

**United States
Department of
Agriculture**

Animal and
Plant Health Inspection
Service

Veterinary Services

Emergency Management

Interim Avian Influenza (AI) Response Plan

March 2006

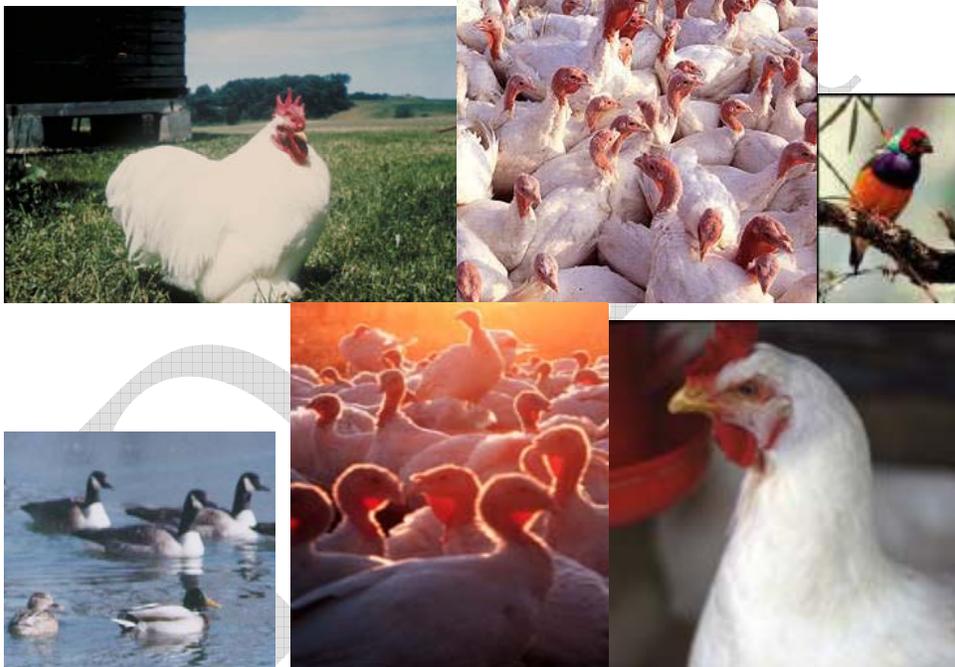
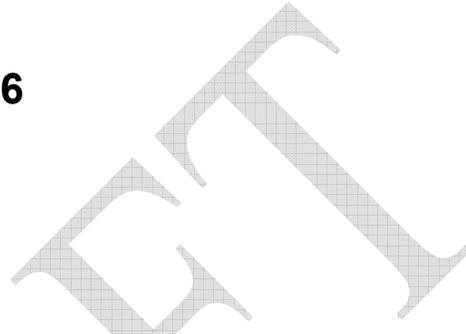


Table of Contents

Introduction

Background: Science of Avian Influenza (AI) Viruses

Prevention, Preparedness, and Surveillance

Emergency Response Framework

National Response Plan and the Incident Command System
National Animal Health Emergency Management System

Standard Operating Procedures for Laboratory Testing, Reporting, and Response

Response to a Positive Laboratory Finding for Notifiable or Highly Pathogenic AI
Veterinary Services Policy Memoranda on Procedures for Investigating a Suspected Foreign Animal Disease/ Emerging Disease Incident FAD/EDI

Field Operational Response Guidelines

Introduction to Field Operational Response Guidelines
HPAI Task Force
Quarantine and Movement Control
Appraisal and Compensation
Euthanasia
Disposal
Cleaning and Disinfection
Biosecurity
Vaccination
Wildlife Management

Personal Protection and Safety

Strategic Safety Stockpile for Avian Influenza
Veterinary Services Policy Memoranda on Personal Protective Equipment
Operational Guidelines: Personal Protective Equipment

Appendices

Appendix A: Veterinary Services Memorandum No. 580.4 Procedures for Investigating a Suspected Foreign Animal Disease/ Emerging Disease Incident (FAD/EDI)
Appendix B: Veterinary Services Memorandum No. 580.18 Policy to Ensure the Protection of Personnel Involved in Highly Pathogenic Avian Influenza Control and Eradication Activities

Introduction

Avian influenza (AI) is a viral infection of birds caused by a group of viruses known as type A influenzas. AI viruses are classified as either highly pathogenic AI (HPAI) or low pathogenic AI (LPAI), based on the genetic features of the virus and the severity of disease in poultry. While most AI viruses are LPAI and usually result in mild or asymptomatic infections, HPAI viruses are associated with very high morbidity and mortality rates in poultry, up to 90 to 100 percent.

Of primary concern is H5N1, a type of AI virus that has mutated into dozens of highly pathogenic varieties and has infected humans. This particularly virulent strain of AI emerged in Asia in late 2003 and was recently detected in Turkey, Romania, and other parts of Europe. In addition to poultry, mortality from H5N1 has been reported in nearly 60 wild bird species worldwide. While there are no reported cases of humans becoming infected from migratory birds, humans have been infected through contact with domestic poultry or poultry products. To date H5N1 has not been detected in North America.

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service has developed a national response plan for rapidly detecting and quickly and effectively responding should H5N1 HPAI virus reach the United States. USDA has a variety of prevention and preparedness activities ongoing both internationally and domestically.

Internationally, USDA is collaborating with the U. S. Agency for International Development to prevent and control H5N1 AI where it currently exists in Asia. This strategy is based on the premise that the best way to protect animal and public health is to address the virus at its source. Domestically, USDA is working to prevent and control H5 and H7 AI in U.S. commercial broilers, layers, and turkeys; their respective breeders; and the live bird marketing system. In addition to import restrictions and activities to prevent illegal entry of poultry and poultry products, a major component of the domestic program is surveillance, both in domestic poultry and wild birds.

In the event of a detection of HPAI, the USDA will implement a foreign animal disease emergency response. The framework of USDA's emergency response system, which is described in this plan, includes the National Response Plan, the National Incident Management System, and APHIS' National Animal Health Emergency Management System. This framework integrates the capabilities and resources of the Federal Government, States, Tribes, local communities, and private organizations.

USDA's response plan includes standard operating procedures for responding to a laboratory finding of HPAI. Field operations guidelines for emergency responders address roles and responsibilities, quarantine and movement controls, appraisal and compensation, euthanasia, disposal, cleaning and disinfection, biosecurity, and wildlife management. Finally, the response plan provides for the stockpiling and use of personal protective equipment for AI responders.

Background: Science of Avian Influenza (AI) Viruses

Scientific Aspects of Avian Influenza (AI) Viruses

Worldwide, there are many strains of the AI virus that can cause varying amounts of clinical illness in poultry. AI viruses can infect chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds, including migratory waterfowl. This virus changes rapidly in nature by mixing its genetic components to form slightly different virus subtypes. AI is caused by this collection of slightly different viruses rather than by a single virus type. There are 144 different characterizations of the AI virus based on two groups of proteins found on the surface of the virus. One group is the hemagglutinin proteins (H), of which there are 16 different types (H1-H16); the other group is the neuraminidase proteins (N), of which there are 9 different types (N1-N9).

