

STATE OF MARYLAND FOREIGN AND EMERGING ANIMAL DISEASE PLAN



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Foreign and Emerging Animal Disease Emergency

Primary Agency: Maryland Department of Agriculture (MDA)

Support Agencies:

State Resources	Maryland Emergency Management Agency (MEMA) Maryland Department of Natural Resources (DNR) Maryland Department of Health and Mental Hygiene (DHMH) Maryland Department of the Environment (MDE) Maryland Department of Transportation (MDOT) Maryland Department of Business and Economic Development (DBED) Maryland Insurance Administration (MIA) Maryland Attorney General (AG) Maryland Fire and Rescue Institute (MFRI) Maryland Department of General Services (DGS) Maryland State Police (MSP) Maryland National Guard (MNG) Maryland Wing of the Civil Air Patrol (CAP) Maryland Institute For Emergency Medical Services Systems (MIEMSS) Virginia - Maryland Regional College of Veterinary Medicine (VMRCVM)
Federal Resources	U.S. Department of Agriculture (USDA) Federal Emergency Management Agency (FEMA) National Institute of Health (NIH) Center for Disease Control (CDC) U.S. Public Health Service (PHS) U. S. Army Medical Research Institute of Infectious Disease (USAMRIID) - Fort Detrick Veterinary Division
Local Resources	Local Emergency Management Agencies Local Law Enforcement Local Departments of Health
Private Resources	American Red Cross (ARC) Delmarva Poultry Industry (DPI) Maryland Horse Council (MHC) Maryland Farm Bureau (MFB) Maryland Volunteer Organizations Active in Disasters (MDVOAD) Maryland Veterinary Medical Association (MVMA) National Milk Producers Federation (NMPF) National Aquarium in Baltimore (NAIB) Baltimore, Catocin and Salisbury Zoos
Adhoc Resources	Maryland Animal Disaster Planning Advisory Committee (ADPAC) Maryland Livestock Marketer Association Professional Animal Workers Society of Maryland (PAWS-MD)

I. INTRODUCTION**A. Purpose**

The purpose of this guidance is to facilitate the coordination of state and federal efforts to prevent, prepare for, respond to and recover from the incursion of a foreign animal disease (FAD) or emerging animal disease (EAD) within the State of Maryland, minimizing the human and economic impact.

B. Scope of Operation

1. This guidance provides technical assistance to state and local government entities, professional animal health organizations and the agriculture industry.
2. Potential operations include monitoring, diagnosis, appraisal, quarantine, isolation, containment, depopulation, disposal and elimination of the FAD or EAD.

II. SITUATION AND ASSUMPTIONS**A. Situation**

1. Agriculture is the number one industry in Maryland, generating nearly eighteen (18) billion dollars in annual state revenues and providing employment for approximately 400,000 citizens. (2000 MDA Statistics)
2. An outbreak of a highly contagious animal health disease, such as Foot and Mouth Disease, could occur in Maryland and could be the result of unintentional international transmission or terrorist activity.
3. There is a concentration of poultry on Maryland's Eastern Shore that could be impacted severely by an outbreak of an FAD or EAD.
4. Maryland Department of Agriculture (MDA) has the responsibility for animal disease monitoring, diagnosis, prevention, quarantine and isolation.
5. There are numerous transmissible and zoonotic animal diseases foreign to Maryland. Listed below are some of the known FADs and EADs that have the potential for rapid spread and serious socioeconomic or public health consequences.

African horse sickness	Contagious bovine pleuropneumonia
Bluetongue	Classical swine fever (Hog cholera)
African swine fever	Foot and mouth disease
Lumpy skin disease	Highly pathogenic avian influenza (Fowl plague)
Newcastle disease	Peste des petits ruminants
Rift Valley fever	Rinderpest
Sheep pox and goat pox	Swine vesicular disease
Vesicular stomatitis	

B. Assumptions

1. Contagious animal health diseases could pose a significant threat to domestic and wild animals in Maryland and could have a severe impact on the state economy.
2. An outbreak of certain animal health diseases could impact the food supply.

III. CONCEPT OF OPERATIONS

A. General

1. Direction and Control

The Secretary of Agriculture (SOA) and the USDA-Area Veterinarian in Charge (AVIC) will jointly provide direction and leadership during animal health emergencies to the extent of each authority. The USDA-AVIC, State Agriculture Veterinarian (SAV), State Wildlife Veterinarian and State Public Health Veterinarian will assist their respective Departmental Secretaries in managing an outbreak of an FAD or EAD.

If criminal activity is suspected, the responding veterinary officials will notify state or local law enforcement. If terrorist activity is suspected, the FBI will be notified.

2. Activation Levels

a. Level 1 - Heightened awareness

There is potential for an FAD or EAD outbreak in Maryland. Normal precautionary measures, public education and surveillance may be enhanced.

b. Level 2 - Suspected FAD or EAD

A farm has been quarantined in Maryland on suspicion of an FAD or EAD (presumptive positive), awaiting confirmation from a laboratory. Access to the property is restricted. Precautionary methods are employed, including movement control.

c. Level 3 - Confirmed FAD or EAD

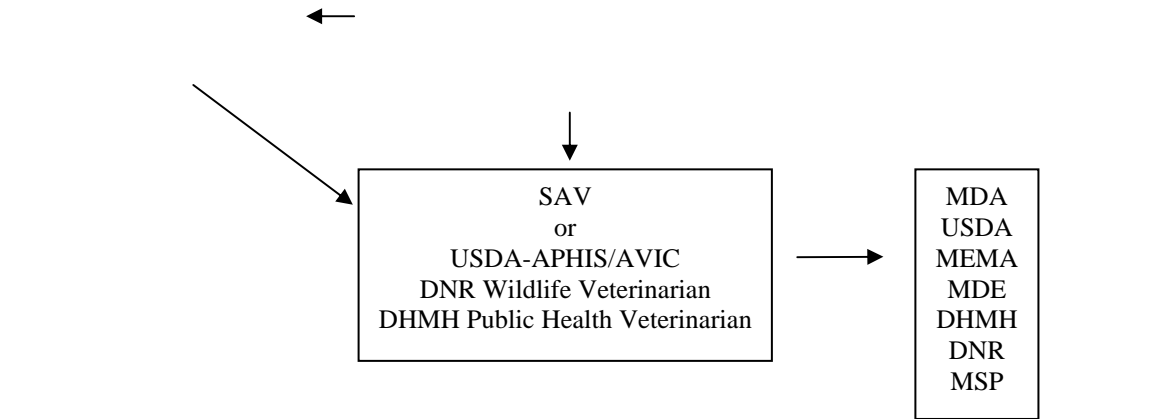
There is a confirmed case of an FAD or EAD in Maryland. Actions to be taken may include declaration of an agricultural emergency by the SOA, establishment of quarantines, additional animal testing, enhanced decontamination at affected sites and carcass disposal.

