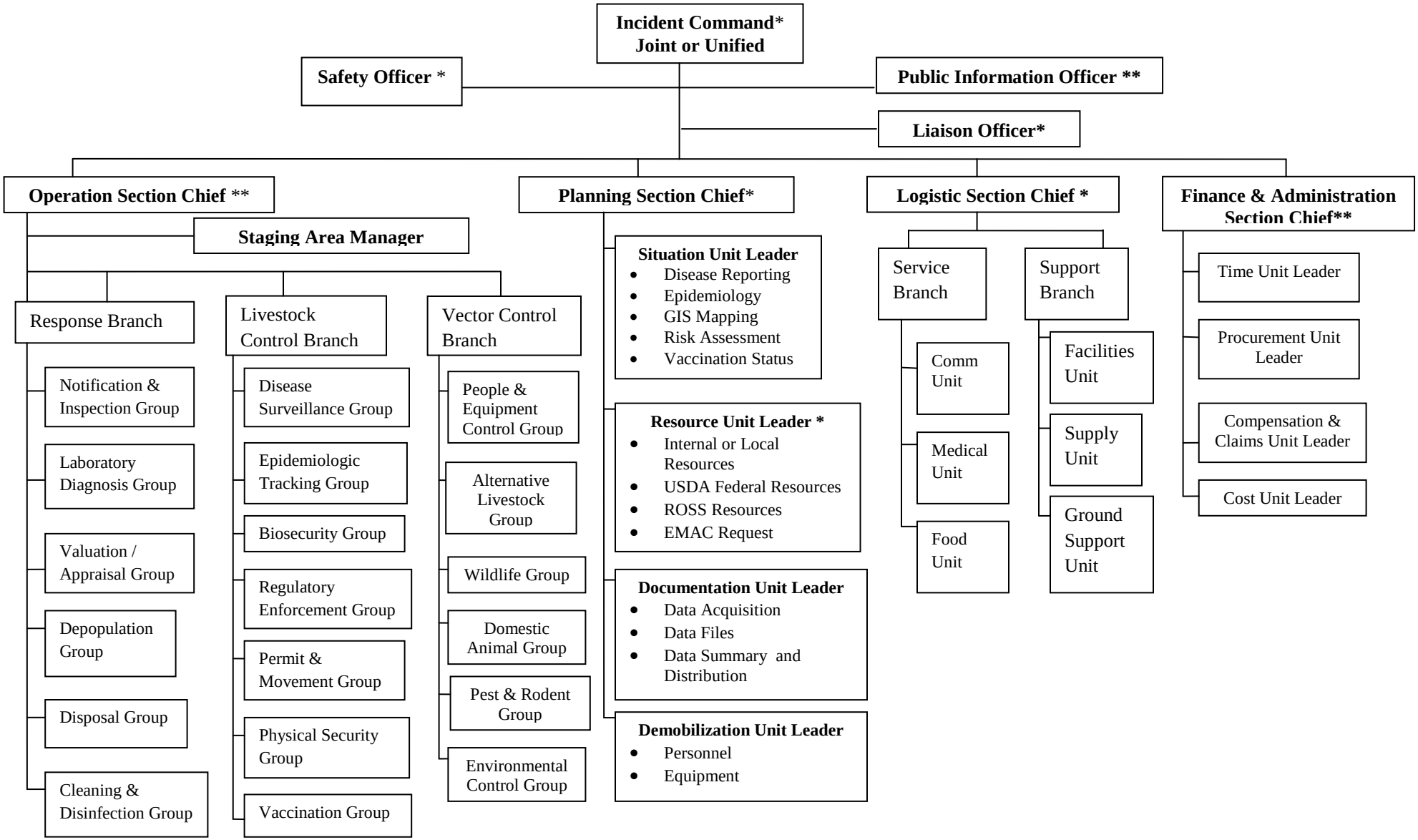
OIE Listed FADs Present in Animal Milk & Milk Treatment Recommendations [1,2]		
Disease Agents	**Present in Raw Unprocessed Milk**	**Treatment to inactivate disease agent for livestock feed**
Babesiosis	No	Raw milk does not present a risk
Bovine Spongiform Encephalopathy	No	Raw milk does not present a risk.
Contagious Bovine Pleuropnumonia (CBPP)	Yes	High Temperature / Short Time Pasteurization
Foot and Mouth Disease	Yes	Double HTST (72° C for 30 seconds), HTST combined with another physical treatment e.g. maintaining pH below 6.0 for 1 hour or additional heating to 72° C combined with desiccation.
Heartwater	No	Raw milk does not present a risk
Rinderpest	Yes	High Temperature / Short Time Pasteurization
Rift Valley Fever	Yes	High Temperature / Short Time Pasteurization
Screwworm	No	Raw milk does not present a risk

[1] **The World Organization for Animal Health, *Terrestrial Animal Health Code*, 2009. http://www.oie.int/eng/normes/Mcode/en_sommaire.htm**

2 **New Zealand Food Safety Authority, Dairy Industry Guidelines for Risk Organism Preparedness and Response October 2008.**

High Temperature / Short Time (HTST) Pasteurization is a process where milk is forced between metal plates or through pipes heated on the outside by hot water. In the HTSP process milk is heated to 71.7 °C (161 °F) for 15–20 seconds.

Appendix D ICS Incident Organization Chart for Animal Disease Response



*** Denotes positions to be filed by ECIMT members when the incident's complexity exceeds CDA's capability to manage the incident effectively. Additional positions may be filled by ECIMT as the complexity of an incident increases.**

All-Hazard Incident Complexity Analysis

Incident Name:	**Date:**
Incident Number:	**Time:**

This Complexity Analysis is weighed based on the relevance to Life Safety, Incident Stabilization, and Property Conservation.

Complexity Factors	Check if Pertinent
Impacts to Life, Property, and the Economy	
Urban interface; structures, developments, recreational facilities, or potential for evacuation.	☐
Community and Responder Safety	
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	☐
Potential Hazardous Materials	
Potential of Hazardous Materials	☐
Weather and other Environmental Influences	
Unique natural resources, special-designation areas, critical municipal watershed, protected species habitat, cultural value sites	☐
Likelihood of Cascading Events	
Variety of specialized operations, support personnel or equipment	☐
Potential Crime Scene (including Terrorism)	
Potential crime scene	☐
Potential of terrorism	☐
Political Sensitivity, External Influences, and Media Relations	
Sensitive political concerns, media involvement, or controversial policy issues	☐
Organizational Performance Values and Product Development	
Non-IAP Products not being developed or deficient.	☐
Area Involved, Jurisdictional Boundaries	
Incident threatening more than one jurisdiction and potential for unified command with different conflicting management objectives.	☐
Availability of Resources	
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.	☐
Percentage Score	**%**
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	

Prepared By	Date:	Time:

Source: Todd Manns, Planning Chief Eastern Colorado Incident Management Team

Appendix F PPE Guidance for Zoonotic and Non-Zoontic Diseases

Personal Protective Equipment Guidelines for Colorado Department of Agriculture Employees																
Environment	Zoonotic Disease not Diagnosed in the U.S.		Zoonotic Disease Diagnosed in the United States													
			Suspect Disease Outbreak Investigation			Confirmed Zoonotic Disease Diagnosis – Emergency Response Activities										
						General Operations Areas Surveillance		Near or Contact Premises Surveillance		Biological Control Area Surveillance		Biological Control Area Activity				
Equipment	Routine Surveillance	Suspect Disease Outbreak Investigation	Routine Surveillance	Outdoor Environ-ment	Indoor Environ-ment	Outdoor Environ-ment	Indoor Environ-ment	Outdoor Environ-ment	Indoor Environ-ment	Outdoor Environ-ment	Indoor Environ-ment	Indoor Depopulation Preparation	Indoor Depopulation Re-Entry CO2 & CO2 Level Testing	Routine Surveillance Operations	Outdoor Environ-ment	Any Cleaning and/or Disinfection Activity
Coveralls, Work Uniforms, etc.	X															
Tyvek Coveralls		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 plus	X plus	X plus	X plus	X plus	X plus
Rubber Glovers (heavy duty)										X	X	X	X	X	X	X
N-95 or N-100 Filtering Face piece*		X	X	X	X plus	X	X	X plus	X plus	X plus					X plus	
Goggles (indirect vented)**				+/-	X or		+/-	X or	X or	X or					X or	
Full-face APR with N-100 Canister					X			X	X	X	X	X		X	X	X
Self-contained breathing apparatus SCBA ***													X			
Boot Covers (Disposable)	+/- OR	+/- OR	+/- OR			+/- OR	+/- OR									
Rubber Boots	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 swine 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 F PPE Guidance for Zoonotic and Non-Zoontic Diseases