AI viruses can be further classified into low pathogenicity and high pathogenicity forms based on the severity of illness they cause in poultry. Most AI strains are classified as low pathogenic avian influenza (LPAI) and cause mild or asymptomatic infections in birds. In contrast, highly pathogenic avian influenza (HPAI) causes a severe and extremely contagious illness and death among infected birds. Mortality rates for birds affected by an HPAI outbreak can be as high as 90 to 100 percent, and any surviving birds are usually in poor condition. While LPAI infections are typically mild, some low pathogenic subtypes—the H5 and H7 strains—have the capacity to mutate into highly pathogenic strains. LPAI poses no known serious threat to human health. However, some strains of HPAI viruses can be infectious to people.

Incidents of LPAI are commonly detected in domestic poultry flocks. HPAI is much rarer, and there is no evidence that it currently exists in the United States. Historically, there have been three HPAI outbreaks in poultry in this country—in 1924, 1983, and 2004. No significant human illness resulted from these outbreaks. Furthermore, the most recent outbreak in 2004 was quickly detected and eradicated. Because of the quick response, the disease was limited to one flock of 6,600 birds.

Since December 2003, a growing number of Asian countries have reported outbreaks of a H5NI HPAI virus in chickens and ducks. At present, the United States does not have HPAI H5N1 and does not import poultry from countries currently experiencing H5N1 outbreaks. The unique aspect of this particular virus is that it has been transmitted from birds to humans, most of whom had reported extensive direct contact with infected birds. The infection of humans with this AI virus has resulted in necessary concern and caution regarding the role of avian species in the epidemiology of human influenza.

Sources of AI Infection

AI viruses are most often found in migratory waterfowl, which appear to be the natural reservoirs for the influenza A viruses. The reservoir of AI viruses in wild birds should be considered a major source of infection for domestic birds, particularly free and open range poultry, and it is important to reduce the contact between these two groups. Live bird markets are the second most important reservoir of influenza virus for commercial poultry.

Transmission of the Virus

AI is spread primarily by direct contact between healthy birds and infected birds, and through indirect contact with contaminated equipment and materials. The virus is excreted through the feces of infected birds and through secretions from the nose, mouth, and eyes. Contact with infected fecal material is the most common means of bird-to-bird transmission. Wild ducks often introduce LPAI into domestic flocks raised on range or in open flight pens through fecal contamination. Within a poultry house, transfer of the HPAI virus between birds can also occur via airborne secretions. The spread of avian influenza between poultry premises almost always follows the movement of contaminated people and equipment. AI also can be found on the outer surfaces of egg shells. Transfer of eggs is a potential means of AI transmission. Airborne transmission of virus from farm to farm is highly unlikely under usual circumstances. HPAI viruses can survive indefinitely when frozen. The avian viruses have also been isolated from the water in ponds where ducks swim.

HPAI can be spread from birds to people as a result of extensive direct contact with infected birds. Broad concerns about public health relate to the potential for the virus to mutate, or change into a form that could spread from person to person.

Clinical Signs and Symptoms

LPAI symptoms are typically mild. Decreased food consumption, respiratory signs (coughing and sneezing), and a decrease in egg production might demonstrate the presence of the disease. Birds that are affected with HPAI have a greater level of sickness and may die suddenly. They could also exhibit one or more of the following clinical signs: lack of energy and appetite; decreased egg production; soft-shelled or misshapen eggs; swelling; purple discoloration; nasal discharge; coughing, sneezing; lack of coordination; and diarrhea.

Diagnosis

Samples are usually taken by swabbing the mucus that coats the throat of live birds. With wild birds, a fecal sample can be taken instead. These samples go into sealed tubes and are taken to USDA-approved laboratories where a polymerase chain reaction (PCR) test is run. A PCR test is a rapid method of identifying the virus, typically producing results within 3 hours. If a sample from an area where avian influenza has not been previously detected tests positive on a rapid test, an additional confirmatory test is performed. This test involves growing the sample in embryonated chicken eggs, which then provides the material to allow detailed identification of the strain of virus and whether it is HPAI or LPAI. This test can take 3-5 days to produce results. Serological tests, including agar gel immunodiffusion, hemagglutination inhibition and ELISAs, may be used as supplemental tests.

Control and Cleanup

When AI outbreaks occur in poultry, quarantine and depopulation (culling) of all infected, exposed, or potentially infected birds, followed by proper disposal of carcasses and the quarantining and rigorous disinfection of farms and surveillance around affected flocks, are the preferred eradication and control options. AI viruses are susceptible to

control using chemical and physical measures such as heat, extremes of pH, nonisotonic conditions, and dryness, which can inactivate AI viruses. In addition, AI viruses are inactivated by organic solvents and detergents.

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Prevention, Preparedness, and Surveillance

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Prevention, Preparedness, and Surveillance

USDA has both an international and a domestic role in controlling the spread of AI in birds and reducing its effects on both the economy and public health. Internationally, USDA is collaborating with the U.S. Agency for International Development (USAID) to prevent, control, and eradicate AI where it currently exists in Asia. The national domestic program goal is to prevent and control H5 and H7 AI in U.S. commercial poultry and the live bird marketing system and to increase surveillance of wild birds to rapidly detect and prevent its spread to poultry.

International Activities

APHIS' international strategy is based on the premise that the best way to protect public health is to address the H5N1 virus at its source, i.e., in the birds/poultry of affected countries. Reducing virus load in birds will proportionately reduce the opportunities for this virus to mutate into a possible pandemic virus.

Through collaboration with USAID, APHIS is providing in-country technical training and capacity building in affected Asian countries. The Agency will work to establish the veterinary health frameworks necessary to reduce the risks associated with outbreaks of endemic H5N1 in birds. To provide ongoing assistance, the Agency will post permanent in-country experts to Cambodia, China, Indonesia, Laos, Thailand, and Vietnam, all countries affected by H5N1. These experts will conduct training, coordinate sampling, and help preserve framework stability required for effective H5N1 control and eradication in birds. This will be carried out through "train-the-trainer" exercises and seminars in the 7 target countries (including Burma). Overall, these APHIS activities will help to reduce the risk of H5N1 entering the United States.

Domestic Activities

APHIS has taken many actions to prevent the introduction of HPAI into the United States and ensure preparedness in the event of an outbreak. In addition to import restrictions on poultry and poultry products from all countries affected by HPAI, USDA's domestic surveillance and preparedness program consists of the following components:

Wildlife Surveillance: Migratory Flyways and Wildfowl—APHIS' Wildlife Services will lead an interagency effort to detect HPAI in wild birds. The initiative will be divided into two phases. The initial phase will address early detection activities in Alaska, and in particular, coastal areas that have the most potential for contact among Asian and North American birds. The second phase will address subsequent HPAI detection activities in four major North American flyways. The plan for wild bird surveillance includes several interrelated components, including: the investigation of wild deaths or sickness; the sampling of live-captured birds; the deployment of sentinel species; environmental sampling; and sampling hunter-harvested birds.

Domestic Bird Surveillance and Diagnostics—There are four domestic areas of concern: live bird marketing system; upland game and waterfowl; commercial/backyard surveillance outside of the live bird marketing system; and commercial breeder, layer, and broiler operations. Through the National Poultry Improvement Plan, a cooperative industry-State-Federal program, APHIS is providing assistance to the broiler industry for expansion of AI surveillance in commercial operations. APHIS will increase personnel and activities to provide surveillance for notifiable avian influenza (NAI) in live bird markets. APHIS will also increase surveillance of upland game and waterfowl birds raised for release and surveillance of auctions, sales, swap meets, flea markets, and public exhibitions.