3. Notification and Reporting Procedures

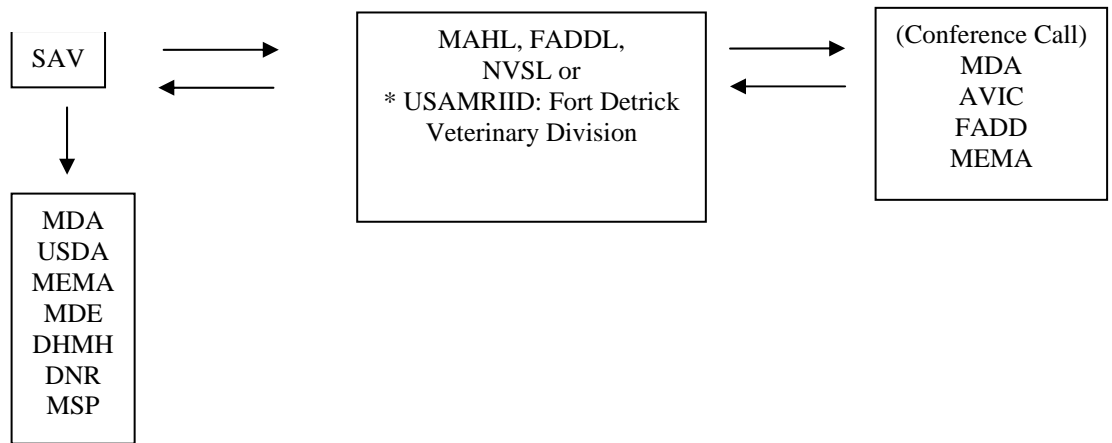
a. Level 1 Activation

Private accredited
veterinarian

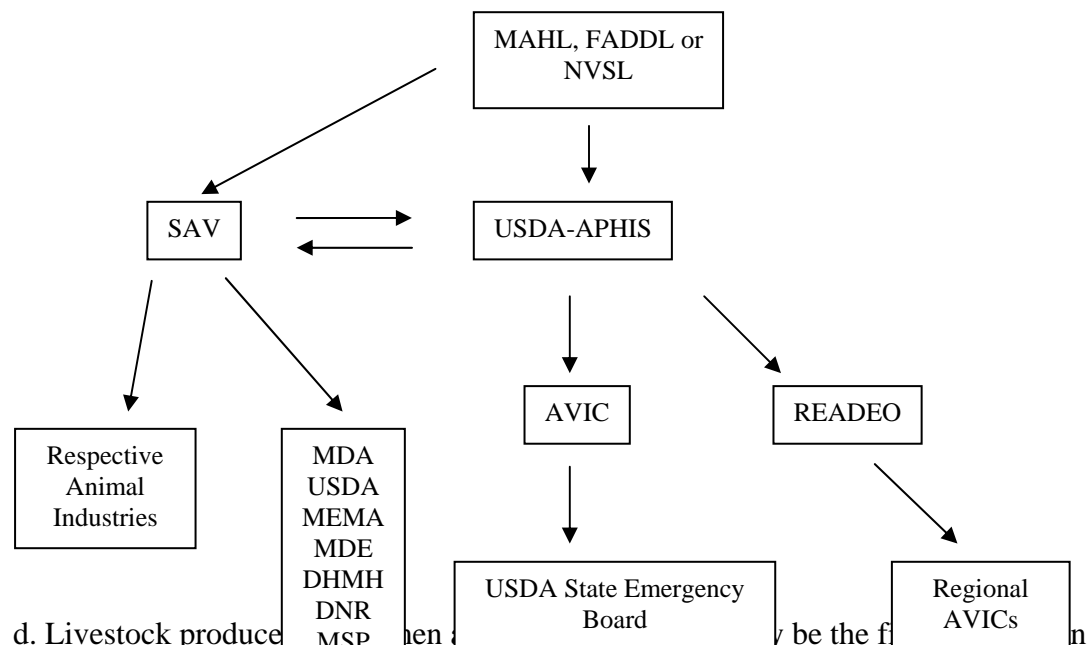
Livestock producers,
dairymen, feedlot operators,
local MDA agricultural products inspectors



b. Level 2 Activation



c. Level 3 Activation



d. Livestock producer reports an unusual condition in animals. The concerned producer should contact a private accredited veterinarian, the SAV, the USDA-AVIC, the Department of

Health and Mental Hygiene (DHMH), the State Wildlife Veterinarian or the Maryland Animal Health Lab (MAHL).

- e. If the disease situation is unexpected with a high death loss, if the symptoms are unusual and especially if a FAD is suspected, a private accredited veterinarian must immediately report findings to the SAV or the USDA-AVIC.
- f. MAHL, if contacted by a private accredited veterinarian or a producer, will contact the SAV or the USDA-AVIC regarding the unusual disease occurrence. All state laboratories are to report to the SAV any suspected or diagnosed diseases, including FADs or EADs.
- g. Suspected FADs in or potentially affecting wildlife or fish will be reported to the Department of Natural Resources (DNR), which will report this information to the SAV.

4. Emergency Response Coordination

a. Primary Contact

The primary point of contact is the SAV. The SAV will notify and convene the Command and Control Team (CCT) after consultation with the SOA. The CCT consists of representatives from MDA, USDA, MEMA, MDE, DHMH, DNR and MSP.

b. State and Federal Government Agencies

When contacted by a producer or a laboratory, the SAV or the USDA-AVIC will determine what steps are necessary to further characterize the disease occurrence. This may include dispatching a Foreign Animal Disease Diagnostician (FADD) to the location and requesting assistance from the USDA Regional Emergency Animal Disease Eradication Organization (USDA-READEO) and Early Response Team (USDA-ERT).

If the FADD determines that the differential diagnosis includes a FAD, he or she will obtain a Foreign Animal Disease Investigation case number and the USDA-AVIC will notify USDA-Emergency Programs. If an FAD or EAD is highly suspected, the USDA-AVIC and SAV will implement measures to isolate the disease to as small an area as possible.

c. Local Government Agencies

At the local level, emergency response coordination is the responsibility of the local emergency management agencies (EMA) in the affected jurisdictions. Cooperative Extension Agents will act as a link between local EMA personnel, local MDA representatives and USDA personnel.

5. Response Teams

A Maryland Response Team (MD-RT) consisting of personnel assigned by the SAV and the USDA-AVIC will be established. Diagnosis, containment and

associated activities will be performed by this team. The roster of state and federal personnel appears in Appendix 8.

6. Investigation Protocols and Procedures

Early investigations of a possible FAD, EAD or zoonotic disease will normally be conducted on the owners' premises. Response team members will be assigned to conduct an investigation of the situation. The veterinary practitioner, working with an MD-RT member, shall provide the following information:

- a. Name, address and telephone number of owner and manager;
- b. Directions to suspect premises;
- c. Species, breed or type of animals;
- d. Number of animals on premises;
- e. Approximate number of animals affected;
- f. Nature of the disease reported;
- g. Date and time when owner/manager first noticed condition;
- h. Clinical signs detailed;
- i. Known disease outbreak history;
- j. Name, address and phone number of veterinarian reporting the disease;
- k. Recent introductions and removals of animals.