Personal Protective Equipment Guidelines for Colorado Department of Agriculture Employees Non- Zoonotic Animal Disease Incident										
Environment	Suspect Disease not Diagnosed in the U.S.		Suspect Disease Diagnosed in the United States							
			Suspect Disease Outbreak Investigation	Confirmed Diagnosis of Suspect Disease – Emergency Response Activities						
				General Operations Areas Surveillance	Near or Contact Premises Surveillance	Biological Control Area Surveillance	Biological Control Area Activity			
Equipment	Routine Surveillance	Suspect Disease Outbreak Investigation	Routine Surveillance	Routine Surveillance Operations	Routine Surveillance Operations	Routine Surveillance Operations	Indoor Depopulation Preparation	Indoor Depopulation Re-Entry CO2 & CO2 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 Glovers (heavy duty)						X	X	X	X	**X**
N-95 or N-100 Filtering Face piece*		**X**	X	X	X	X	X		X	**X plus**
Goggles (indirect vented)**										**X or**
Full-face APR with N-100 Canister										**X**
Self-contained breathing apparatus SCBA ***								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 responders respiratory system as can occur with agents such as the Foot and Mouth 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 ihigh risk confined space such as manure pits.

Appendix G Regulatory Communication Network

County Emergency Managers of Colorado Current as of January 2011				
Colorado County	**Emergency Manager**	**Phone Number (24-Hour)**	**Fax Number**	**Email**
Adams	Heather McDermott	720-322-1400	720-322-1404	hmcdermott@co.adams.co.us
Alamosa	Pet Magee	719-589-5807	719-587-0264	pete_magee@qwestoffice.net
Arapahoe	Lt. Greg Palmer	303-795-4711	720-874-4158	GPalmer@co.arapahoe.co.us
Archuleta	Drew Petersen	970-263-2131	970-731-4800	dpetersen@archuletacounty.org
Baca	Riley Frazee	719-523-4511	719-523-6584	riley.frazee@seregion.com
Bent	Randy Freed	719-456-1363	719-456-0476	randyf@bentcounty.net
Boulder	Mike Chard	303-441-4444	303-441-3884	mchard@bouldercounty.org
Broomfield	Kent Davies	303-438-6400	720-887-2001	kdavies@ci.broomfield.co.us
Chaffee	Lisa Ortega	719-539-2596	719-539-7442	lortega@chaffeecounty.org
Cheyenne	Darcy Janssen	719-767-5633	719-346-8542	janssen@wildblue.net
Clear Creek	Kathleen Krebs	303-679-2393	303-679-2440	kkrebs@co.clear-creek.co.us
Conejos	Rodney King	719-589-5804	719-376-5661	rodneykk@hotmail.com
Costilla	Matthew Valdez	719-672-3302	719-672-3003	Mathew.Valdez@costillacounty.net
Crowley	Larry Reeves	719-267-5555 x1	719-267-3114	lreeves@crowleycounty.net
Custer	Christe Feldmann	719-783-2270	719-783-9085	ccoem@centurytel.com
Delta	Rob Fiedler	303-640-9999	970-874-2014	fiedler@deltacounty.com
Denver	Daniel Alexander	303-640-9999	720-865-7691	daniel.alexander@denvergov.org
Dolores	Todd Parisi	970-677-2500	970-677-2880	dcoem@yahoo.com
Douglas	Fran Santagata	303-660-7500	303-814-8790	fsantagata@dcsheriff.net
Eagle	Barry Smith	970-479-2201	970-328-8694	barry.smith@eaglecounty.us
Elbert	LaRiea Thompson	303-805-6131	303-805-6159	LaRiea.Thompson@elbertcounty-co.gov
El Paso	Jim Reid	719-390-5555	719-575-8591	
Fremont	Steve Morrisey	719-276-5555	719-276-7304	steve.morrisey@fremontco.com

Colorado Department of Emergency Management. http://www.dola.state.co.us/dem/localem.htm. Jan 2011.

County Emergency Managers of Colorado (Cont.)
Current as of January 2011

Colorado County	Emergency Manager	Phone Number (24-Hour)	Fax Number	Email
Garfield	Chris Bornholdt	970-625-8095	970-945-6430	cbornholdt@garfield-county.com
Gilpin	George Weidler	303-582-5500		gweidler@co.gilpin.co.us
Grand	Trevor W. Denney	970-887-2732		tdenney@co.grand.co.us
Gunnison	Scott Morrill	970-641-8000	970-641-7693	smorrill@gunnisoncounty.org
Hinsdale	Jerry Gray	970-641-8000	970-944-2630	grayj@lakecity.net
Huerfano	Diego A. Bobian	719-989-8220		dbobian@huerfano.us
Jackson	Kent Crowder	970-723-4242	970-723-4706	
Jefferson	James (Tim) McSherry	303-277-0211	303-271-4905	jmcsherr@jeffco.co.us
Kiowa	Chris Sorensen	719-438-5411	719-438-5503	chris@kiowaoem.com
Kit Carson	Darcy Janssen	719-346-8538	719-349-8542	janssen@wildblue.net
Lake	Mike McHargue	719-486-1249	719-486-0139	mikemchargue@hotmail.com
La Plata	Butch Knowlton	970-385-2900	970-382-6272	knowltonbk@co.laplata.co.us
Larimer	Erik Nilsson	970-416-1985	970-498-9203	nilssoed@co.larimer.co.us.
Las Animas	Bill Cordova	719-846-2211	719-845-2598	bcordova@amigo.net
Lincoln	Kenneth Morrison	719-743-2426	719-743-2280	lcadmin@lincolncountyco.us
Logan	Bob Owens	970-522-3512	(970) 521-0632	Owens@sterlingcolo.com
Mesa	Andrew Martsolf	970-250-1279		andrew.martsolf@mesacounty.us
Mineral	William Fairchild	719-658-2600	719-658-2764	mincosheriff@centurytel.net
Moffat	Tom Soos	970-824-6501	970-826-2423	tom.soos@thmcraig.org
Montezuma	Doug Parker	970-565-8441	970-565-3991	dparker@so.montezuma.co.us
Montrose	Ike Holland	970-252-4010	970-249-7761	iholland@montrosecounty.net
Morgan	Steve Enfante	970-867-8531	970-867-7344	senfante@co.morgan.co.us
Otero	Chris Johnson	719-384-5941	719-384-2272	cjohnson@oterogov.org

Colorado Department of Emergency Management. http://www.dola.state.co.us/dem/localem.htm. Jan 2011.

County Emergency Managers of Colorado (Cont.)
Current as of January 2011

Colorado County	Emergency Manager	Phone Number (24-Hour)	Fax Number	Email
Ouray	Alan Staehle	970-252-4020		awsouray@aol.com
Park	Brain Foltz	719-836-4121	719-836-4156	bfoltz@parkco.us
Phillips	Randy Schafer	970-854-3144	970-854-3811	rschafer@pctc.net
Pitkin	Ellen Anderson	970-920-5300	970-920-5307	ellena@co.pitkin.co.us
Prowers	Staffon Warn	719-336-3977	719-336-4883	staffon.warn@prowerscounty.net
Pueblo	Karen Ashcraft	719-583-6250	719-583-6218	ashcraft@co.pueblo.co.us
Rio Blanco	John Hutchins	970-878-9620	970-878-3127	rbcem@co.rio-blanco.co.us
Rio Grande	Vic Webb	719-657-4000		rgcoem@riograndecounty.org
Routt	Bob Struble	970-846-1552		bstruble@co.route.co.us
Saguache	Jim Felmlee	719-655-2525		jfelmlee@amigo.net
San Juan	Kristina Maxfield	970-387-5531	970-387-0251	sanjcoem@yahoo.com
San Miguel	Jennifer Dinsmore	970-728-1911	970-728-9206	jenniferd@sanmiguelcounty.org
Sedgwick	Mark Turner	970-474-3355	970-474-2607	ptsports57@yahoo.com
Southern Ute Indian Tribe	Kathie Gurule	970-563-4401	970-563-0215	kgurule@southern-ute.nsn.us
Summit	Joel Cochran	970-453-2232 ext 336	970-453-7329	jcochran@co.summit.co.us
Teller	Steve Steed	719-687-9652	719-687-1202	steeds@co.teller.co.us
Ute Mountain Ute Indian Tribe	John Trocheck	970-565-3706	970-564-5443	Jtrocheck@utemountain.org
Washington	Mike McCaleb	970-345-2244	970-345-2701	mmccaleb@co.washington.co.us
Weld	Roy Rudisill	970-304-4015 x2700	970-304-6543	rrudisill@co.weld.co.us
Yuma	Roger Brown	970-848-0464	970-848-0160	yumaoem@wycomm.org

Colorado Department of Emergency Management. http://www.dola.state.co.us/dem/localem.htm. Jan 2011.