Smuggling Interdiction and Trade Compliance--The Smuggling Interdiction and Trade Compliance (SITC) unit conducts risk-management and anti-smuggling activities to prevent the unlawful entry and distribution of prohibited agricultural commodities. The program will enhance activities to further safeguard against HPAI. Specifically, SITC will produce a market survey looking at domestic markets that are likely to have illegally imported avian products to establish baseline information on how much product is getting through ports of entry. Additionally, SITC will begin intelligence gathering, targeting likely shippers and importers of prohibited products, and cooperating with U.S. Customs and Border Protection and other agencies to conduct large-scale inspection operations at ports of entry.

Laboratory Support and Diagnostics—APHIS' National Veterinary Services Laboratories (NVSL) will provide support to National Animal Health Laboratory Network-approved laboratories for the processing of samples submitted from both the wildlife, commercial, and live bird marketing segments of the HPAI surveillance program. NVSL will also develop and contract out the production of test reagents that will be distributed at no charge to laboratories approved to participate in the HPAI program. The Center for Veterinary Biologics will more quickly review data packages concerning the licensure of new products (diagnostic test kits and vaccines) for AI.

Biosecurity--APHIS will expand its “Biosecurity for the Birds” program to promote best practices in both the live bird marketing system and backyard flock owners.

Preparedness—USDA will use an enhanced version of the North American Animal Disease Spread Model (NAADSM) to develop computer-generated scenarios for HPAI. The NAADSM will be used to evaluate the potential consequences of AI incursions in United States and North American poultry and determine optimal methods of control and what countermeasures, including reagents, vaccines, and other supplies and materials, need to be included in the National Veterinary Stockpile (NVS) for such incursions. The NVS will address those needs by acquiring, configuring, and maintaining critical veterinary supplies to ensure that these resources are can be deployed within 24 hours of an adverse event.

APHIS will also work to assist States in organizing, training, and equipping both the State Incident Management Teams and Veterinary Reserve Corps. These groups will

operate as a robust early warning surveillance system to rapidly identify any introduction of HPAI, as well as educating wildlife and domestic poultry groups on the signs and symptoms of HPAI and how to report it when they see it. In addition, APHIS will identify and contract with prequalified vendors who can supplement initial responders at an outbreak site.

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Emergency Response Framework

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Emergency Response Framework

USDA has taken aggressive steps to protect our Nation by integrating the capabilities and resources of the Federal Government, States, Tribes, local communities, and private organizations into a seamless National Emergency Management System. The policy framework of the system includes the National Response Plan, the National Incident Management System, and APHIS’/the National Animal Health Emergency Management System.

National Response Plan

The **National Response Plan** establishes a comprehensive approach to enhance the ability of the United States to manage large-scale domestic emergencies. The plan incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector—and integrates them into a unified structure. It forms the basis of how the Federal government coordinates with State, local, and Tribal governments and the private sector during incidents.

As part of the National Response Plan, the **National Incident Management System** integrates effective practices in emergency preparedness and response into a comprehensive national framework for incident management. The system enables responders at all levels to work together more effectively and efficiently to manage domestic incidents no matter what the cause, size or complexity.

Under the National Incident Management System, the **Incident Command System (ICS)** provides a foundation for training and other efforts by communicating and sharing information with other responders and with the public. ICS orders resources to assist with response efforts and integrates new technologies and standards to support incident management. The goal is to have all of the Nation’s emergency responders using a common language and a common set of procedures, whether working individually or together.

Five Primary ICS Management Functions



Under the National Response Plan, resources are grouped into Emergency Support Functions (ESFs) that would most likely be needed during a domestic incident. ESF #11 specifically addresses the protection of agriculture and natural resources and is coordinated by USDA. Under ESF #11, USDA's Animal and Plant Health Inspection Service (APHIS) is responsible for coordinating State, Tribal, and local authorities and other Federal agencies to conduct any animal disease control and eradication activities.

National Animal Health Emergency Management System

Following the principles of the National Response Plan and the National Incident Management System, APHIS has established the **National Animal Health Emergency Management System (NAHEMS)**. The NAHEMS provide an operational framework for responding to a foreign animal disease emergency.

NAHEMS guidelines are designed for use at any of three levels of response commensurate with the severity of the outbreak. These levels include:

- *A local/limited response:* This level of response is managed by local, State, Federal, and industry officials, with response coordination provided primarily at the State and regional levels and with national-level consultation and consequence management (e.g., trade issues).
- *A regional response:* A regional response is managed by local, State, Federal, and industry officials, and in some cases includes the involvement of the appropriate State emergency management agency as specified in State animal health emergency response plans). National-level crisis management, response coordination, consultation, and consequence management are required.
- *A national response:* This level of response requires the combined efforts of local, State, industry, and Federal agricultural officials as well as nonagricultural personnel from Government (e.g., the Federal Emergency Management Agency) and the private sector in national-level crisis management, response coordination, consultation, and consequence management.

Topics covered in the NAHEMS guidelines include:

- Field investigations of animal health emergencies;
- Implementation of an animal emergency response using the ICS;
- Disease control and eradication strategies and policies;
- Operational procedures for disease control and eradication;
- Site-specific emergency management strategies for various types of facilities;
- Administrative and resources management; and
- Educational resources.

As part of the NAHEMS, APHIS has developed guidelines for **Animal Emergency Response Organizations (AEROs)** at the State level. These organizations draw upon Incident Command System principles and are designed to integrate easily with each State's emergency management system as well as the Federal Response Plan. The AERO guidelines provide personnel and other animal health emergency response workers with

general principles and recommendations as to the response system necessary in the event of a major U.S. animal health emergency.

Through AEROs, prequalified specialists—trained in both animal health and emergency management principles—will stand ready to respond as needed to eradicate or respond to an animal health emergency. These specialists will work in teams, will travel as needed to various locations within their States, and will be available to help other States as well.

The NAHEMS also includes a **Leader’s Guide for Emergency Operation Centers** to assist with effective and efficient management. The guidelines include a systematic approach to identifying human and material resources needed at the incident site based on the size and complexity of the incident. Categories range from a Type 5 Incident, which is contained in a comparatively short time with comparatively minor levels of resources, to a Type 1 incident, which can be contained only with significant human and material resources that are committed for a longer time period.

USDA Legal Authority:

The Animal Health Protection Act (AHPA) was enacted to enable the Secretary to prevent, detect, control, and eradicate diseases and pests of animals, such as avian influenza (AI), in order to protect animal health, the health and welfare of people, economic interests of livestock and related industries, the environment, and interstate and foreign commerce in animals and other articles. The AHPA gives the Secretary a broad range of authorities to use in the event of an outbreak of AI in the United States and to prevent the introduction of such a disease into the United States. The Secretary is specifically authorized to carry out operations and measures to detect, control, or eradicate any pest or disease of livestock, which includes poultry, and to promulgate regulations and issue orders to carry out the AHPA. The Secretary may also prohibit or restrict the importation, entry, or interstate movement of any animal, article, or means of conveyance to prevent the introduction into or dissemination within the United States of any pest or disease of livestock. Under certain specified circumstances, the Secretary may declare an extraordinary emergency to regulate intrastate activities or commerce. The Secretary also has authority to cooperate with other Federal agencies, States or political subdivisions of States, national or local governments of foreign countries, domestic or international organizations or associations, Indian tribes and other persons to prevent, detect, control, or eradicate AI.