7. Decision Making Process

- a. Upon notification by the SAV that an outbreak of an FAD or EAD is suspected, the SOA will notify the CCT.
- b. If the FAD or EAD has zoonotic potential, the SOA or the SAV will notify the Secretary of DHMH.
- c. The CCT will make recommendations to the State Emergency Operations Center (SEOC) for management of the FAD or EAD. Immediate issues to consider may include:
 1. Activation of the SEOC;
 2. Activation of the Emergency Management Assistance Compact (EMAC);
 3. Activation of a USDA-READEO to assist with outbreak control;
 4. Coordination and issuance of media releases;
 5. Establishment of a news media center near the scene of the infected site.

B. Preparedness and Prevention

1. Education and Public Information

State public information officers will work with the SAV and the USDA-AVIC to establish and implement informational and educational training programs for veterinarians, animal owners and livestock dealers. The goal will be to educate those individuals most likely to see suspicious symptoms first, so that they will know when to contact MDA or the USDA.

2. Biosecurity Training

MDA will be responsible for providing ongoing biosecurity training, including the provision of a written guide.

3. Other Measures

- a. Public agricultural events such as farm tours, agricultural shows and fairs may be postponed or canceled to prevent introduction of disease.
- b. Vaccines may be utilized in certain situations.
- c. Biosecurity plans will be developed and implemented for all susceptible establishments including zoologic parks, research laboratories, farms and germplasm centers.

C. Response

1. Public Information

- a. A Joint Information Center (JIC) will be maintained throughout the emergency. The JIC will be headed by the MDA Public Information Officer and supported by public information officers from MEMA and other agencies responsible for addressing the FAD or EAD hazard. The JIC will be responsible for rumor control.
- b. A Near Site Media Center (NSMC) will be established in the vicinity of the affected area and will serve as a central location for media inquiries and requests. The Center will provide information pertaining to all levels of the response.

2. Biosecurity

Biosecurity measures will be followed at all times. All vehicles leaving quarantined premises will be cleaned thoroughly and disinfected with an approved disinfectant. Only essential personnel will be allowed access to quarantined sites.

3. Diagnosis

- a. State and federal veterinarians may work with private veterinary practitioners and animal owners to conduct examinations and other diagnostic procedures.
- b. An FADD may be requested to perform diagnostic tests. Collection and submission of specimens will be the responsibility of the state and federal regulatory personnel with assistance from the local veterinary practitioner.
- c. The USDA-AVIC, in consultation with the CCT, will issue a priority number prior to the submission of specimens to federal diagnostic laboratories. In extremely

suspicious cases, diagnostic samples will be delivered by hand to the appropriate laboratory.

- d. The Foreign Animal Disease Diagnostic Laboratory (FADDL) at Plum Island, New York or the National Veterinary Service Laboratory (NVSL) at Ames, Iowa will perform laboratory tests. The USAMRIID-Fort Detrick Veterinary Division may be consulted for technical advice and laboratory support.

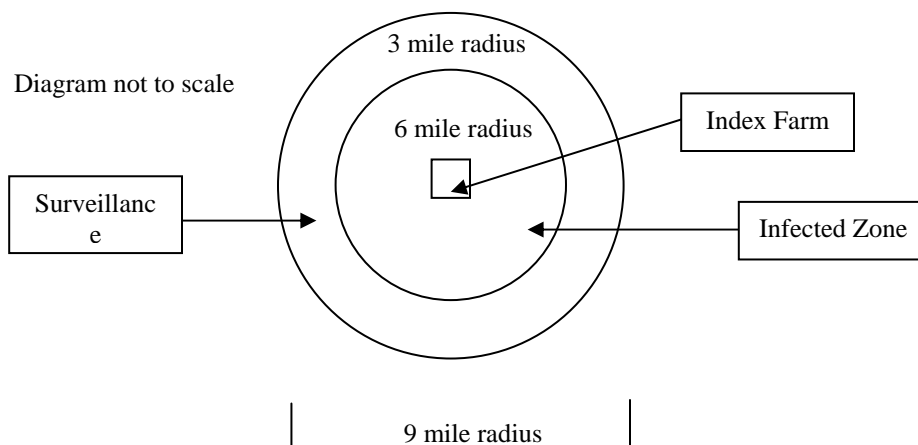
4. Epidemiology

- a. The SAV or the USDA-AVIC will trace all animals that have been moved to and from the affected premise. A complete evaluation of the animals' movements, current locations and present health status will be conducted. The presence and proximity of other animals in the area will be considered. If any animal or avian species at another location exhibits disease symptoms, the protocols for the primary infection site will be followed.
- b. The Area Epidemiology Officer (AEO) for APHIS VS in Maryland will provide epidemiological support.
- c. If the disease investigation confirms a zoonotic disease, the Secretary of DHMH will activate the epidemiologic tracking division.

5. Quarantine

- a. Quarantine, as described in this document, refers to imposition of one or more biosecurity measures for the purpose of establishing enforced physical separation of the healthy animal population from infected or potentially infected animals, their products and items or persons they may have contaminated. A quarantine may apply to one or more premises including ports of entry, farms, livestock auction markets or defined geographic areas.
- b. If an FAD or EAD is suspected, the SOA may authorize a quarantine of the premises. The SOA will designate the SAV to implement the provisions of the quarantine and conduct an economic impact assessment.
- c. Additional containment and control measures for an FAD, EAD or zoonotic disease, including the postponement or cancellation of public agricultural events, may be imposed at the discretion of the SOA and the SOH.
- d. The presumptive or confirmed infected premise is the actual farm or site where the FAD or EAD was reported. The designated infected zone will extend at least six (6) miles beyond the presumptive or confirmed infected premise. The actual distance in any one direction for the zone is determined by terrain, animal movements and concentrations, weather and known characteristics of the agent. Movement of animals within the infected zone will be allowed under permit only.
- e. The surveillance zone will surround the infected zone for a minimum of three (3)

miles. As such, the infected and surveillance zones combined should constitute at least a nine (9) mile radius from the infected premises. The exact boundary of the surveillance zone is established to assure containment of the outbreak. Initially, all movement will be stopped. Once the extent of the outbreak is understood, susceptible livestock can move within the surveillance zone under permit. Non-susceptible species may be moved in or out of the zone under permit.



f. The limits of the surveillance zone may be extended by MDA and the USDA.

6. Appraisal and Payment

Before destroying any animals, animal products, materials, equipment or buildings, USDA and state appraisal forms must be completed and signed by the owner-claimant, the federal appraiser and a state appraiser. Appraisal teams will be assigned to each affected site as soon as possible after the diagnosis has been made. In accordance with Maryland Agricultural Article 3-107 and USDA policy, if the Secretary of the USDA declares an extraordinary emergency the USDA will pay fair market value for all animals and materials.

7. Euthanasia and Disposal

Humane procedures will be used to euthanize animals. A method approved by the AVMA Council on Euthanasia will be selected. The disposal method will be determined based on the type and number of carcasses, location, topography, soil type, location of the water table and weather. The determination will be made by MDA in consultation with MDE.

8. Repopulation

No animals will be placed on the premises for at least thirty (30) days after disinfection. After this period, sentinel animals may be placed on site. If after thirty (30) days the sentinel animals are asymptomatic, the farmer may restock once the quarantine is rescinded.