County Sheriffs of Colorado (Cont.) Current as of January 2011		
Colorado County	**Sherriff**	**Phone Number**
Adams	Doug Darr	303-655-3216
Alamosa	David Stong	719-589-6608
Arapahoe	J. Grayson Robinson	720-874-4165
Archuleta	Peter Gonzales	970-264-2131
Baca	David Campbell	719-523-4511
Bent	David Encinias	719-456-0795
Boulder	Joseph Pelle	303-441-4605
Broomfield*	Chief Tom Deland	303-438-6400
Chaffee	William Palmer Jr.	719-539-2814
Cheyenne	Ken Putman	719-767-5633
Clear Creek	Don Krueger	303-569-3251 ext. 376
Conejos	Robert Gurule	719-376-2196
Costilla	Amos Medina	719-672-3302
Crowley	Miles Clark	719-267-5555
Custer	Fred Jobe	719-783-2270
Delta	Fred McKee	970-874-2000
Denver*	Chief William Lovingier	720-913-2000
Dolores	Jerry Martin	970-677-2257
Douglas	David Weaver	303-660-7541
Eagle	Joseph D. Hoy	970-328-6611
Elbert	Shayne Heap	303-621-2027
El Paso	Terry Maketa	719-520-7204
Fremont	Jim Beicker	719-276-5555
Garfield	Lou Vallario	970-945-0453

County Sheriffs of Colorado. **http://www.csoc.org/counties.asp**. **Jan 2011**

*Chief of Police for Bloomberg and Denver Counties.

County Sheriffs of Colorado (Cont.) Current as of January 2011		
Colorado County	**Sheriff**	**Phone Number**
Gilpin	Bruce Hartman	303-582-1060
Grand	Rodney Johnson	970-725-3344
Gunnison	Rickard Bescker	970-641-1113
Hinsdale	Ronald Bruce	970-944-2291
Huerfano	Bruce Newman	719-738-1600
Jackson	Scott Fischer	970-723-4242
Jefferson	Ted Mink	303-271-5305
Kiowa	Forrest Frazee	719-438-5306
Kit Carson	Tom Ridnour	719-346-8934
Lake	Ed Holte	719-486-1249
La Plata	Duke Schirard	970-247-1157
Larimer	Justin Smith	970-498-5100
Las Animas	James Casias	719-846-2211
Lincoln	Tom Nestor	719-743-2426
Logan	Brett Powell	970-522-2578
Mesa	Stan Hilkey	970-244-3500
Mineral	Ronald Bruce	719-658-2600
Moffat	Tim Jantz	970-824-4495
Montezuma	Dennis Spruell	970-565-8452 x303
Montrose	Rick Dunlap	970-249-6606
Morgan	James E. Crone	970-867-2461
Otero	James Casias	719-384-5941
Ouray	Dominic Mattivi	970-325-7272
Park	Fred Wegener	719-836-2494
Phillips	Charles Urbach	970-854-3644
County Sheriffs of Colorado. http://www.csoc.org/counties.asp. **Jan 2011**		

County Sheriffs of Colorado (Cont.) Current as of January 2011		
Colorado County	**Sheriff**	**Phone Number**
Pitkin	Joe Disalvo	970-920-5300
Prowers	James Faull	719-336-8050
Pueblo	Kirk Taylor	719-583-6125
Rio Blanco	Si H. Woodruff	970-878-5023
Routt	Garrett Wiggins	970-879-1090
Saguache	Mike Norris	719-655-2544
San Juan	Sue Kurtz	970-728-4442
Sedgwick	Randy Peck	970-474-3355
Summit	Sheriff John Minor	970-453-2232
Teller	Mike Ensminger	719-687-9652
Washington	Larry Kuntz	970-345-2244
Weld	John Cooke	970-356-4015 x2801
Yuma	Chad Day	970-332-4805

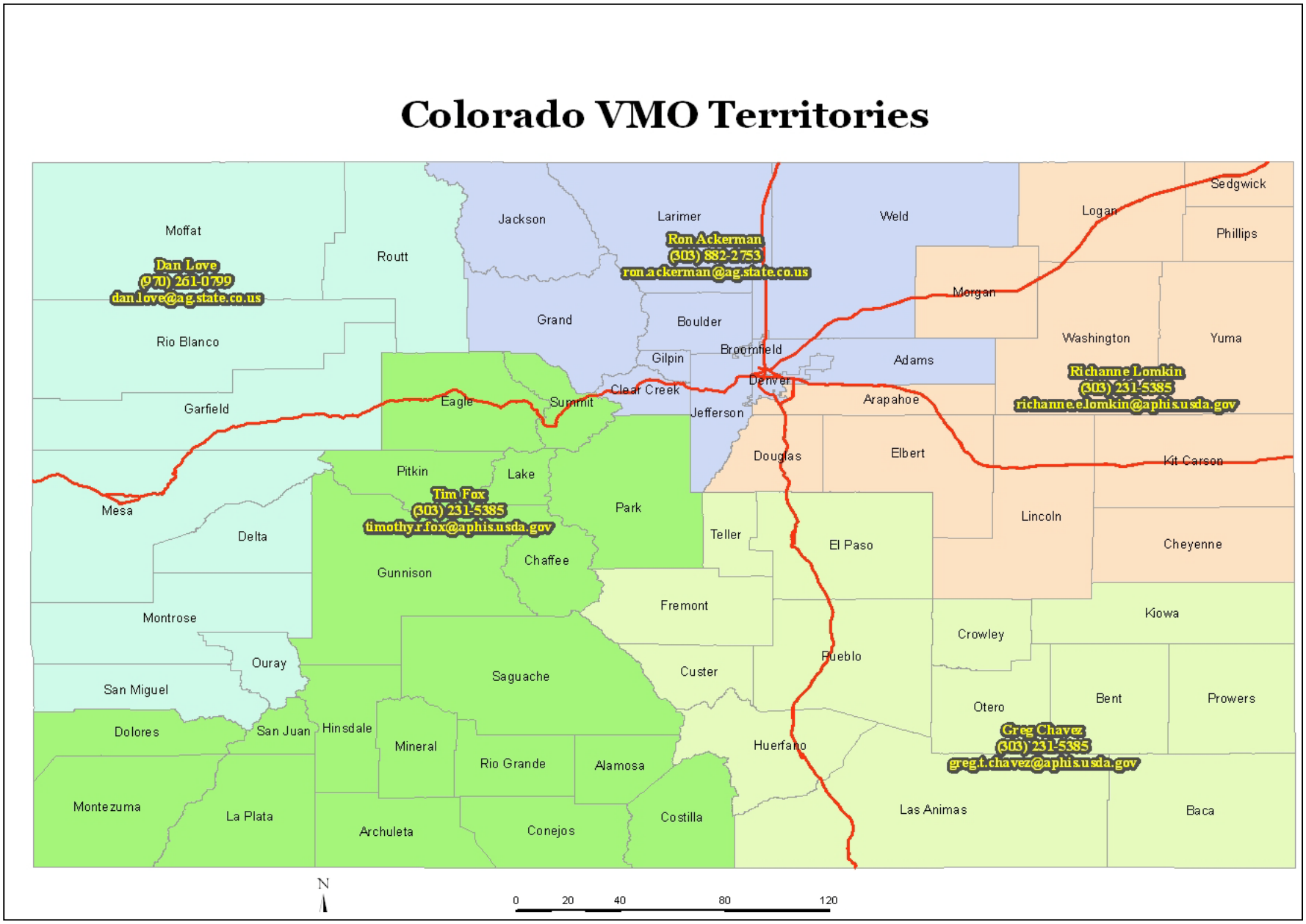
County Sheriffs of Colorado. **http://www.csoc.org/counties.asp**. **Jan 2011**