Standard Operating Procedures for Laboratory Testing, Reporting, and Response

Response Plan to a Report of Notifiable Avian Influenza Virus

The “Response Plan to a Report of Notifiable Avian Influenza Virus” specifies actions to be taken to respond to a positive laboratory result for notifiable AI (NAI). Notifiable AI is defined by the World Organization for Animal Health (OIE) in the Terrestrial Code chapter on AI.

Response to a Positive Laboratory Finding for Highly Pathogenic Avian Influenza

Response actions will begin upon receipt of a suggestive or positive result on a screening test for NAI or HPAI virus at a designated National Animal Health Laboratory Network (NAHLN) laboratory and other laboratories. Many additional actions will be taken upon receipt of a presumptive positive diagnosis from the NVSL. A full response will be initiated upon receipt of a confirmed positive diagnosis from the NVSL. The actual field circumstances surrounding a presumptive or confirmed NAI or HPAI case may require modification of response actions specified in this plan. Responses to HPAI versus LPAI may differ.

Veterinary Services Policy Memoranda on Procedures for Investigating a Suspected Foreign Animal Disease/ Emerging Disease Incident (FAD/EDI)

Suspected cases which are reported for FAD investigations will still be addressed per current FAD procedures as detailed in VS Memorandum 580.4. A condensed version is included in Appendix A.

All employers processing biologic specimens suspected of being infected with HPAI virus must ensure that their employees comply with all provisions of 29 CFR 1910.1030 for employee protection against blood-borne pathogens, including the reporting of accidental exposure to AI virus. Any accidental exposure should be reported to an immediate supervisor or employee health department.

Field Operational Response Guidelines

Introduction to Field Operational Response Guidelines

There are two major components to a field response to a highly contagious animal health incident. The first component required is an understanding of the overarching strategies for responding to a highly contagious disease event and its intricacies and complexities. The USDA's highly contagious disease guidelines provide that overarching view.

The second component to a field response is the policy and procedures needed to control spread of and eliminate the disease. A description of those activities specific to high pathogenic avian influenza (HPAI) is presented below.

The overall goal for response to a highly contagious disease is to detect, control, and eradicate the disease agent as quickly as possible to return individual farms to normal production and the United States to disease-free status. The response target time to accomplish this goal should be 4 months or less, as response efforts become more difficult to maintain after such a period of time.

HPAI Task Force

During an incident, task force teams accomplish specific required actions. The teams are described briefly below.

Team Descriptions

Surveillance Team—The surveillance team is responsible for filling out premises surveillance surveys regarding premises and collecting biological samples.

Commercial Conveyance Inspection Team—The commercial conveyance inspection team will identify, inspect and produce permits for conveyances transporting live poultry, poultry products, poultry byproducts, or farm-related equipment.

Euthanasia Team—The euthanasia team is responsible depopulating poultry production premises that may be a source of infection.

Disposal Team—The disposal team is responsible for elimination of material that may be a source of viral contamination.

Cleaning and Disinfection Team—This team cleans and disinfects the premises to ensure that HPAI does not re-emerge or spread.

Epidemiology Team--This team collects and analyzes information regarding cases of HPAI reported by the Disease Reporting Officer.

Diagnostics Team—This team conducts sampling, following the HPAI SOP.

Survey Teams--are authorized to place these quarantines in consultation with the Deputy Planning and Intelligence Chief. Quarantine Notices should be personally served to bird owners. Premises visited as part of general area surveillance will only be placed under quarantine if there are sick birds and HPAI is suspected.

Team Function Descriptions

Site Surveillance: The surveillance team is responsible for filling out surveillance surveys regarding premises and collecting biological samples. Surveillance team members will be trained in biosecurity protocols and sampling techniques to collect oropharyngeal and cloacal swabs. Team members will use a new personal protective equipment (PPE) pack on each premises and will have to obtain enough packs for each stop. The designated “dirty” team member will collect sample and the “clean” person fills the laboratory submission forms and will handle the sample bags for submission to the designated laboratory.

Commercial Conveyance Inspection: All personnel responsible for the inspection of conveyances that may be transporting poultry or related items must use appropriate safety equipment to prevent against contamination and transmission of HPAI. The inspection team will be trained in biosecurity measures and equipped with PPE and biosecurity equipment. The inspection team will be responsible for inspecting and disinfecting conveyances that transport poultry and poultry related products. Vehicles will need to carry appropriate permits to transport poultry or poultry related items out of the control area. The inspection team will report any vehicle found to be transporting poultry or poultry related items.

Disease Reporting: Disease reporting personnel will act as the primary contacts for the laboratory regarding laboratory submissions and test results. Personnel will assist the epidemiology group in conducting investigations. The decision on how to classify a premises is made by the Disease Reporting Officer (DRO). The DRO will consult with the Epidemiology group to inform them that there is a new infected premises in their area. The DRO is responsible for keeping the database accurate, validating information entered into EMRS. The following EMRS reports are used to produce daily reports by other sections of Planning and Intelligence.

Euthanasia: Each euthanasia scenario is unique and dependent upon the adequacy of the euthanizing agent, the euthanasia enclosure, and the euthanasia personnel. If any component is lacking, the likelihood of inadequate euthanasia increases. Personnel will be trained in key concepts, including: euthanasia, handling of birds, safety, and biosecurity. Birds are usually euthanized by releasing CO₂ into a poultry house that has been appropriately conditioned to contain the gas while the process is taking place. The euthanasia team will determine the number of birds to be euthanized, the size of the enclosure and the amount of CO₂ to be used. In addition to receiving training regarding biosecurity issues the euthanasia team will be trained in security measures for handling CO₂.

Disposal: Burial is the primary method of disposal for birds, eggs, litter, refuse from cleaning and disinfection activities, and for other potentially contaminated material. Composting and rendering may also be utilized on a case by case basis. Deposition of materials in public landfills using commercial waste haulers will be utilized unless otherwise approved tract for hauling off all HPAI Task Force materials. Safety, biosecurity, and compliance with environmental regulations are the primary issues for disposal of large volumes of HPAI-affected material. Personnel will receive biosecurity training and will follow personal safety guidelines.

Cleaning and Disinfection: The objective of backyard cleaning and disinfection is to reduce the potential for HPAI virus spread from an infected or contact premises. Cleaning and disinfecting activities should be limited to areas inhabited by or exposed to poultry. Task Force onsite supervisors should evaluate each premises with this objective in mind and make a reasonable determination as to whether materials can be effectively cleaned and disinfected or should be discarded.

After depopulation of birds, careful and thorough cleaning and disinfection ensures that HPAI does not re-emerge on the premises. Thus, cleaning and disinfection is a vital component of the Task Force mission. Adequately cleaning and disinfecting larger commercial premises requires planning before the depopulation occurs as well as work after depopulation.

Epidemiology: . For each address with birds that is identified, epidemiologists will determine a premises identification number using the Emergency Management Response System (EMRS). CPs will be determined by epidemiologists (based on information from the surveillance or diagnostics groups or a field visit). Epidemiologists will write a justification for depopulating CPs based on actual epidemiological links. The disease reporting officer (DRO) will make the final decision on depopulation.

Diagnostics: Diagnosticians will follow the sampling guidelines on the “HPAI SOP” to estimate the number of birds that should be sampled when visiting a premises. The team member carrying the supplies onto the premises is designated the “swabber” (the swabber is usually the VMO); the other team member is designated as the “catcher.” A designated courier will transport samples to the designated animal health laboratory. Diagnosticians will follow biosecurity measures before arriving, while on, and exiting a premises to prevent contamination of samples, possible human exposure, and transmission to other premises.