D. EMAC/Resource Support

1. The SAV may request assistance from other states through MEMA via utilization of the Emergency Management Assistance Compact (EMAC).
3. The USDA-AVIC, with the concurrence of the SAV, may make a request to the USDA - Eastern Regional Director for additional personnel if necessary.
4. Other potential resources include the following:
 - a. State and federal meat and poultry inspection staff;
 - b. USDA, Wildlife Services;
 - c. Veterinary Medical Assistance Teams (VMAT);
 - d. Local law enforcement, animal control, animal inspectors;
 - e. Maryland Voluntary Organizations Active in Disasters (MVOAD);
 - f. Humane societies;
 - g. Other state's mutual aid agreements;
 - h. Veterinary practitioners.

IV. DEFINITIONS

1. Bio-terrorism

The threatened use or use of a microorganism or toxin derived from living organisms to induce death or disease in people, animals or plants.

2. Emerging Animal Disease (EAD)

A new disease or a new emergence of an old disease that is detected within the United States or its territories.

3. Foreign Animal Disease (FAD)

A transmissible disease in animals previously eradicated from or never detected in the United States and its territories. The disease may be listed in the Office of International Epizootic Disease Code List.

4. Quarantine

Imposition of one or more biosecurity measures for the purpose of establishing enforced physical separation of the healthy animal population from infected or potentially infected animals, their products and items or persons they may have contaminated.

9. Zoonotic Disease

A disease that can be spread from animals to humans or from humans to animals.

V. EXPLANATION OF ACRONYMS

AEO	Area Epidemiology Officer
APHIS	Animal and Plant Health Inspection Service, USDA
AVIC	Area Veterinarian in Charge
EAD	Emerging Animal Disease
EMA	Emergency Management Agency
ERT	Emergency Response Team
FAD	Foreign Animal Disease
FADD	Foreign Animal Disease Diagnostician
FADDL	Foreign Animal Disease Diagnostic Laboratory, Plum Island, NY
JIC	Joint Information Center
MAHL	Maryland Animal Health Laboratory
NSMC	Near Site Media Center
NVSL	National Veterinary Service Laboratory, Ames, IA
READEO	Regional Emergency Animal Disease Eradication Organization
SAV	State Agriculture Veterinarian
SOA	Secretary of Agriculture
SOH	Secretary of Health and Mental Hygiene

VI. APPENDICES

- Appendix 1: Organizational Roles and Responsibilities
- Appendix 2: Cleaning and Disinfecting Procedures
- Appendix 3: Supplies and Equipment
- Appendix 4: Bio-Security
- Appendix 5: Euthanasia
- Appendix 6: Transport of Animals
- Appendix 7: Disposal of Animals
- Appendix 8: Contacts

Appendix 1: Organizational Roles and Responsibilities**1. Federal Agencies****FEMA**

- a. Provide a representative to the SEOC when the USDA declares an emergency.
- b. Support state response and recovery activities.
- c. Identify federal organizations that can assist with response and recovery activities.

USDA APHIS VS

- a. Assist MDA with investigation, diagnosis, epidemiology, notification, emergency declarations, quarantines, provision of supplies and equipment, appraisals, herd depopulation, disinfection and vector control.
- b. Provide laboratory testing reagents, equipment and shipping containers.
- c. Submit samples via overnight or direct courier to NVSL or FADDL.
- d. Prepare reports.
- e. Request personnel and supplies from the Director of the Eastern Region.

2. State Agencies**Attorney General's Office**

Assure that all activities are within existing state laws and propose new laws when necessary.

CAP (Maryland Wing)

- a. Assist with air space missions.
- b. Transport specimen samples to FADDL or NVSL.
- c. Assist with damage assessment and search and rescue operations.

DBED

Support restoration of agriculture and other enterprises adversely impacted by the emergency.

DGS

- a. Assist in identifying resources to support response and recovery operations.
- b. Provide support in the development of contract agreements for services and supplies.
- c. Identify and provide available facilities/storage space for response and recovery activities.

DHMH

- a. Identify public health issues associated with the FAD or EAD.
- b. Develop and coordinate appropriate protective actions regarding any potential public health hazards associated with the FAD or EAD.
- c. If the FAD or EAD has zoonotic potential, enact zoonotic disease prevention activities.
- d. Assist with lab support.
- e. Provide support for mental health counseling.
- f. Assist MDE with analysis and sampling of air and water.

DNR

- a. Implement access controls and movement restrictions on wildlife habitats to prevent and contain the spread of the disease.

- b. Assist with the depopulation of animals.
- c. Assist with the assessment of susceptible wildlife species.

MDA

- a. Assign available field staff to assist with diagnostic and containment efforts.
- b. Quarantine or otherwise restrict movement of animals, animal products and personnel.
- c. Assist with collection of specimens and preparation of laboratory submission forms.
- d. Develop and disseminate public information relating to the nature and characteristics of the disease, its prevention and a list of animal health contacts.
- e. Develop the necessary procedures, protocols and capabilities to initiate the assessment process and conduct sampling of susceptible domestic animals once a suspected outbreak is reported.
- f. Coordinate the epidemiological investigations.
- g. Implement the necessary protective measures to contain the disease.
- h. Provide disease surveillance to all facilities within the quarantine zone.
- i. Identify livestock appraisers to determine the value of agricultural products, materials, and facilities that may need to be destroyed.
- j. Develop and implement strategies to safely handle and dispose of contaminated animals, both domestic and wildlife, and any associated agricultural products and materials.
- k. Develop necessary sanitary measures
- l. Maintain a resource list.

MDE

- a. Develop, maintain and implement plans and procedures to prevent, mitigate, respond to and recover from adverse environmental impacts resulting from an FAD or EAD outbreak.
- b. Coordinate environmental sampling and monitoring strategies for potential and actual events impacting air, land and water.
- c. Assist in the analysis of data received from the sampling and monitoring strategies.
- d. Assist in the development of a long-term environmental restoration site plan.
- e. Act as the lead agency for long-term restoration activities.
- f. Evaluate sites and methods for disposal of dead animals.
- g. Supervise and regulate waste management.
- h. Provide guidance in establishing and operating decontamination stations.

MEMA

- a. Activate the Joint Information Center.
- b. Develop standard operating procedures to facilitate the communications and operational interface between local, state and federal agencies during all phases of disaster management.
- c. Coordinate the preparation and dissemination of public information with the appropriate local, state and federal agencies.
- d. Coordinate needs assessment and damage assessment operations.
- e. Coordinate response and recovery operations.

MFRI

- a. Assist MDA and MDE with logistics support and resource management.
- b. Act as State liaison to local fire departments assisting with controlled or prescribed burning operations.
- c. Assist MDA and MEMA with information dissemination and equipment distribution.

- d. Assist MDE with establishing and operating decontamination stations.
- e. Offer recommendations for personal protective equipment (PPE) levels and decontamination procedures.

MIA

Assist farmers with insurance options.

MIEMSS

- a. Assist MDA, DHMH and MDA with communications to hospitals and EMS, fire and commercial ambulance services.
- b. Assist MEMA with the development of public service announcements.