Colorado County Extension Offices Current as of October 2009		
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	5804 South Datura, St. Littleton, CO 80120
Archuleta	(970) 264-5931	344 Highway 84, Pagosa Springs, CO 81147
Baca	(719) 523-6971	772 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	6650 W. 120th Ave., 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
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	601 North Main Street, Ordway, CO 81063
Custer	(719) 783-2514	205 South 6th, 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, 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) 520-7675	305 S. Union Blvd., Colorado Springs, CO 80910
Elbert	(719) 541-2361	325 Pueblo, Simla, CO 80835
Elbert Branch Office	(303) 621-3162	P.O. Box 189, Kiowa, CO 80117
Fremont	(719) 276-7390	615 Macon Avenue, Canon City, CO 81212
Garfield	(970) 625-3969	1001 Railroad Avenue, Rifle, CO 81650
Colorado State University Extension, http://www.ext.colostate.edu/cedirectory/countylist.cfm Oct. 2009		

Colorado County Extension Offices Current as of October 2009		
Colorado County	**Phone Number**	**Address**
Gilpin	(303) 582-9106	230 Norton Drive, Blackhawk, CO 80422
Grand	(970) 724-3436	210 11th Street, Extension Hall, 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 West Sixth Avenue, Golden, CO 80401
Kiowa	(719) 438-5321	County Courthouse - 1305 Goff, Eads, CO 81036
Kit Carson	(719) 346-5571	251 16th Street, Burlington, CO 80807
La Plata	(970) 247-4355	2500 Main Ave., Durango CO 81301
Larimer	(970) 498-6000	1525 Blue Spruce Drive, Fort Collins, CO 80524
Las Animas	(719) 846-6881	2200 North Linden Ave, Trinidad, CO 81082
Lincoln	(719) 743-2542	326 8th St., Hugo, CO 80821
Logan	(970) 522-3200	508 South 10th Ave, Sterling, CO 80751
Mesa	(970) 244-1834	2775 Highway 50, Grand Junction, CO 81502
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 81324
Montrose	(970) 249-3935	1001 North 2nd, St. Montrose, CO 81401
Morgan	(970) 542-35	914 E. Railroad, Ave, Fort Morgan, CO 80701
Otero	(719) 836-42	411 North 10th St. Rocky Ford, CO 81067
Park	(719) 836-4293	880 Bogue St. Fairplay, CO 80440
Phillips	(970) 854-3616	127 East Denver, Holyoke, CO 80734
Prowers	(719) 336-7734	1001 S. Main St., Pueblo, CO 81003
Pueblo	(719) 583-6566	212 W. 12th St. Pueblo, CO 81003
Colorado State University Extension, http://www.ext.colostate.edu/cedirectory/countylist.cfm Oct. 2009		

Colorado County Extension Offices Current as of October 2009		
Colorado County	**Phone Number**	**Address**
Rio Blanco	(970) 878-9490	779 Sulphur Creek Road, Meeker, CO 81641
Rio Blanco Branch Office	(970) 675-2417	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 6th St. Steamboat Springs, CO 80477
San Miguel	(970) 327-4393	1120 Summit, Norwood CO 81423
Sedgwick	(970) 474-3479	315 Cedar, Julesburg, CO 80737
SLV Area Office	(719) 852-7381	1899 E. Hwy 160 Monte Vista, CO 81144
Summit	(970) 668-3595	37 Peak One Dr., CR1005, Frisco, CO 80443
Teller	(719) 689-2552	112 North A St. Cripple Creek, CO 80813
Washington	(970) 345-2287	181 Birch Avenue Akron, CO 80720
Weld	(970) 304-6535	525 North 15th Ave., Greeley CO 80631
Yuma	(970) 332-4151	310 Ash Street, Wray, CO 80758
Colorado State University Extension, http://www.ext.colostate.edu/cedirectory/countylist.cfm Oct. 2009		

Appendix H Colorado VMO Territories



Source: Colorado Department of Agriculture, Animal Industry Division

Appendix I FADI Collection Data Form Sample

Foreign Animal Investigation Form

FADD Name and Phone: _____ Date: _____ FAD Control #: _____

Owner Information	Premises Information
Name: _____	Address: _____
Address: _____	City: _____
City, State, Zip: _____	State, Zip: _____
Type of Operation: _____	County: _____
Phone: _____	Latitude: _____
County: _____	Longitude: _____

Primary Species on Premises Initiating compliant: _____

Primary Species on Premises if different from above: _____

Number of animals showing lesions by species: (use separate page for additional animals or use comments lines)

Species:	# Animals:	# Sick	Description/ID:	Samples Submitted:
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____

Please describe any movements of affected animals from the premises over the past month _____
_____

Number & type of other susceptible species on premises: _____

Private Practitioner: _____ Clinic Name: _____

Phone: _____ Cell Phone: _____

Has practitioner collected samples? ___Yes_____No If yes, what type? _____

Has FADD collected Samples: ____Yes ____ No If yes, what type? _____

FedEx Tracking #: _____

What lab were samples sent to? ____ FADDL ____ NVSL Date Shipped: _____

Onset date: _____ Follow-up Date: _____

Quarantine date: _____ Quarantine number: _____

Count down date: _____ Quarantine release date: _____

Comments: _____
_____
_____
_____
_____
_____

Appendix J EPA Approved Disinfectants for Highly Pathogenic Diseases

Environmental Protection Agency (EPA) Approved Disinfectants for Highly Pathogenic Diseases[1]				
Disease	**Product**	**EPA Regulatory No.**	**Manufacturer**	**Active Ingredient(s)**
Bovine spongiform encephalopathy -- No Products Registered				
Contagious Bovine Pleuropneumonia --- No Products Registered				
Foot and Mouth Disease				
	Low PH Phenolic 256	211-62	Central Solutions, Inc	2-Benzyl-4-chlorophenol o-Phenylphenol
	2-Benzyl-4-chlorophenol o-Phenylphenol	1677-129	Ecolab Inc.	Ethaneperoxoic acid Hydrogen peroxide
	Oxysept LDI	1677-203	Ecolab Inc.	Ethaneperoxoic acid Hydrogen peroxide
	Lonza DC 101	6836-86	Lonza, Inc.	Alkyl dimethyl benzyl ammonium chloride 1-Decanaminium, Ndecyl-N,N-dimethyl-,chloride 1-Decanaminium, N,Ndimethyl-N-octyl-,chloride 1-Octanaminium, N,Ndimethyl-N-octyl-,chloride
	Aseptrol S10-TAB	70060-19	BASF Catalysts, LLC	Sodium chlorite Sodium dichloroisocyanurate dehydrate
	Virkon S	71654-6	DuPont Chemical Solutions Enterprise	Sodium chloride Potassium peroxymonosulfate
Rift Valley Fever – No Products Registered				
Rinderpest – No Products Registered				

1 **United States Animal Health Association, Committee on Foreign and Emerging Diseases. *Foreign Animal Diseases*, 2008.**

Appendix K Local, State, and Federal Agencies Roles and Responsibilities

LEAD AGENCY

Colorado Department of Agriculture

The CDA, Animal Industry 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 the APHIS AVIC. 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 AVIC may use any or all of the following action steps to control and/or eradicate the disease encountered in the event.

- Establish and name incident command.
- In consultation with the APHIS AVIC, determine the scope and level of initial response and initiate a task force.
- Frequently conduct a complexity analysis to assure appropriate command in place.
- In consultation with the APHIS AVIC, determine the location and size of hold / quarantine areas.
- Establish quarantine area(s) and issue quarantine orders as needed.
- In consultation with the APHIS AVIC 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.
- In collaboration with the CDA, USDA – APHIS, VS, and/or the Incident Management Team and the Public Information Officer, prepare information for dissemination to the public, producers, processors and other concerned groups through the Joint Information System or Center.
- CDA will notify Colorado Division of Emergency Management (CDEM) when a livestock disease sample is being sent to the Foreign Animal Disease Diagnostic Lab (FADDL, Plum Island, NY) for analysis and is likely to be a highly contagious or infectious disease or agent of concern.
- CDA will coordinate with CDEM, USDA, Colorado Department of Transportation (CDOT), Colorado State Patrol (CSP), local jurisdiction emergency managers, law enforcement, and other agencies as needed in enforcing 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 recovery personnel in the field.
- CDA will coordinate with USDA, APHIS, VS, Emergency Programs Staff and provide liaison between other federal, state and local organizations when required.
- CDA will develop protocols for worker protection related to incident-specific health and site safety 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, dairy, 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 IC PIO provide advisories and related public information.
- CDA will 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 DOW of any wildlife disease threat or involvement.
- Work in close collaboration with the Colorado Brand Board and livestock industry groups as well as major dairy producers

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, county agencies, and other county 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 may:

- Assist in identifying clean transportations 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, and all other responders should any conflicts arise.