Quarantine and Movement Controls

Quarantine

All premises identified by the epidemiology team as infected premises (IPs) and contact premises (CPs) will be quarantined. All premises adjacent to IPs or CPs will be quarantined. The quarantine should specify to “hold” and “segregate” all avian species.

Procedures for Releasing Quarantines

In order for an infected premises to be eligible for release, all IPs and CPs within the control zone must also be eligible for release. Cleaning and disinfection must have been effective and the premises must have been empty for 30 days following the completion of cleaning and disinfection. If cleaning and disinfection are considered inadequate, an epidemiologist will evaluate the premises to determine if further action. It is recommended that all quarantined premises within one kilometer of an IP be released from their individual premises quarantines at the same time.

- *Demonstrating Freedom from Disease:* Any defined portion (area) of the control area that has met the standards for surveillance on both non-commercial and commercial premises will be eligible for release from federal quarantine nine weeks after the last depopulation of an infected premises within a defined portion. Any portion of the control area intended for release from Federal quarantine must have an epidemiologically appropriate boundary to define the area.
- *Commercial Poultry Planning:* The Commercial Planning Liaison (CPL) will confirm that cleaning and disinfection of the premises was completed. Environmental sample collection will be performed to validate that cleaning and disinfection processes have been effective in removing the HPAI virus from a premises. The CPL will also estimate the appropriate time for repopulation. The mission of the Commercial Poultry Planning Unit is to respond to emerging issues and to develop working policies for interaction with the commercial poultry industry. The unit also addresses the needs of poultry producers that arise from task regulation. The Goals of Commercial Poultry Planning are to prevent the introduction of HPAI, early detection of HPAI virus, and timely, effective outbreak response.

Responsibilities of Quarantine and Movement Control Personnel

- Provide advice and recommendations to Incident Command and general staff in the planning of premises, area, State, and Federal quarantines.
- Notify owners or operators of Infected or Contact (potentially exposed) Premises of the placement of quarantines on their property.
- Coordinate closely with the Biosecurity Unit to ensure that biosecurity measures associated with area and premises quarantines are enforced strictly.
- Provide advice and recommendations to Incident Command and general staff on the formulation of rules for permits and allowable movements.

- Issue permits to provide movement control vis-à-vis allowable movements of animals, animal products, vehicles, equipment, and other materials.
- Provide personnel to supervise quarantine checkpoints.

Authorities and Legal Issues

State and Federal Quarantines: Generally, State quarantines are placed on individual herds, flocks, or premises when an FAD is suspected. In the event of an outbreak of a highly contagious FAD, Federal regulatory officials have the authority to place quarantines or “hold orders” under the Animal Health Protection Act.

Federal-State Cooperation: According to the Animal Health Protection Act, the Federal Government can cooperate with the States as appropriate to:

- Identify livestock (which, as defined by the Act, includes poultry) infected with or exposed to an emergency disease.
- Seize, quarantine, and depopulate such animals and dispose of contaminated items.
- Control intrastate (within-State) movement.
- Otherwise carry out provisions of the law.
- States and Tribal Nations use State or Tribal Nation authority to carry out operations or implement measures within their respective jurisdictions.

Legal Issues: A number of legal issues may arise as part of quarantine and movement control activities. Examples of such issues include:

- Identification of the circumstances under which it is appropriate for Government to use its police powers to protect the public.
- The relative emphasis to be placed on (a) the rights of individual property owners and (b) the public good.
- The types of actions that constitute a regulatory taking and the potential eligibility of property for appraisal and compensation by Federal or State Government.

Initial Movement Restrictions

Swift action in the 72 hours following announcement of a diagnosis of an FAD is critical to the effectiveness of disease eradication and control efforts. Typically, under State law, the State can place an immediate quarantine or hold order on a premises at the request of a foreign animal disease diagnostician (FADD) if the FADD has conducted an investigation and the presence of an FAD appears highly likely. Initially, the quarantine or hold order can take the form of a verbal quarantine if the FADD conducting the investigation does not have quarantine forms. As soon as a written quarantine order can be written and signed, it should be presented to the owner or manager of the premises by a regulatory officer or other official as required by the laws of the State involved.

- **Guidance for Defining Quarantine Areas**—If a highly contagious disease is found within a State’s borders, the State initially should be quarantined in its

entirety. If the disease site is near (i.e., within 50 miles of) a State border, the adjacent State(s) should be quarantined as well.

- ***Notifying State and Federal Officials***—The State Veterinarian and Federal Area Veterinarian in Charge should be notified immediately of either a verbal or written quarantine. They also should be made aware of any support that may be necessary from outside the premises to (a) enforce the quarantine and (b) begin disease control and eradication operations on the premises.
- ***Enlisting Local Law Enforcement***—Some States have the authority to enlist local law enforcement to help maintain and enforce a State-ordered quarantine.

Control Area and Zone Designations

The designation of one or more Control Areas and various Zones is essential to successful quarantine and movement control activities.

- ***Control Area***—The Control Area consists of the Infected Zone and a Buffer-Surveillance Zone.
- ***Infected Zone***—In an outbreak, the Infected Zone initially will encompass the perimeter of all presumptive positive and confirmed positive premises and will include as many of the Contact Premises as the situation requires logistically or scientifically. The boundary of the Infected Zone initially should be established at least 10 kilometers (6.2 miles).
- ***Buffer-Surveillance Zone***—The zone immediately surrounding the Infected Zone is the Buffer-Surveillance Zone, which with the Infected Zone comprises the Control Area.
- ***Adjustment of Buffer-Surveillance Zone Boundaries***—The perimeter of the Buffer-Surveillance Zone will be adjusted appropriately as epidemiological information becomes available and the extent of the outbreak becomes better known.
- ***Buffer-Vaccination Zone***—If emergency vaccination is used to slow the spread of highly contagious disease pathogens, it will be implemented strategically so as to create a “firebreak” ahead of the spread of the disease agent. The area where vaccination is being—or has been—practiced will be known as a Buffer-Vaccination Zone. The Buffer-Vaccination Zone will border the Infected Zone and will be surrounded by a Buffer-Surveillance Zone.
- ***Free Zone***—A Free Zone is a zone in which the absence of the disease under consideration has been demonstrated by the meeting of requirements for disease-free (or “free”) status as specified in the OIE *International Animal Health Code*.

- **Surveillance Zone**—A Surveillance Zone should be established within and along the border of a Free Zone, separating the Free Zone from the Buffer-Surveillance Zone within a Control Area. Surveillance in the Surveillance Zone will focus on premises determined to be at the highest risk of infection.

Premises Designations

To assist in making premises designations, the Incident Commander may wish to appoint and convene an internal staff advisory group. This group, typically drawn from the membership of the Planning and Operations Sections, makes recommendations as to these designations based on epidemiological and other information.

The group typically will review aspects of the situation such as:

- The recent history of a premises related to pathogen transmission.
- Information from movement control records and other records may be helpful. Observations and notes from the FADD concerning diagnostic visits. In some cases, it may be helpful to ask the FADD to consult with the group in person or by conference call.
- The results of laboratory analysis of all samples taken on a premises.

Final decisions on premises designations will be made by the Incident Commander(s).