MNG

- a. Assist with debris clearance, depopulation, euthanasia and disposal procedures.
- b. Assist with back-up communications.
- c. Assist with security and civil disturbance control.
- d. Assist with air traffic control.
- e. Upon request, provide a liaison team to the Defense Coordinating Element to ensure proper coordination between State and Federal military forces.

MSP

- a. Implement security measures at infected sites and quarantine areas.
- b. Provide security for workers investigating infected sites.
- c. Augment emergency communications on site.
- d. Implement traffic control measures to carry out security policies.

VMRCVM

Assist with organizing, preparing and training emergency responders on humane methods of euthanizing animals.

Appendix 2: Cleaning and Disinfecting Procedures

1. Principles of Cleaning and Disinfecting

- Remove all organic material.
- Follow all label instructions for the disinfectant used.
- Use the appropriate disinfectant for the agent.
- Follow appropriate safety procedures while using disinfectants.

2. Cleaning and Disinfecting Farms

Cleaning and disinfecting teams (C&D) should be assigned to each infected site immediately following confirmation of diagnosis.

- a. The C&D teams should ensure that all entrances to the premises, except for those that can be monitored, are closed.
- b. Equipment for cleaning and disinfecting personnel moving to or from the site should be available at the entrance. A tent, shed, trailer or other shelter should be available for changing clothing. Equipment such as brushes, scrapers, disinfectants, measuring and mixing containers, hoses and high-pressure spray pumps should be available at the entrance for cleaning and disinfecting trucks and other heavy equipment leaving the premises.
- c. Before initiating cleaning, all contaminated areas and buildings should be sprayed with an appropriate disinfectant. Fire department and military equipment may be available in some areas and is very useful. The Field Unit C&D Officer should determine the availability of such equipment in the area where disinfection is being conducted. Special attention must be directed to bulk feed trucks, automatic feeders and other closed areas to assure adequate disinfecting. All straw, hay, feed, loose litter and trash must be removed and burned or buried. All manure and bedding that cannot be burned or buried should be composted. The compost area should be fenced to prevent contamination spread, particularly by swine and dogs. Overhead beams and projections should be swept and washed thoroughly. Encrusted floors, walls and stalls should be scraped and scrubbed. Parts of buildings, such as stalls, wooden mangers, feed boxes and wooden floors, which are decayed or in such condition that cannot be thoroughly cleaned, should be removed and burned. In some instances, it may be necessary to destroy entire buildings and their contents to ensure the elimination of the infectious agent. No disinfectant can be expected to satisfactorily penetrate manure, blood, or other organic materials. Provision must be made for directing wash water into a confined drainage system or a ditch for burial or treatment.
- d. Barnyards, open pens and stable areas should be raked and the accumulated waste material burned or buried. Grading or plowing is preferable. Manure that cannot be buried or burned should be fenced off. Manure must remain composted for three to six months, depending upon environmental conditions, before it can be spread. Plastic covers can be used to both conserve heat and to keep vermin out. Hay, straw, feed and grain that may have been contaminated should be burned or buried. This includes those parts of the stocks or bins which the owner has been walking over while removing hay or grain, or parts with which animals may have had direct contact. Such contact areas should have at least three feet of

loose material, two layers of the bales, or one layer of sacks removed and burned or buried. Should it be necessary to salvage hay, straw or grain on farms where large quantities are stored, careful study should be made to determine the possibility and extent of contamination. Contaminated silage should be removed and destroyed. All possible contaminated areas should be condemned and destroyed by burning or burial. The surfaces of remaining stacks of hay, grain or sacked feed should be thoroughly disinfected.

- e. MDE approval should be obtained for the milk disposal method selected. Before disposal, milk should be acidified by mixing sufficient acetic or other acid to lower the pH below 4, approximately 3 parts glacial acetic acid to 97 parts milk, or NaOH to raise the pH above 12. As the addition of acid will cause the milk to curdle, it should be placed in an open receptacle such as an opened barrel. After acidification, the milk should be disposed of with the infected animals. The pipeline of the milking system should be disassembled, thoroughly cleaned, rinsed and reassembled as for normal cleaning operations. A hot detergent solution at 70 to 80 degrees C. should be pumped through the system for 1/2 hour and a 2 percent acetic acid solution for another 1/2 hour. Metal parts should be dipped in 2 percent sodium hydroxide. Air lines and other parts not reached by the normal pump-through cleaning should be disassembled and cleaned with a 2 percent sodium hydroxide solution. All milk-holding tanks, buckets, cans, wash basins and other equipment in the dairy should be thoroughly washed with detergent and disinfected with a 2 percent sodium-hydroxide solution. Miscellaneous items such as brushes, sponges, rags, and other porous items must be burned. The milking parlor and milk room should be cleaned and disinfected following the same procedures as for all other buildings.
- f. Non-susceptible animals should be confined until disinfection is completed. Before being released, dogs and cats should be dipped, sprayed, or sponged with a 2 percent acetic acid solution and rinsed. Eggs should not be allowed to leave an affected premise except under permit. Permits for the movement of eggs may be issued provided the egg case or other container is cleaned and disinfected. Permits should not be issued for the movement of poultry until thirty days after completion of disinfection.
- g. Contaminated clothing and equipment used by the owner or others handling animals should either be destroyed, thoroughly cleaned and disinfected or fumigated.

3. Cleaning and Disinfecting Slaughtering Plants

- a. Before disinfecting is initiated, all meat that has been approved for human consumption should be removed.
- b. Meat and hides from infected animals must be appraised and burned or buried. Other hides may be placed in an approved soak or moved under supervision to a tannery for supervised processing. The approved drench is a 1 to 10,000 solution of sodium-biflouride at an initial pH of 3.8. Hides must be soaked for 24 hours. The solution shall not exceed pH 5 during this 24 hours.
- c. Horns, hoofs, and offal from unexposed animals may be rendered on the premises, moved under supervision to an approved rendering plant or buried.

- d. Sheds, pens, alleys and other outside areas must be sprayed with a permitted disinfectant and scraped, brushed, raked and washed clean. Materials that cannot be cleaned must be burned.
- e. All equipment, tables, cutting blocks, refrigerators, coolers, floors and walls inside the plant must be scraped, brushed and washed clean. A final spray of a permitted disinfectant must then be applied. A fresh water rinse must be applied before the plant is allowed to process meat.
- f. Clothing must be soaked in a permitted disinfectant and laundered. Waterproof apparel, boots, belts, and knife holders must be soaked in a permitted disinfectant. All personal clothing of employees must be laundered on site or destroyed. Arrangements must be made for clean clothing to be brought to the employees.

4. Cleaning and Disinfecting Stockyards

- a. Spray all areas with a permitted disinfectant.
- b. Burn all items that cannot be properly cleaned and disinfected.
- c. Scrape and clean all remaining items, including fences, watering facilities, vehicles, scales, ramps and chutes.
- d. Remove all manure from the floor of each pen and alleyway for burial or composting. A pig-proof fence should be constructed around the compost pile. After composting, the material should be evaluated and disposed of in a safe manner.
- e. Areas contaminated by the movement of people or equipment, such as offices and seating space around sales arenas, must be cleaned and disinfected.