Appendix K Local, State, and Federal Agencies Roles and Responsibilities

State Agencies

Colorado Division of Emergency Management may:

- Activate the State Emergency Management Plan and SEOC to support CDA.
- Support CDA by providing statewide coordination among any and all agencies impacted by the event. Assist unit leaders within incident command in acquiring needed resources to include carrying out ROSS and EMAC requests in general stand in support to the IMT as needed.

Colorado State Patrol (CSP) may:

- Provide law enforcement support and coordination to conduct traffic checkpoints and roadblocks, enforce stop movement orders and secure quarantined areas and related sites during livestock disease emergencies.
- Coordinate with local law enforcement agencies to support response and recovery with all available resources.

Colorado Department of Public Health and Environment may:

- Coordinate with CDA if a zoonotic condition exists.
- Support public information efforts.
- Consult with CDA and USDA regarding bio-security issues related to zoonotic diseases.
- Provide veterinary and epizootiologic support to an CDA emergency.
- Assist and collaborate with CDA on subjects such as carcass disposal, cleaning and disinfection and other issues that may influence soil, water, and air quality.
- Liaison with Environmental Protection Agency 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.

Colorado Division of Wildlife may:

- Provide disease surveillance and management 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.

Colorado Department of Transportation may:

- 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.

Colorado State University (CSU) may:

The College of Veterinary Medicine and Biomedical Sciences (CVMBS) may 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. Extension Disaster Emergency Network (EDEN) will also be an important resource to enhance CSU Extension's involvement in the response and recovery phase of the incident.

Federal Agencies

Untied States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) may:

- Assist in disease eradication activities including quarantine, evaluation, indemnification, slaughter, disposal, cleaning and disinfecting, epidemiology, trace-back, vector control and transportation permitting arrangements and /or in acquiring appropriate contractors to conduct such activities.
  .
- 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.
- Allocate funding for indemnifying to the owner(s) of depopulated animals or related property loss.
- Define restrictions on interstate commerce.

USDA, Food Safety Inspection Service (FSIS)

The FSIS is charged with protecting the Nation's food supply by providing inspectors and veterinarians in meat, poultry, and egg product plants and at ports-of-entry 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.

Appendix K Local, State, and Federal Agencies Roles and Responsibilities

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.

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.

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.

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.

Appendix L Industry's Role in Emergency Response

Industry will play an important role both in preventing a disease outbreak and in response and recovery efforts of such an event. The following appendix offers recommendations and actions to improve Continuity of Operations plans for the dairy industry. In addition, information presented in this appendix provides producers supplementary information on steps taken in a Foreign Animal Disease Investigation (FADI), information that will be collected during an FADI and clinical signs of FADs significant to cattle and sheep. Specific material provided in this section includes the following.

Foreign Animal Disease Investigation Action Steps / Check list of FAD Information

Flow Chart of a Foreign Animal Disease Investigation

Developing a Site Plan

Biosecurity Measures for Dairy Producers

Dairy Farmers of America Farm Visitor's Guide

Dairy Farmers of America Dairy Operation Emergency Contact List

An Example of Cleaning Procedures for Milking Equipment

Milk Tanker Cleaning and Disinfecting Recommendations

List of FADs Diseases Significant to Cattle

FOREIGN ANIMAL DISEASE INVESTIGATION ACTION STEPS

1. Contact the State Veterinarian's Office or the USDA Area Veterinarian in Charge

Colorado State Veterinarian:	**Keith Roehr, *DVM* (303) 239 - 4161**
Area Veterinarian – in– Charge:	**Roger Perkins, *DVM* (303) 231 – 5385**

2. The Colorado State Veterinarian or AVIC will dispatch a Foreign Animal Disease Diagnostician (FADD) to initiate an investigation within 24 hours of the initial notification.

3. The FADD will set up an appointment to visit the premises, assess the disease situation, collect and submit laboratory samples, execute disease control actions if necessary, and file a report with the State Veterinarian and AVIC. See section 4.1 Foreign Animal Disease Investigation for specific FAD protocols.

4. The State Veterinarian and AVIC will assign a priority level to the laboratory submissions which will govern the response of the federal lab(s).

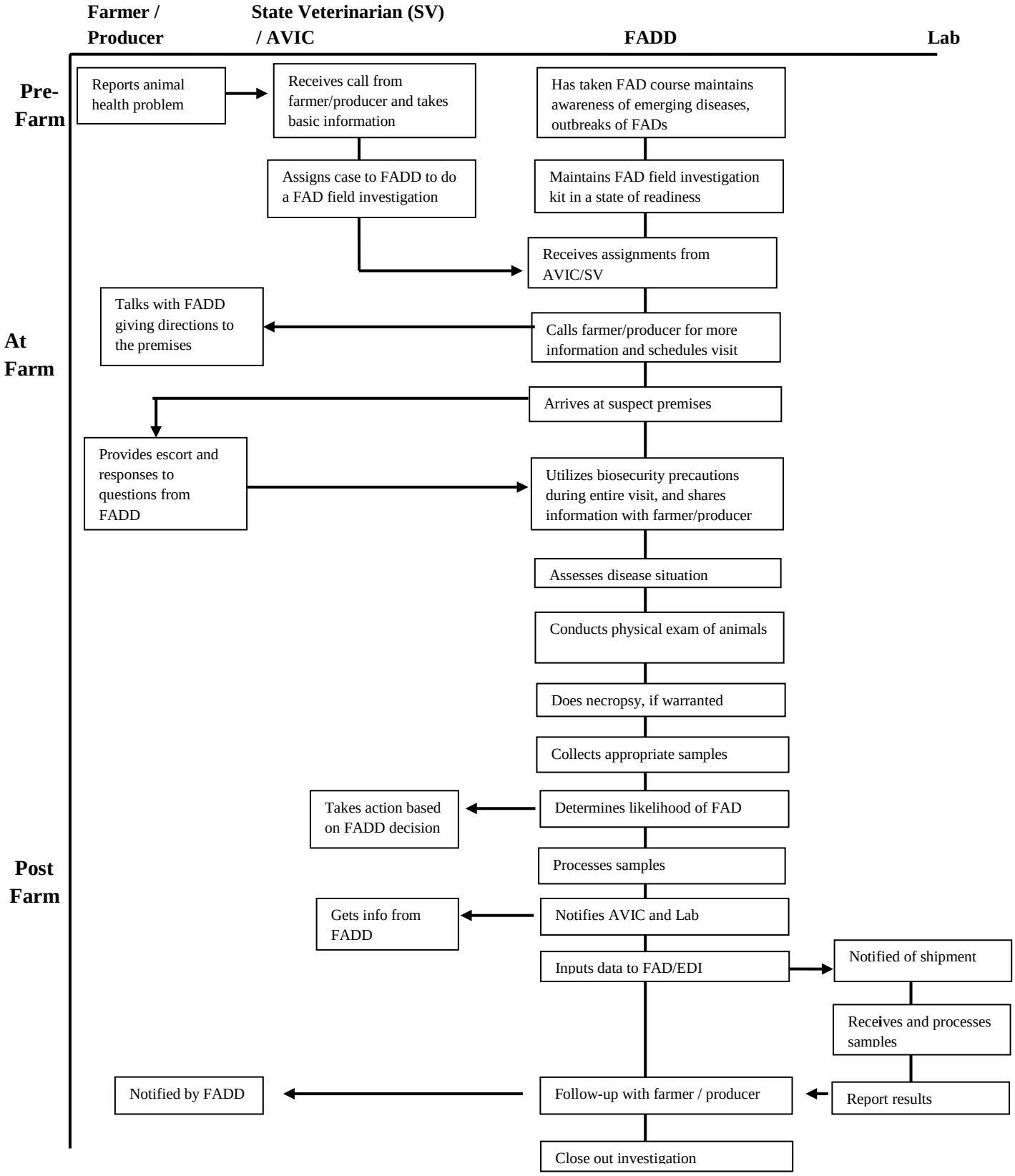
5. Further actions may be taken at the discretion of the State Veterinarian in collaboration with the AVIC and in consultation with the FADD.