Premises may be designated as an Infected, Contact, or Suspect Premises or may remain in a nonregulated status:

- **Infected Premises**—The declaration of a premises as an Infected Premises requires careful consideration in that the designation has legal as well as operational implications.
- **Contact Premises**—A Contact Premises is a premises that is related to known Infected Premises by sound epidemiological evidence but on which the disease of concern has not been diagnosed.
- **Suspect Premises**—A Suspect Premises is a premises on which it is reasonable to believe that some exposure to a FAD may have occurred.
- **At-Risk Premises**—Premises within the Buffer-Surveillance Zone that have clinically normal susceptible animals are known as At-Risk Premises. Surveillance on an At-Risk Premises will consist of a minimum of two inspections of animals per incubation period of the disease under investigation.

Movement Control: General Considerations

The concept of “movement control” allows for the movement of animals, animal products, vehicles, equipment and (occasionally) people, subject to certain conditions.

Securing a Quarantined Premises

A quarantined premises must be secured adequately to ensure that no movement of animals, animal products, or fomites can occur either onto or from the premises. All access points not directly supervised by a regulatory official or other trustworthy individual should be gated or blocked so that no vehicular traffic or animals on foot can move through them. Considerations include:

- *Controlling Movement of People*—Human movement is an issue during a quarantine because people can convey a pathogen onto or from a premises. Although State agricultural officials are authorized to control animal and animal conveyance movement, most States may not have the authority to control human movement.
- *Preventing Unauthorized Visits*—It is especially important to prevent people from outside the premises—who may be unaware of the premises’ quarantine status—from accidentally gaining access to the premises and thus becoming “part of the problem” in the effort to prevent pathogen transmission.
- *Planning for Medical Emergencies*—To ensure adequate contingency planning prior to any medical need, the AERO team member should determine whether people on the premises have any serious medical conditions that might necessitate their immediate departure from the quarantined premises.
- *Planning for Animal Care*—Although the movement of personnel within a quarantined premises should be limited in order to prevent the spread of disease organisms, allowance must be made for the humane care of animals and for other necessary activities.
- *Stopping All Movement Until Biosecurity Measures Are in Place*—The stopping of *all* movement (except, of course, for medical emergencies) when a highly contagious disease is suspected is difficult, but necessary, while adequate biosecurity measures and other controls are being put in place. However, not all of the premises that may be placed under quarantine will necessarily have animals present.
- *Related Facilities*—If a animal-related facility (e.g., a processing plant, artificial insemination center, or auction market) is located within an Infected Zone and thus is closed down or inactive, consideration can be given to asking facility officials for the temporary use of the facility in ways that would benefit disease control efforts.

Movement Guidelines after Controls are in Place

Once adequate movement controls are in place, vehicles, and equipment can be allowed to leave a Quarantined Premises provided that the items meet acceptable biosecurity standards. In addition, it is important to keep records of animal movements (e.g., by means of individual animal or animal lot identification not only during an animal health emergency but also on a routine daily basis.

Waiting Period for Contact With Susceptible Animals—Even after thorough personal cleaning and disinfection have been completed, people who leave the premises should not come into contact with susceptible animals for at least one incubation period.

Animal Products—In general, no products (e.g., milk, hay, or crops) from quarantined livestock premises or quarantined product-processing premises should be permitted to leave the premises.

Quarantine Checkpoints

The purpose of area quarantine security checkpoints is to control the movement of vehicles containing farm-related products, materials, or animals that may spread disease pathogens.

Operating a Quarantine Checkpoint

Being stopped at a quarantine checkpoint—regardless of the important community goals being served by quarantine or movement control enforcement—raises a certain level of concern in any driver. Thus, Quarantine Checkpoint Teams and other Quarantine and Movement Control personnel should use their best interpersonal skills as they provide this needed public service.

- *Communicating With Drivers*—Personnel at quarantine checkpoints should make a special effort to be helpful and informative in their interactions with drivers.
- *Information Sheets*—Quarantine and Movement Control personnel may find it helpful to hand each driver an information sheet to read while waiting.
- *Dealing With Contaminated Items*—The information sheet provided each driver should include information on cleaning and disinfection and on the safe use and disposal of disinfectants that are readily available and approved for use by the public.
- *Animals Designated for Movement Control*—Quarantine checkpoint personnel must be given specific information—with illustrative photographs, if possible—on susceptible animals that should not be allowed movement.

Quarantine checkpoint staff should implement necessary movement restrictions as follows:

- ***Nonsusceptible Animals***—During an outbreak of highly contagious disease, movement of nonsusceptible animals requires a permit and is contingent upon specific, rigorous cleaning and disinfection requirements. The animals must be assumed potentially to have been in close contact with infected or contact animals or premises.

- ***Pets***—During an outbreak of highly contagious disease, checkpoint personnel should be given a list of pet animals that may be allowed movement in the company of their owners.

Movement Categories

Movement From an Uninfected State: An initial 72-hour movement ban often is necessitated by a case of a presumptive positive FAD.

Movement From a Presumptive Positive State: An initial 72-hour movement ban may be necessitated by a case of a presumptive positive FAD. Regardless of whether a 72-hour movement ban is imposed, the movement restrictions described below will apply to the movement of animals and animal products from a presumptive positive State to an uninfected State:

Movement to Slaughter: If susceptible animals and animal products originate *fewer than* 12.4 miles (20 kilometers) from a presumptive positive or Infected Premises, they may be moved directly to slaughter after a time equaling two incubation periods (provided that no clinical signs of disease have been observed) following the depopulation and decontamination of the presumptive positive or Infected Premises.

Movement to Other Premises: If susceptible animals and animal products originate *fewer than* 12.4 miles (20 kilometers) from presumptive positive or Infected premises, they may be moved directly to any other premises after a time equaling three incubation periods (provided that no clinical signs of disease have been observed) following depopulation and decontamination of the presumptive positive or Infected Premises.

Movement from a Traced Premises: If susceptible animals and products originate *fewer than* 12.4 miles (20 kilometers) from a “traced premises” (premises on which animals originating on an Infected Premises are or have been present), they may be moved in a sealed vehicle accompanied by a completed, signed VS Form 1-27 after the traced premises have been monitored for a time equaling one incubation period provided that no clinical signs of disease have been observed.

Movement of Nonsusceptible Animals: Nonsusceptible animals and/or products derived from nonsusceptible animals originating *less than* 12.4 miles (20 kilometers) from a presumptive positive premises may be moved in a sealed, disinfected vehicle accompanied by a completed, signed VS Form 1-27.

Movement from Shows and Exhibition: An initial 72-hour movement ban may be necessitated by a confirmed positive case of an FAD, especially a highly contagious FAD.

Establishing a Permit System

In the face of a disease outbreak, establishing a permit system for animal movement will allow regulatory personnel to manage all movements to and from Infected Premises, Contact Premises, and Suspect Premises. A Permit Team, led by a Quarantine and Movement Control Team Manager, should be in place and ready to function should a FAD outbreak occur.

Permits for Movement of Animals and/or Animal Products

An official permit for movement of animals and/or animal products can be issued at the discretion of AERO/Incident Command to allow the movement of animals and/or animal products from a premises or a geographic area described in a quarantine order. A movement permit can consist of a VS Form 1-27, a State-issued permit document, or a letter—customized to the applicant’s situation—generated by the Permit Team.