5. Cleaning and Disinfecting Carriers

Railroad cars, trucks and other vehicles that have carried livestock through any quarantined area within a period of fifteen (15) days before the outbreak of the disease must be cleaned and disinfected. Exceptions may be made for those vehicles cleaned and disinfected under supervision since last used. Exterior, including the undercarriage, and interior surfaces must be cleaned. The interior of the truck cabs should be washed with clean water and sponged with a permitted disinfectant. Manure and litter removed from these vehicles should be burned or handled in a manner as described for affected premises.

6. Fumigation

Fumigation may be the method of choice for disinfecting certain facilities, especially when motor vehicles or machinery are involved or the area is inaccessible for spraying.

- a. Paraformaldehyde may be used as a fumigant. Paraformaldehyde is a crystalline white flaky powder. When heat is applied it produces formaldehyde gas. It can be used to fumigate laboratories, machinery, equipment, electronic apparatus and areas inaccessible by conventional C&D methods or where the caustic effect of other agents precludes their use.

- b. Ethylene oxide may be considered in certain situations.

7. Disinfectants

- a. The selection of a disinfectant is governed by the type of surface to be disinfected and the cleanliness of the surface.
- b. When using disinfectants, all surfaces should be rinsed with clean water before application. Recommended disinfectants may irritate the skin, eyes and respiratory system. Protective equipment such as rubber boots, rubber gloves, masks and goggles should be worn during mixing and application. Areas of the body that are exposed to disinfectants should be thoroughly washed immediately with water. Disinfectants should be applied at the recommended dilutions.
- c. Persons responsible for disinfection operations must be familiar with the characteristics of the disinfectant they are using. A disinfectant whose action is based upon its acidity is rendered useless if sprayed upon highly alkaline material. Conversely, if the action is based upon the disinfectants alkalinity it is rendered useless when sprayed on highly acid material.
- d. Recommended disinfectants are described below and appear in Table 1.

Sodium Hydroxide (NaOH) - Sodium hydroxide is very caustic and will cause irritation to the skin, eyes and respiratory system. Protective clothing must be worn when using this product. The action of NaOH on a virus is dependent on its alkaline pH. It must never be mixed with another product which will alter its alkalinity. Sodium hydroxide should not be used on painted portions of vehicles because it will remove paint.

Calcium Oxide (CaO) - Synonyms include quicklime, unslaked lime, burnt lime, calx and caustic lime. Calcium oxide is a white or grayish white granular powder. On exposure to air, it absorbs CO₂ and water and becomes air-slaked. It is soluble in water, glycerol and sugar solutions, and insoluble in alcohol. It should be kept tightly closed and dry during storage. Calcium oxide is used in dehairing hides. It has been used at the rate of one barrel for eight head of cattle or sixteen head of swine or sheep. It reacts with body acids and water to hasten the decomposition of carcasses and to repel rodents and other animals.

Calcium Hydroxide Ca(OH)₂ - Synonyms include slaked lime and calcium hydrate. This compound is formed when quicklime is treated with water. It absorbs carbon dioxide from the air to form calcium carbonate. When ignited, it forms calcium oxide and water. When dissolved in acid solutions it generates heat, but its solubility in water decreases due to fixed alkali hydroxides. It is also soluble in glycerol and sugar solutions. It should be kept tightly closed during storage.

Chlorinated Lime - Synonyms include bleaching powder, chlorinated soda, chloride of lime and calcium oxychloride. Chlorinated lime is a relatively unstable chlorine carrier in solid form. It is a complex chemical compound of indefinite composition which is usually composed of quicklime (CaO), slaked lime Ca(OH)₂ and calcium hypochlorite Ca(OCl)₂. Maximum available chlorine content approaches 39 percent. Commercial products usually range between 24 percent to 37 percent of available chlorine. It is a white or grayish white

powder which, when exposed to air, becomes moist and rapidly decomposes. Therefore, it should be kept dry and tightly closed in storage. It is effective in barnyards and areas where animals have been penned. Chlorinated lime is used in alternate layers in manure piles.

Table 1 - Disinfectants

5.25% sodium Hypochlorite (bleach)	2 gallons bleach to 3 gallons water
Sodium hydroxide* (lye), 2 percent	13 1/2 oz. can to 5 gallons water
Sodium carbonate, 4 percent	1 lb. to 3 gallons warm water
Acetic acid, 2 percent	2 parts glacial acetic acid to 98 parts water (6.5 ounces to 1 gallon of water)
Citric acid, 2 percent	1 lb. to 6 gallons water
Metasilicate, 4 percent	1 lb. to 3 gallons water
Virkon S	Use according to manufacturer's recommendations

* When using lye disinfectant of any strength, protective goggles, rubber gloves and rain gear must be worn. Flush areas of the body exposed to lye with water and treat with vinegar.

8. Final Inspection

Following cleaning and disinfecting, and prior to placing sentinel animals on the premises, the Field Unit C&D officer or his designated representative will inspect the premises.

Appendix 3: Supplies and Equipment

The following are supplies and equipment commonly required for animal disease emergencies.

Cleaning

Cleaning brushes and sponges
 Buckets
 Disinfectants
 Hand-held sprayers
 Plastic garbage cans
 Plastic containers
 Long-handled brushes
 Heavy plastic bags
 Manure forks
 Shovels
 Scrapers
 Hoes
 Heavy brooms
 50" lengths of ¾ pressure hoses
 Spray nozzles
 Power spray unit and tank
 Shop vacuum cleaners
 Extension cords and adapters
 Liquid detergent
 Soda Ash
 Sodium hydroxide

Medical

Swine mouth speculum
 Probangs
 Veterinary thermometers
 Surgical masks
 Surgical gloves
 20 ml sterile glass vials
 5 1/2" curved scissors
 Bard Parker handle #3 and blades
 5 1/2" tissue forceps
 15ml vacutainers
 Disposable syringes
 Sedatives and anesthetics
 Euthanasia agents
 Fiberglass, plastic or metal cases
 Metal pans 12 x 12 x 4"
 Styrofoam specimen containers and
 rigid secondary containers

Clothing

Plastic hats, coats, pants and boots
 Heavy rubber gloves
 Coveralls
 Hard hats
 Safety goggles

Heavy Equipment

Draglines
 Bulldozers
 Front-end loaders
 Tractors with forklifts
 Trucks and trailers
 Fogging trucks

Miscellaneous

Captive bolt guns
 Iowa hog holders
 Axes
 Crowbars
 Hatchets
 Post hole diggers
 Portable corrals
 Tents or trailers
 Metal-handed knives
 Sharpening stones
 Heavy chains
 Pliers
 Claw hammers
 Official ear tags and ear tag pliers
 Crescent wrenches
 Screw drivers
 Coolant material
 Flashlights
 Lariat
 Masking tape
 Nose leads
 GPS units

Appendix 4: Biosecurity

1. Entering a Contaminated Area

- a. Do not drive into the contaminated area. Vehicles should be left at the entrance, with doors and windows closed.
- b. Prior to entering the contaminated area, change into protective clothing and disinfect footwear. Protective clothing may include coveralls or Tyvex disposable suits, boots, masks, respirators, disposable gloves and goggles.
- c. Prior to entering the contaminated area, assemble disinfecting and veterinary supplies. Disinfecting supplies may include buckets, scrub brushes, disinfectant, water and plastic bags. Veterinary supplies may include syringes, needles, swabs and alcohol.