6. Laboratory results will be reported to the State Veterinarian who will notify the AVIC and FADD. The FADD will then notify the practitioner and the owner.
   Source: American Association of Swine Veterinarians

Information collected during a Foreign Animal Disease Investigation

- ✓ Name and Address of Owner / Manager
- ✓ 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

FLOW CHART OF FOREIGN ANIMAL DISEASE INVESTIGATION



Source: USDA National Animal Health Emergency Management System Guidelines

DEVELOPING A SITE PLAN

In the event of a disease outbreak, the State Veterinarian will recommend biosecurity measures to assist in containing the spread of the disease agent for all premises in or near the control area. Identifying the infrastructure on your premises prior to an outbreak will assist Colorado animal health officials in developing a biosecurity plan to protect the premises. Instructions for developing a site plan are listed below. The following guidance may also be used to update and reevaluate existing site plans.

A. Indicate geographic directionality (north, south east and west) on the Site Plan.
B. Sketch an outline of all structures on the premises.
C. Identify structure's purpose—(ie. Residential house, feed storage, nursery).
D. For structures housing animals, identify type and number of animals.
E. Sketch and identify water sources for livestock and humans on premises.
F. Outline all yards and pastures that animals have access to.
G. Identify all premises' ingresses and egresses.
H. Identify all roads, streams or ponds on the premises.
I. Indicate the acreage of premises.
J. Attach aerial photos of property to sketched site plan. Area photos can be obtained for many locations at www.maps.google.com.

Site Plan Template

GENERAL PREVENTION PRACTICE CHECKLIST FOR BEEF AND DAIRY PRODUCERS

Minimizing or preventing disease entry and spread on farms is the goal of an effective Biological Risk Management plan. To accomplish this, there are several general management practices that every farm could implement with minimal cost. If done properly, they can help prevent and control a variety of diseases. It is important to consult your herd veterinarian and seek his/her input while implementing disease control strategies. By working together, you will be able to identify and implement steps to "fit" your operation.

The following management recommendations address disease prevention and control without requiring you to know details about specific diseases. Simple and basic considerations include knowing what is in the area of our farm perimeter (e.g. farms, visitors, neighboring livestock and wildlife), individual animal identification, animal health protocols, recognizing and dealing with sick animals, isolation/ quarantine, supply handling and neonatal management.

Farm Entrance and Perimeter

- **Limit Access to Your Farm**
  - The entrance to your farm is a major control point.
  - Have only one gated entrance to the animal areas on your farm to better control and monitor all visitors and vehicles arriving at your farm.
  - Lock gates to prevent unwanted human or animal entry.
- **Maintain fences to keep your animals in and and other animals out.**
- **Limit contact between your animals and others that may present a risk of disease.**
  - Coordinate with neighbors to avoid fence line contact between herds.
  - Minimize contact between domestic animals, wildlife and birds.
  - Keep cats and dogs from roaming between farms.
- **Minimize visitors and traffic on your farm.**
- **Post signs at the farm entrance to inform visitors of procedures to follow on your farm**
  - Stay off this farm unless given permission to enter.
  - Check-in with farm personnel upon arrival.
  - Follow farm biosecurity procedures.
  - Wear protective clothing (coveralls, boots) while on this farm. (Be sure to guide visitors to where protective clothing is located).
- **Delivery vehicles and personnel should follow your established farm biosecurity guidelines regarding parking, driving and animal contact.**
  - Inspect delivery vehicles for cleanliness prior to entering and provide a wheel well, tire and undercarriage wash station in case they are soiled.
  - Require feed deliveries to your farm be the first delivery of the day.
  - Require that all other deliveries be left at the perimeter of the farm.
  - To prevent vehicle entry, animal load out and delivery should occur at the perimeter of the farm.
  - Require delivery personnel to follow farm biosecurity procedures like all other visitors.
- **Take measures to prevent runoff from other operations from entering your operation.**
  - Exposing your cattle to contaminated water or waste from other operations can introduce disease.
  - Restrict animal access by fencing off water or waste from neighboring operations that accumulates from run-off following rainfall.

Source: Iowa State University, The Center for Food Security and Public Health

People and Vehicles

- **For the safety of your animals and the people who handle them, require that all individuals wash hands with soap and warm water before AND after animal contact.**

Employees

- **Require that employees who have contact with livestock at other locations (including their own home) use the same biosecurity measures as visitors on your farm.**
- **Educate yourself and train your employees to recognize and report diseases.**
  - When all employees know what to look for regarding sick animals, a reporting system allows those in charge to make treatment decisions or decide if the herd veterinarian should be contacted.
  - Early identification of serious diseases can help minimize the risk of disease spread on your farm.
  - If unusual illness or signs are noticed, contact your herd veterinarian immediately.
- **Maintain a written Biological Risk Management Plan and have regularly scheduled meetings to educate and update those involved.**
  - This is critical to make sure everyone is current on your operation's practices and provides the opportunity to make changes if needed.

Neighbors

- **Take steps to prevent disease spread from your neighbors' operation to yours.**
  - Do not share equipment or vehicles between farms.
  - If equipment must be shared, all manure and bedding should be removed, the equipment washed with warm water and soap, rinsed, disinfected and rinsed again before using it with animals from your farm.
  - Always wear clean clothes or coveralls, gloves, hats, boots, etc. when coming in contact with animals.
  - Wash and disinfect boots, change gloves, hats, and clothes or coveralls before returning to your farm.

Visitors and Vehicles

- **Post warning signs telling visitors to only enter your farm with permission.**
- **Provide a phone number at the farm entrance for visitors to call and make an appointment.**
  - Biosecurity measures can be explained at that time and posted near the phone number for all to see.
- **Prevent off-farm vehicles from driving in areas where animals travel.**
  - Require visitors and vehicles to park in designated areas at the entrance to your farm away from all animal areas.
  - Use only on-farm vehicles for transporting visitors within your operation.
- **All visitors should be accompanied by someone from the farm at all times.**
- **Provide clean coveralls and disposable or disinfected rubber boots.**
  - Post signs to direct visitors to a designated area where these are available.
  - Require that these items be worn by all visitors at all times while in animal areas.
  - Make sure boots are clean before entering animal areas; provide a well-maintained foot bath OR clean disposable boots and a receptacle near the entrance to the animal facility.

- After exiting animal areas, wash and disinfect boots OR remove them and dispose of them properly.
- When leaving your farm, visitors should remove all protective clothing and footwear provided by the farm and leave it in the designated area.

- **Visitors should avoid livestock areas and restrict them from contacting or handling your animals (unless absolutely necessary).**

Record Keeping

- **Traffic on or off your farm should be closely monitored and recorded.**
- Maintain a log sheet to record all visitors and vehicles that enter your farm.
- **Maintain thorough and accurate records of animal movement.**
- Document all animal movements, including the dates of introduction into the herd, where they came from and movements between separate units.
- Each farm location must be treated as a separate unit or premises.

Animals

Animal Identification

- **Individually identify every animal.**
- Individual animal identification is essential for proper record keeping (e.g. vaccinations, treatments, pregnancy status, etc.) which is an integral part of managing animals and minimizing disease risk on your farm.
- If more than one person works on your operation, individual animal identification is imperative for proper communication of health status, treatment needs, antibiotic withdrawal/ residue prevention status and location.

New Introductions & Returning Animals

- **Limit the frequency and number of new introductions.**

Animal Health

- **Keep health records on every animal.**
- **Review and update your vaccination and treatment protocols with your veterinarian at least twice a year.**
- **Monitor and inspect animals at least daily for signs of illness.**
- Investigate all animals with unusual signs or those unresponsive to treatment, especially those that die suddenly.
- **Clean equipment, boots and change clothing between animal groups with different health status.**
- **Promptly euthanize animals that are not going to recover.**
- Chronically infected animals can serve as an ongoing source for many disease causing organisms.
- Properly dispose of the carcass (e.g. render, compost, bury or burn) according to local and state laws.
- **Have your veterinarian necropsy animals that die from unknown causes.**
- This may help identify a potentially infectious disease before it becomes widespread on your farm.
- **Promptly remove dead animals from your operation as they can serve as a reservoir for many disease organisms.**
- Render, compost, bury or burn dead animals in a timely manner so predators, wild birds and other animals do not spread disease.