The conditions for issuance of a permit should include the following:

- No animal in the herd of origin has shown clinical signs of the disease of concern for a period of time equaling two incubation periods or longer.
- No susceptible animals have been moved to the premises of origin for a period of time equaling two incubation periods.
- The origin and destination premises are not under quarantine.
- The premises of origin is not an Infected Premises, Contact Premises, or Suspect Premises, and no epidemiological evidence of disease is detectable.
- Transport conveyances for the animals or animal products meet acceptable biosecurity standards.
- Susceptible species to be moved have been examined by a veterinarian within 24 hours prior to movement and have been found to be free of clinical evidence of disease.

Permits for Movement within a Control Area—Permits to move animals and materials from premises to premises within a Control Area can be issued if:

- No animal on the premises of origin has shown clinical signs of the disease of concern for two incubation periods or longer.
- No susceptible animals have been added to the premises of origin for a period of time equaling two incubation periods.
- The premises of origin is not an Infected Premises, Contact Premises, or Suspect Premises, and no epidemiological evidence of disease is detectable.
- Transport conveyances meet acceptable biosecurity standards established for the Control Area.

- Susceptible species to be moved have been examined by a veterinarian within 24 hours prior to movement and have been found to be free of clinical evidence of the disease of concern.

Permits for Movement to Slaughter within a Control Area—Permits to move to slaughter (for human food use) can be issued if (a) the animals meet the requirements of USDA’s Food Safety and Inspection Service for food use and (b) the animals are eligible for a permit for movement from premises to premises or for movement directly to slaughter.

Movement: The Infected Zone

In an outbreak, the Infected Zone initially will encompass the perimeter of all presumptive or confirmed positive premises and will include as many of the Contact Premises as is required logistically or scientifically.

Movement Into an Infected Zone—Susceptible animal species can be moved into an Infected Zone with a permit and with implementation of appropriate biosecurity measures.

Movement Out of an Infected Zone—No susceptible animal species may leave the Infected Zone unless they are (a) going directly to slaughter at an approved slaughter facility established in the Buffer-Surveillance Zone and/or (b) meet criteria described on a permit. Similarly, no products posing a risk of pathogen transmission may leave the Infected Zone unless they are (a) going directly to a processing facility in the Buffer-Surveillance Zone and/or (b) meet criteria described on a permit. No materials posing risk of pathogen transmission may leave the Infected Zone except by permit.

Movement Within an Infected Zone—During the initial phase of an incident, no shipments of species, products, or materials posing risk of pathogen transmission should be allowed to move within an Infected Zone except at the discretion of AERO/Incident Command.

Movement: The Buffer-Surveillance Zone

The Buffer-Surveillance Zone, which is the zone (within the Control Area) established in the area immediately surrounding the Infected Zone—initially may include the entire State or States that have Infected Premises or known contacts.

Movement: The Surveillance Zone

The Surveillance Zone is the section of the Free Zone that is adjacent to the Buffer-Surveillance Zone (i.e., separating the Free Zone from the Buffer-Surveillance Zone).

Movement of Nonsusceptible Animals

During an outbreak of a highly contagious disease, Quarantine and Movement Control personnel may need to deal with requests by owners in an Infected Zone to move nonsusceptible animal species.

Suggesting Policies for Human Movement Control

Permits are used to control the movements of animals and animal products rather than those of humans. However, officials may be able to encourage movement controls for the general human population in a Control Area by suggesting general policies for certain specific movements such as those of schoolchildren.

Human Movement From Infected Premises—Control of the movement of people as well as that of animals, animal products, vehicles, equipment, and other materials is critical to the maintenance of biosecurity during a disease outbreak or other animal emergency.

Controlling Visitor Movement

Visitors may wish to enter a premises for a wide variety of reasons—from social calls to reading the electricity meter, delivering fuel or feed, or vaccinating an animal.

Minimizing Visits Within the Infected Zone—An Infected Zone will be established when a positive or presumptive positive case of an FAD is detected on a premises.

Making Alternative Arrangements—Community institutions and businesses can be encouraged to work with the public to devise alternative arrangements to substitute for in-person premises visits.

Premises Vulnerability—As a general rule, the closer a premises is to an Infected Premises, the greater is the premises' vulnerability to pathogen transmission and thus the greater is the need for implementation of rigorous controls, including adequate cleaning and disinfection procedures and other biosecurity measures.

Use of Disposable Outerwear—Within a Control Area, it is highly recommended that all visitors—regardless of how low the risk level is perceived to be—wear disposable coveralls, boots, hats, and gloves during their visits to premises with susceptible species.

Importance of Biosecurity—The Quarantine and Movement Control Unit must provide the same degree of intensive pathogen transmission control for areas surrounding the Infected Premises that the Biosecurity Unit provides on the Infected Premises.

Planning for Quarantine Release

Officials should never place a quarantine without a plan for its release. If a State is quarantined, this plan should specify:

- The length of time that a complete ban on animal and animal product movement will be in effect.
- The procedures by which the entire State will be evaluated for the presence of further disease sites.
- Whether the State quarantine will be released (a) by sections, according to evaluations of perceived risk, or (b) entirely, except for the Control Area(s).

Lifting a Quarantine on an Infected Premises

Before a quarantine on an Infected Premises can be removed, all areas of the premises must be evaluated and certified as clean. Prior to quarantine release, the AERO team will need to complete a number of premises activities such as:

- Dealing with susceptible animals and nonsusceptible animals on the premises.
- Disposing of animal products and other contaminated or potentially contaminated materials.
- Dealing with wildlife.
- Cleaning and disinfecting the premises, with an adequate subsequent period of “downtime” allowed.
- Placement of sentinel animals

Removal of Quarantine—All areas of an Infected Premises must be evaluated and certified as clean before a premises quarantine can be removed. If Federal or State quarantines are in effect, various administrative processes for removing quarantines on premises will need to be completed.

Lifting a Quarantine on a Contact or Suspect Premises

Before a quarantine on a Contact or Suspect Premises can be lifted, animals and animal products that have left the premises must be traced and destroyed.

Coordination With Other Areas or States

Depending on the size of the outbreak, coordination of quarantine placement and release between areas, States, or regions may be necessary for effective disease control and eradication.

Epidemiological Tracing and Recalls

The key to “getting ahead” of a highly contagious FAD and to determining its source is the ability to trace the movements of animals, animal products, and related materials at the beginning of an outbreak. These activities include the following:

Tracing Movements to and From an Affected Farm or Ranch—Immediately upon confirmation of a diagnosis of highly contagious disease on a farm or ranch, and in conjunction with the initiation of eradication procedures, information must be obtained from the owner and employees about movements onto and from the premises.

Tracing Movements From Affected or Exposed Slaughter Facilities—Tracing fresh, frozen, or chilled animal products from a slaughter facility can be difficult. The veterinary inspector and the plant manager should be contacted initially to determine the inclusive dates of the movements to be traced.

Tracing Movements of Veterinary Practitioners—Once a highly contagious foreign animal disease is known to exist in an area, veterinary practitioners in the area should be notified immediately and the dangers of pathogen spread emphasized in order to minimize veterinarians’ involvement with Infected, Contact, or Suspect Premises.

Tracing Movements From Stockyards or Auction Markets—The procedures for tracing animals, vehicles, and personnel from an Infected, Contact, or Suspect stockyard or auction market essentially are the same as those for an individual premises.

Recalling Animals and Animal Products From Trade Destinations—In situations in which infected, contact, or suspect animals or contaminated items already have left U.S. ports for a trade destination, the veterinary officials of the destination country should be informed immediately of the situation and offered the option of discontinuing the transaction.