2. Leaving a contaminated area

- a. Remove dirt and other debris from shoes. Wipe shoes with an approved disinfectant, and allow the product to remain on shoes for fifteen (15) minutes. Wipe off shoes with a clean damp cloth. Place shoes in a plastic bag and secure. Place primary bag into another bag.
- b. Place clothing that has not been in contact with the contaminated area in a plastic bag and secure. Clothing that has been in contact with the contaminated area should be washed and dried in a drier. If contaminated clothing must be taken from the site, laundering restrictions will be provided. Clothing that is to be dry-cleaned must be bagged separately and dry-cleaned.
- c. All persons leaving the contaminated area will be decontaminated at the farm entrance and re-examined at checkpoints. Decontamination includes washing hands and fingernails and disinfection of footwear.

Appendix 5: Euthanasia

Euthanasia Methods

Humane procedures must be used. A method approved by the AVMA Council on Euthanasia will be selected. It is advisable that euthanasia not be performed in public view, and it is recommended that the owner not be present. The euthanasia should be performed as rapidly as possible, under the supervision of a veterinarian. Each animal should be checked to ensure that the procedure was successful. The depopulation operation will be under the supervision of the READEO Humane and Disposal Officer.

1. Mechanical: captive bolt or gunshot

The type, size and status of domestication will determine the degree of control and restraint needed for the captive bolt method. Proper firearm safety must be practiced at all times. Caliber, type of firearm and ammunition must be matched to the animal. When possible, non-ricocheting ammunition should be used. Shooting is humane only when rapid central nervous system destruction occurs. This is possible by shooting the animal in the brain or high in the cervical spinal cord. Location of the proper target point and accurate aiming are essential for a humane kill. The target point for most animals can be located by drawing imaginary lines from each ear to the opposite eye. Where the lines intersect in the middle of the forehead is the proper entrance point. The angle of fire should cause the bullet exit through the forehead.

2. Chemical: toxic gas or lethal injection

Toxic gas may not be a practical euthanasia method for large livestock, however carbon dioxide and carbon monoxide have been used to euthanize large farm animals. Carbon monoxide is lethal at a 1% concentration for humans and a safety hazard. Lethal injection requires proper animal restraint and the drug must be recognized as an effective and humane killer. The route of administration must be intravenous, and the agent used must be effective for the species. Lethal injectables include barbiturates and a mixture of chloral hydrate, magnesium sulfate and pentobarbital.

3. Electrical: stunning followed by other action

Electrical current must pass through the brain in order to produce instant stunning. This effect must be promptly followed by electrically induced fibrillation of the heart or some other method to produce death. Exsanguination is a common procedure used after stunning.

Appendix 6: Transport of Animals

Movement of animals from the infected site for the purposes of depopulation or disposal should be avoided if possible. Permitted movement will be in accordance with the quarantine restrictions and will be administered by the state or federal officials. The transport of carcasses should be carried out in closed leak-proof vehicles that can be easily cleaned and disinfected. The vehicle should be built in such a way that leakage and aerosol dispersal during transport is prevented. The handling of the carcasses should be kept to a minimum. The following guidelines should be observed.

1. During killing and handling, mutilation of the carcasses should be avoided to keep leakage to a minimum.
2. All trucks hauling carcasses should be leak proof and covered.
3. All infected animals and carcasses should be under continuous security until the pathogens are destroyed. An official should accompany each truckload of carcasses.
4. The destination should be inspected and approved for disposal of the infected and exposed carcasses prior to transport.
5. The destination should be reasonably accessible and have a large capacity.

Appendix 7: Disposal of Animals

The method of disposal must be approved by the READEO environmental quality officer. Necessary permits or pre-clearance must be obtained.

1. Burial

Burial is the preferred method of disposal and should be used whenever practical. Digging the disposal trench should begin as soon as possible after confirmation of the diagnosis. The site should be on the affected premises or as close to the premises as topography permits. When selecting a burial site, consideration should be given to underground cables, water or gas lines, septic tanks and wells. If possible, an area away from public view should be chosen.

- a. Information should be supplied to the READEO Contract Officer concerning trench dimensions, cubic yards of material to be moved, price per yard, charges for blasting or other special techniques and provision for trench filling and possibly refilling several weeks after the carcass and fill dirt have settled.
- b. A burial trench should be at least 7 feet wide and 9 feet deep. At this depth, 14 square feet of floor space is required for each bovine carcass (5 mature hogs or sheep equal one bovine carcass). If equipment and soil conditions permit, it may be desirable to dig deeper and wider trenches. For every additional 3 feet in depth, the number of animals per 14 square feet of floor space can be doubled. At least 6 feet of dirt must be placed above the carcasses.
- c. Contaminated manure, feed, milk and other items may be placed in the trench with the carcasses and covered with at least 6 feet of soil.
- d. If a suitable site is unavailable on the infected premises, the carcasses should be transported to a pre-approved designated burial site. The site should be inaccessible to animals, removed from populated areas, not used for agricultural purposes, clearly marked and properly protected.

2. Burning

Burning carcasses can be difficult and expensive. Burning should be used only when burial is not feasible. A high water table, excessive rock conditions or public health and environmental protection concerns may prevent use of burial as a method of disposal. A holding pen for confining animals prior to depopulation should be available near the burn site.

- a. The burn site should be a flat area away from public view and easily accessible to heavy vehicles. The fire should be built away from buildings, hay, feed stacks, overhead electric and telephone cables and shallow underground pipes. The prevailing wind direction should be considered to prevent excessive quantities of smoke from blowing across public roads. The fire will burn best if constructed at a right angle to the prevailing wind.
- b. A burning operation consists of elevating the carcasses on a platform constructed of incendiary materials, such as wood, coal, straw and old tires. Until carcasses are destroyed, the fire should be guarded to avoid dissemination of infected material by scavengers. The

fire will have to be tended and rearranged periodically as it progresses.

1. Fuel requirements

Straw or hay: Allow 3 bales per cattle carcass. Contaminated straw or hay can be used in fire preparation.

Heavy timber: Allow 3 pieces, approximately 8 feet long by 1 square foot in cross section, per cattle carcass. Railroad ties or bridge timbers are ideal.

Kindling wood: Allow 50 pounds per cattle carcass.

Old tires: Allow 4 or 5 tires per cattle carcass.

Coal: Coal should be of good quality and in large pieces, preferably 6 to 8 inches in diameter. Allow 500 pounds of coal per adult cattle carcass. Proportionately less is required for young stock. When goats, sheep or swine are burned with cattle, they may be placed on top of the cattle carcasses at the rate of two animals for each cattle carcass without additional fuel. At this rate, or when goats, sheep or swine are burned alone, allow 100 pounds of coal per animal.