- **Limit purchases to a few sources with known and trusted herd health programs.**

- Obtain a complete herd health history prior to introducing new animals.
- Request copies of vaccination and treatment records for all purchased animals.

- **Handle all animals that temporarily leave your operation as new introductions when they return.**
  - Limit their contact with other animals during their time off your farm.
  - Do not share stalls, tack, feed or water with animals from other operations.
  - Do not share trailers, grooming supplies, reproductive equipment, needles or syringes with other farms.
  - Prevent reproductive contact with animals from other herds.
- **Place animal delivery and load out facilities on the perimeter of the farm.**
- **Quarantine all newly acquired animals or reintroduced animals.**

Isolation and Quarantine

- **Isolation of sick animals is necessary to minimize disease exposure of others in your herd and quarantine is required to prevent exposure of your herd to new or returning animals.**
  - In addition to being removed from all other animal areas, isolation and quarantine facilities should be separate from one another.
  - Equipment (feed, treatment, milking) should not be shared between isolation and quarantine animals.
  - If equipment must be shared, wash in warm water and soap to remove visible contamination, rinse, disinfect and rinse before removing from one location and moving it to another.
- **Immediately isolate sick animals from the herd to minimize disease spread.**
  - Prevent direct contact between isolated animals and others.
  - Prevent sharing ventilation, feed/water and equipment to minimize the risk of disease spread.
- **Use separate facilities, equipment and staff to handle isolated livestock.**
  - If this is not possible, at a minimum, handle or visit the isolated animals LAST.
  - Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill and isolated animals.
- **Any animals that have recently been purchased or returned to the farm should be quarantined.**
  - New or returning animals (e.g. shows and competitions) can be infected with a disease without showing signs right away.
  - Quarantine allows time for a disease to develop in the animal, without exposing your entire herd to the disease agent.
  - Do not allow new additions and animals returning to share water, feed, facilities or bedding with your other animals.
  - Ideally animals should be quarantined at a separate location (premises).
- **Time spent in isolation and quarantine varies depending on the disease risk so this should be determined together with your herd veterinarian.**
  - It is a good risk management plan to test for key diseases before taking animals out of isolation or quarantine to make sure they are not carrying diseases that could be introduced into your herd.
  - Work with your herd veterinarian to establish what tests are appropriate for your animals.

Neonatal Management

- **Ensure adequate ingestion of disease-free Colostrums within the first 6 hours of life.**

- Adequate ingestion of colostrum is the most important consideration for a calf's resistance to disease and all calves should receive colostrum within 6 hours of birth.
- A calf's immune system depends on the antibodies in colostrum. After 6 hours of life, the calf's ability to absorb antibodies from colostrum diminishes.
- Once a calf is born, cows begin to produce milk which will dilute colostrum and require the calf to consume more volume for maximum antibody absorption and immune function.

- **Prevent contact of newborns with older animals and contaminated environments.**

- This will decrease disease exposure to the calf and give the colostrum the ability to provide protection.

Wildlife and Other Animals

- **Prevent contact with free roaming animals (e.g. wildlife, cats, dogs, etc.).**
- **Control of wildlife may be difficult, but should be attempted.**

- Keep farm access routes, parking areas, yards and storage areas clean and tidy to avoid attraction of birds or rodents.

- **Minimize bird contact and nesting in your operation.**

- Birds are disease carriers and while it is nearly impossible to eliminate them from animal housing areas, steps should be taken to discourage their nesting and roosting.
- Contact your local extension office or herd Veterinarian for approved control methods in your area.

- **Maintain a rodent control program.**

- Rodents harbor many diseases that can affect cattle and can readily contaminate feed.
- Contact your local extension office or herd veterinarian for approved control methods in your area.

- **Secure all feed storage areas and clean up spilled feed to minimize access by pests.**

- These steps will help minimize the number of pests by limiting available food sources.

Supply Handling

- **Always read and follow label directions for proper storage of vaccines and medications.**

- Sunlight deactivates some vaccines and can render antibiotics worthless, causing poor protection or response to treatment when used used in your animals.
- Vaccines and medicines that need to be Refrigerated are susceptible to changes in temperature and may not work if they get too warn (greater than 46°F) or too cold / frozen (less than 36°F).
- Products that do not require refrigeration should be properly stored in a cabinet or other enclosure to restrict access by unauthorized individuals and minimize environment exposure (e.g. sunlight and temperature extremes).

- **Monitor your supply refrigerator at least monthly to help ensure the product are adequately stored (36-46 ^{o}F).**

- **Work with your veterinarian to teach proper procedures to all people who handle vaccines and medicines.**

- Restrict access to only trained personnel.
- Training should include proper handling and administration of these products plus when to when to use them.

Source: Iowa State University, The Center for Food Security and Public Health

- Improper handling and storage can cause contamination which could cause disease.
- Improper use of vaccines and medicines can make them ineffective and some can even be harmful to the person.
- Prudent antibiotic use helps maintain effectiveness in treating disease.
- Improper use of antibiotics can lead to the development of resistance and illegal residues.

Cleaning and Disinfection

General Recommendations

- **Thoroughly clean all objects to remove any visible debris (manure, dirt, bedding) before applying a disinfectant.**
  - Most disinfectants are ineffective when dirt, manure and other debris are present.
  - These materials prevent the chemicals in the disinfectant from contacting and killing the disease causing agents.
- **Use the proper concentration of any disinfectant (always mix according to the product label).**
- **Always allow a disinfection solution contact time to "sit" and work.**
  - To be effective, disinfectants need time to kill the microorganisms present.
  - Refer to the product label to determine the amount of time recommended (usually at least 5 minute.

Dairy Farmers of America -- Farm Visitor's Guide
Biosecurity & Safety Handout for Visitors to a Working Dairy Farm

Dairy producers are concerned about limiting their farms' exposure to numerous disease-causing organisms. As guests, it is up to us to do our part to limit the possible spread of disease. We have the potential to transmit infectious agents of many types from farm-to-farm if basic safeguards are not taken. Everyone visiting dairy farms is responsible for limiting the spread of these agents. Many diseases cause significant shedding of infectious organisms in waste material, saliva, or exhaled air when animals cough. These sources can contaminate your clothing, boots, hands, or tools. Please take appropriate measures to limit contact with and the possible transfer of disease to other dairy farms as well as ensure your own safety on the farm.

Please follow these important biosecurity and safety measures:

1 Wear new plastic boots at every dairy farm.

2. Visit the calves first, then cows. This prevents the transfer of any pathogens from cows to calves.

3. Do not let calves suck on fingers or hands – disease can easily be transmitted this way from calf-to-calf and calf-to-human. Crypto or Salmonella infections, or microscopic manure partials on the hands can transmit Johne's and other disease to the calves.

4. In many free stall barns, feed I piled up on the ground in front of the cows. Please do not walk through the feed pokes or step into any managers.

5. In the milking parlor, if it is time to let cows in r out, please exit the parlor.

   Too many strangers will disrupt the cows' behavior and slow down the milking process.

6. Try to walk into the milk house or dairy parlor with clean boots- this is where milk is produced, cleanliness is important.

7. Be extremely careful around any machinery such as feed trucks, skid loaders and other equipment. They can be extremely dangerous. Do not get in the way of employees doing their jobs.

8. Avoid hospital pens, other than a view from afar. Again, it is very easy to Carry disease on your jacket, pant legs, or boots when walking through a hospital pen.

9. Observe animals from the feed alleys and not in the pens.

10. Take off and discard disposable boots in an appropriate place (definitely not in the milk house).

Dairy Farmers of America -- Dairy Operation Emergency Contact List

Name by Priority for Farm	**Work/Cell Number**	**Home Number**
Milk Marketing	**Name**	**Phone Number**
Field Representative		
Area Office		
Director		
Milk Hauler		
Local Emergency	**Location**	**Phone Number**
Police/Sherriff's Dept.		
Fire Dept.		
Ambulance Service		
Clinic or Hospital		
Poison Control Center		
State Agency	**Name**	**Phone Number**
Dept. of Agriculture		
Dept. of Emergency Management		
Dept. of Homeland Security		
Dept. of Health		
Milk Program		
Milk Program Farm Inspector		
OSHA		

Dairy Farmers of America -- Dairy Operation Emergency Contact List (Cont.)