Liquid fuel: Kerosene, furnace oil or diesel fuel should be obtained in sufficient quantity to thoroughly soak the materials before the fire is lighted. A minimum of 1 gallon per cattle carcass ($^{\circ}\text{C}$) is required. A reserve supply of fuel oil should be held in case difficulty in burning is encountered. **Gasoline should not be used.**

Gel Terra Torch System: The gelling agent used is a powdered aluminum soap suitable for gelling various types of hydrocarbons. Mixing of the fuel and gelling agent powder is done by re-circulation in a tank. To obtain the correct liquid viscosity, for example, 4.5 pounds of the powder is added to a 30-gallon tank containing the fuel mixture. The thickened fuel gives a hotter and more lasting fire.

2. Estimation of animals (Bovine equivalents)

1 adult cow or bull	= 1 $^{\circ}\text{C}$
5 adult swine	= 1 $^{\circ}\text{C}$
5 adult sheep	= 1 $^{\circ}\text{C}$

3. Length of fire

One yard per $^{\circ}\text{C}$, though 2 pigs, 2 goats or 2 sheep can be layered on top of each $^{\circ}\text{C}$.

4. Amount of material per $^{\circ}\text{C}$

Straw	= 3 bales per $^{\circ}\text{C}$
Heavy timbers	= 3 per $^{\circ}\text{C}$
Kindling wood	= 50 pounds per $^{\circ}\text{C}$
Tires	= 4 per $^{\circ}\text{C}$

Coal	= 500 pounds per °C
Fuel oil	= 1 gallon per °C

5. Example

500 cattle	= 500 °C
1,000 swine	= 200 °C
700 sheep	= 140 °C
Total	= 840 °C

Reduce 840 °C by 200, as 2 swine or 2 sheep carcasses may be added for each cattle carcass without additional fuel (840 °C - 200 °C = 640 °C). Stake out fire line 640 yards long. The line can be divided into 2 or 3 separate lines.

Straw, 3 bales per °C	= 1,920 bales
Heavy timber, 3 per °C	= 1,920 timbers
Kindling wood, 50 pounds per °C	= 16 tons
Tires, 4 per °C	= 2,560 tons
Coal, 500 pounds per °C	= 160 tons
Liquid fuel - 1 gallon per °C	= 640 gallons

- c. Select a site and stake out the area of the fire bed. Lay three rows of straw or hay bales lengthwise along the line of the firebed approximately 12 inches apart with 12 inches between each bale in a row. Push loose straw into the space between the bales. Place the large timbers lengthwise on top of each row of straw. Distribute the remaining large and medium-sized timbers across the fire bed with 6 to 12 inches of space between timbers. Place old tires and small kindling wood on the fire bed. Spread loose straw over the wood and tires. Spread the coal evenly over the wood and tires to make a level bed. Place carcasses on the fire bed. Position carcasses on their backs with legs in the air alternately, head to tail. Place loose straw over the carcasses and stuff into the spaces between carcasses. Pour or spray liquid fuel over the pyre. A pump can be used if available. Start the fire along the entire length of the pyre. A torch that will burn for several minutes is recommended for starting the fire.

If weather conditions are favorable, the bulk of the carcasses should burn within 48 hours. It will be necessary to tend the fire, stirring it occasionally and replacing carcass pieces that drop off. Additional fuel may need to be added. When all the carcasses have been completely burned and the fire has died out, the ashes should be buried and the area should be graded or plowed.

3. Rendering

Rendering is the most economical method of disposing of carcasses, however satisfactory rendering plants are not always available. The movement of carcasses to rendering plants poses some additional risk in terms of spreading the agent.

4. Alkaline Hydrolysis

Alkaline hydrolysis is a procedure utilizing various alkalizing chemicals applied to the carcasses. The final product can be discarded in the sewage system.

5. Composting

Composting consists of the mixing by volume of 1 part carcass, 2 parts litter and 1 part straw. The procedure is carried out in an enclosed area. For mammals the carcasses should be cut into smaller pieces of approximately 10 to 12 inch thickness. Urea, at the rate of 10-15 pounds per 1000 pounds of carcass, should be added. The process generally takes 2 weeks and temperatures of 140-155°F can be reached.

6. Other Methods

Other methods of disposal may be recommended by the AVIC, SAV or READEO Director. These methods should be directed to the Deputy Administrator, VS for approval. An example of an alternative method of disposal would be the use of an incinerator. This method is appropriate when incinerators are located near the affected premises and their capacity is sufficient for the number of animals involved.

Appendix 8: Contacts**Maryland Department of Agriculture**

Secretary: Louis Riley: 410-841-5880 (W), 410-535-0645 (H), 410-370-4323 (M), 410-693-0308 (C)

Deputy Secretary: John Brooks: 410-841-5881 (W), 410-822-7852 (H), 410-370-4323 (M), 410-370-5632 (C)

Assistant Secretary for Animal Health: Robert Halman: 410-841-5782 (W), 410-457-4365 (H)

State Veterinarian: Dr. Roger Olson: 410-841-5783 (W), 301-663-6811 (H)

Assistant State Veterinarian: vacant

MEMA representative: Dr. Jacob Casper: 443-394-1449 (H), 410-315-0820 (pager)

MEMA representative: Stephen Malan: 410-841-5920 (W), 410-833-9198 (H)

Director of Communications: Don Vandrey: 410-841-5888(W), 410-693-2131(C), 410-541-8973(pager)

Public Information Officer: Sue K. duPont: 410-841-5882 (W), 410-608-4812(C), 410-716-5786(pager)

Frederick Animal Health Laboratory: 301-663-9528

College Park Animal Health Laboratory: 301-314-1870

Centreville Animal Health Laboratory: 410-758-0846

Salisbury Animal Health Laboratory: 410-543-6610

Oakland Animal Health Laboratory: 301-334-2185

United States Department of Agriculture

Area Veterinarian-in-Charge: Dr. David Vogt: 410-349-9684 (W), 410-279-3037 (M)

Emergency Programs Chief: Dr. Jos. Anelli: 301-734-5869

Emergency Programs Staff: Dr. Ty Vannieuwenhoven: 301-734-4917 (W), 301- 346-4733 (M)

Maryland Department of Health and Mental Hygiene

Public Health Veterinarian: Dr. Cliff Johnson: 410-767-6703

Deputy Public Health Veterinarian: Dr. Tracey Duvernoy: 410-767-5779 (W), 301- 896-0575 (H)

Maryland Department of Natural Resources

Wildlife Veterinarian: Dr. Cindy Driscoll: 410-226-5193 (W), 410-643-1449 (H)

Maryland Department of the Environment

Primary contact: George Harman: 410-631-3856 (W), 410- 526-2494 (H)

Maryland Emergency Management Agency

Director: Donald Keldsen: 410-517-3625 (W)

Deputy Director: Walter Mueller: 410-517-5128 (W)

Readiness Director: Paul Mitchell: 410-517-3611 (W)

MEMA Public Information Officer: Quentin Banks: 410-517-3631 (W)

Director of Plans: Ruth Mascari: 410-517-5105 (W), 410-343-1495 (H)

All Hazards Planner: Steven Welzant: 410-517-3609 (W), 410-661-4545 (H)

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