Animal Health	**Name**	**Phone Number**
Regional VMO		
State Veterinarian		
AVIC		
Area Emergency Coordinator		
Environmental	**Agency**	**Phone Number**
State Carcass Disposal		
State Spill Reporting		
State Manure Management		
State EPA Contact		

An Example of Cleaning Procedures for Milking Equipment

1. Pre-rinse

Rinse all equipment and utensils and flush pipeline with lukewarm (100-110°F) water immediately after use. This also applies to bulk tanks. Water temperature should not exceed 120°F.
Disassemble all parts that must be hand-washed.

2. Wash

Mix chlorinated alkaline cleaning solution as determined by manufacturer's recommendations and water quality tests.
___ gallons hot water (160-170°F)
___ ounces alkaline cleaner
For hand washing:
Soak all parts at 120-135 F for at least 5 minutes.
Brush all parts thoroughly.
Drain.
For pipelines and bulk tanks:
Circulate cleaning solution for 6-10 min.
The wash solution temperature should be above 120°F at the end of the cycle. Start with water at 170°F. Run air through for 2-3 min.
Brush all parts not designed for cleaning by circulation solution including
Outside of tank and outlet valve.
Drain.

3. Rinse

Rinse the detergent solution with tap water before adding the acid rinse.
Rinse tank thoroughly (inside and outside).
Rinse tank outlet valve.

4. Acid-rinse

Rinse pipeline and bulk tank with lukewarm or cold acidified water.
___ gallons clean water
___ ounces acid cleaner
Do not recirculate rinse solution.
Circulate 2-3 minutes and drain. Repeat running air through for 2-3 min.
Visually inspect line, receiver jar, etc., for proper cleaning.

Immediately before milking:

1. Sanitize

Flush pipeline and bulk tank with sanitizer immediately before milking, using:
___ gallons clean water
___ ounces sanitizer
Circulate 2-3 minutes and drain.
Sanitize hand-washed parts.
Let drain.

Source: G.M. Jones, Virginia Cooperative Extension. *Cleaning and Sanitizing Milking Equipment.* Publication 404-400.

Milk Tanker Cleaning and Disinfecting Recommendations

- ✓ Cleaning and disinfection cannot be achieved under open air conditions in cold weather. A permanent or temporary enclosed facility with temperatures greater than 10°C and a contained drainage area is needed.
- ✓ If tanker has a CIP (Clean in place system), flush CIP with hot water and mount ball rotator or wand washing system.
- ✓ Pre-Rinse with 38-46° F water.
- ✓ Circulate 1/100 dilution of sodium metasilicate, pentahydrate solution (available in 55 gallon drums), or other EPA approved disinfectant validated by peer-reviewed research, at 49-77F for 15 minutes.
- ✓ Make new solution for every tanker from infected (control) or surveillance zone.
- ✓ Flush tanker with three, 49-77° F flushes of water with no soap.
- ✓ Flush with cool water for final rinse to prevent foaming.
- ✓ Disinfect inside of tanker using an appropriate disinfectant according to label directions (may not be needed for FMDV, but required by industry).
- ✓ Remove organic material from small parts and equipment using hot water. Disinfect small parts and equipment using an appropriate disinfectant according to label directions before replacing them on tanker.
- ✓ Disinfectant should be approved by FDA.
- ✓ Organic material should be removed from inside cab and interior of cab C&D as needed. Dispose of all trash. Clean all compartments.
- ✓ Remove all visible organic material from outside of tanker using hot water (49-77 C). Take care to avoid splashing adjacent tankers during the washing process. Curtain can be installed in bays to prevent splashing.
- ✓ Begin at top and work down. Include cab, undercarriage, wheel wells, and tires.
- ✓ Disinfect all outer surfaces of tanker.
- ✓ At least a 10 minute disinfectant contact time is recommended but use appropriate disinfectant as per label directions.
- ✓ Rinsing may be necessary if product is corrosive.
- ✓ The tanker filter will also be tested for integrity. If the filter fails the integrity test it must be replaced before milk can be hauled.
- ✓ Rinse water from tankers washed after hauling Foot and Mouth Disease-positive milk should be considered Foot and Mount Disease positive and should be handled according to EPA requirements.

Source: Dr. Sandra Amass, *Dairy Industry Facilities Manual (Draft 8/03)* National Biosecurity Resource Center

Appendix L Industry's Role in Emergency Response

The following table presents information on FADs that are considered highly contagious and would cause high morbidity or mortality in cattle. Information presented in this table is intended to assist producers in recognizing a potential FAD agent in cattle populations.

Foreign Animal Disease Significant to Cattle			
Disease Agent[1]	**Clinical Signs[5]**	**Mode of Transmission**	**Zoonotic Disease**
Bovine spongiform encephalopathy[3,4]	- Nervousness - Persistent kicking when milked - Difficulty in coordination and rising - Hesitation at doors, gates and barriers - Loss of body weight despite continued appetite	**For Cattle:** Oral - Ingestion at a young age of BSE-contaminated feed **For Humans:** Oral - Ingestion of BSE-contaminated beef	**Yes**
Contagious bovine pleuropneumonia[2,4] (CBPP)	- Loss of milk production - Painful and difficult breathing - Initial dry cough that becomes moist - Loss of appetite - Fever - Moaning while exhaling - Elbows turned out, head lowered, back arched to ease breathing	Aerosol - Cough from infected cow Direct Contact - Cattle-to-Cattle (saliva, urine or (reproductive tissues or fluids)	**No**
Foot and Mouth Disease[2,3]	- Loss of milk production - Lameness - Blisters on top of foot, between Claws and on heels. - Lesions on snout - Oral lesions less commonly seen - Production of sticky, foamy, stringy saliva	Aerosol Direct Contact - Cattle-to-Cattle (saliva, milk, urine, reproductive tissues or fluids, tears, blood and feces) Oral - Ingesting infected product Fomites	**No**

[1] **Listed by USDA as a FAD, FADD must conduct an investigation.**
[2] **Ausvetplan Disease Strategy 2008**
[3] **United States Animal Health Association, Committee on Foreign and Emerging Diseases. *Foreign Animal Diseases*, 2008.**
[4] **Iowa State University, The Center for Food Security and Public Health, Animal Disease Information, http://www.cfsph.iastate.edu/DiseaseInfo/default.htm**
[5] **USDA, APHIS *Publications*** http://www.aphis.usda.gov/publications/animal_health/index_ah_c.shtml.

Foreign Animal Disease Significant to Cattle (Cont.)				
Disease Agent[1]	**Clinical Signs**	**Mode of Transmission**	**Biosecurity measures to prevent Disease Agent**	**Zoonotic Disease**
Rift Valley Fever[2,3]	- Depression - Loss of appetite - Decrease in milk production - Abortion	**For Cattle:** Vector - Mosquito and possibly ticks and biting mites **For Humans:** Vector -- Mosquito Aerosol -- Infected animal tissue or fluids		**Yes**
Rinderpest[2,3]	**Peracute** - High fever - Congested mucous membranes - Death within 2–3 days **Acute** - Onset of a rapidly mounting fever - Depression - Loss of appetite and milk production - Watery discharges from the eyes and nose - Constipation - Mouth lesions **Subacute** - Mild form of disease, usually in endemic area	Aerosol (limited) Direct Contact - Cattle-to-Cattle (saliva, milk, urine, reproductive fluids, tears, blood and feces) Oral - Ingesting infected product Fomites (limited)		**No**

[1] **Listed by USDA as a FAD, FADD must conduct an investigation.**
[2] **Ausvetplan Disease Strategy 2006**
[3] **United States Animal Health Association, Committee on Foreign and Emerging Diseases. *Foreign Animal Diseases*, 2008.**
[4] **Iowa State University, The Center for Food Security and Public Health, Animal Disease Information, http://www.cfsph.iastate.edu/DiseaseInfo/default.htm**
[5] **USDA, APHIS *Publications*** http://www.aphis.usda.gov/publications/animal_health/index_ah_c.shtml