Appraisal and Compensation

This guideline focuses on essential appraisal functions such as the responsibilities of appraisal personnel, appraisal procedures, assessment of compensation eligibility and fair market value, and payment of indemnity.

Compensation Overview

As stated in the U.S. Constitution, the government shall compensate an owner for any asset it takes or destroys. The USDA pays compensation because it is required by law and because compensation encourages owners to participate in disease control programs. However, compensation is not designed to make the owner whole, i.e. suffer no financial consequence because of the disease affecting his animals. The USDA is not authorized to compensate for the entire loss by an animal owner.

Responsibilities of Appraisal Personnel

Appraisal personnel provide services that are essential to the control and eradication of a foreign animal disease. Key appraisal personnel include:

- An Emergency Management Compensation Specialist,
- An Appraisal Unit Leader, who is based at the Field Operations Center, and
- Multiple Appraisal Teams, each headed by an Appraisal Team Leader and working at multiple premises.

The services of a special expert appraiser also may be needed.

- **Emergency Management Compensation Specialist** The Emergency Management Compensation Specialist is the agency's resource person in determining value of animals. The Emergency Management Compensation Specialist maintains appraisal calculators that may be used to determine fair market value of animals to be depopulated. If an appraisal calculator hasn't been developed for the type of animal being depopulated, the Emergency Management Compensation Specialist may either develop one or offer ranges of prices or guidelines of what should be offered.

The Appraisal Unit Leader

During a disease outbreak this individual has appraisal (or valuation) AND operational duties.

Appraisal or valuation duties include:

- Coordinates the appraisals of animals with the Emergency Management Compensation Specialist. Obtains appraisal calculators from the Emergency Management Compensation Specialist and requests assistance from the Emergency Management Compensation Specialist for the appraisal of specialized, high-value animals. Regularly keeps the Emergency Management Compensation Specialist updated on appraisals made and changes in local market conditions.
- Gives guidance to the Appraisal Teams in how they should go about determining fair market value of animals and materials that are to be destroyed and their collection of appropriate documentation that supports the value determined. Provides training to Appraisal Teams in the use of appraisal calculators.

Operational duties include:

- Ensures that up-to-date contact information is maintained on people who are willing and qualified to serve as Appraisal Team Leaders and team members.
- Assigns personnel to Appraisal Teams and appoints an Appraisal Team Leader to supervise each team. Assigns Appraisal Teams to various premises.

The Appraisal Team

The Appraisal Team does the actual valuation based on price sheets, appraisal calculators or general guidelines received from the Appraisal Unit Leader. An important part the appraisal process is obtaining an accurate inventory of animals to be depopulated. The Appraisal Team must have at least one Federal representative, and may have a State representative, as well as a special expert appraiser. The owner or owner's representative should be present during appraisal.

Appraisal Team Leader—The Appraisal Team Leader provides general leadership on the Appraisal Team and is responsible for specific tasks such as:

- Assemble and bring appraisal packets to a premise.
- Follow appropriate biosecurity procedures.
- Explain the appraisal process and the purpose of compensation to the owner.
- Determine inventory of animals and materials to be destroyed. Indemnity is based upon inventory as determined by the Appraisal Team.
- Obtain from owner any information that may support a desired valuation.
- Cross-checking the figures on appraisal forms to verify accuracy and completeness.
- Notifying the Appraisal Unit Leader that an appraisal has been completed so that subsequent activities can proceed.

The Special Expert Appraiser

A special expert appraiser is an individual with special knowledge of unique, special, or exotic or purebred animals and materials. The services of such an appraiser typically are used in situations calling for the appraisal of an unusual animal type or breed. The appraisal performed by the special expert appraiser belongs to USDA and the expert appraiser should not share his report with the animal owner. USDA has no obligation to accept the values of any outside appraisal.

Appraisal Methodology

Fair market value can only be known when a sale occurs between a knowledgeable and willing buyer and seller. Obviously, USDA ordering the destruction of an owner's animals does not represent a sale between willing buyer and seller. Consequently, fair market value must be estimated. An appraisal is an estimate of what an animal is worth or the price it would have received if it had been sold.

The sales comparison approach is the preferred method for determining value. In this method, the appraiser uses information from recent sales of comparable properties to form an opinion of the value of the subject property (the animal being appraised). Ideally, comparable properties match exactly with the subject property in major characteristics; unfortunately, this is usually not the case. When there are some differences in one or more major characteristics the appraiser must make adjustments to the comparable properties to arrive at the value of the subject property. When using the sales comparison approach, it is important to base the estimated sale price on what the owner would receive for his animals at the farm.

Sometimes, only retail prices are observed (as is the usual case with pet birds or pet fish). However, the sales comparison approach method is not an effective method for estimating fair market value when market prices are not observable or reflective of true value due to the low number of animals traded. When the sales comparison approach method cannot be used two other appraisal methods are available, the cost-of-production approach and the income approach. Both approaches require detail knowledge of production costs.

The cost-of-production approach assumes that an asset should have worth at least equal to the cost to produce it. The cost-of-production approach can also be used to estimate value of breeding stock to the point of sexual reproduction, e.g. egg laying in poultry, calves/milk in cattle, and piglets in swine. A limitation of the cost-of-production approach is that it undervalues animals that are being raised for a profit.

The income approach is an alternative approach used to estimate the value of a breeding animal. The income approach can also be used to value meat animals. With meat animals, the income approach starts with a known price and costs are subtracted from this price until the desired age or weight is reached.

Since both the cost-of-production approach and income approach require detailed knowledge of costs, the income approach is the preferred method to generate values closer to true worth. The exception to this is during periods of low prices and/or high costs. In such situations it is possible for the income approach to return a value less than the cost-of-production approach. And if costs become greater than revenue, then the income approach would generate a negative asset value. Consequently, select the method which generates the greatest value. This puts a floor on asset value equal to its cost-of-production.

The cost-of-production approach and the income approach will generate the same appraisal value when net revenue or profit margins (gross revenue minus costs) are allocated across the various production phases.

Appraisal Procedures

The immediate purpose of the appraisal process is to determine the fair market value of animals and materials infected with or exposed to a pathogen. In the larger context of fighting pathogen spread, the completion of appraisals enables the prompt initiation of depopulation procedures.

Preliminary Census

Once a FADD or other designated official has determined that animals and materials on a premises have been infected or contaminated by (or exposed to) a pathogen, he performs a preliminary census (count) of the animals and materials in need of appraisal and enters this information into the EMRS or other acceptable database. In this sense, the FADD serves as a liaison with the Appraisal Team in helping the team identify the animals and materials in need of appraisal.

The Appraisal Unit Leader should check with the animal owner to determine whether any high-value (i.e., unique, special, or exotic or purebred) animals are present before sending an Appraisal Team to the premises. If such animals are present, the Appraisal Unit Leader should contact the Emergency Management Compensation Specialist to discuss the situation, including any special documentation required from the owner. The Appraisal Unit Leader should then inform the Appraisal Team how to handle the situation and if a special expert appraiser will be part of the Appraisal Team.

Appraisal Packet

The Appraisal Team Leader assembles and brings an appraisal packet to the premises. The packet should include the following equipment and supplies:

- At least two sets of “Appraisal and Indemnity Claim,” (i.e., VS Form 1-23) with an adequate number of continuation sheets (VS Form 1-23a) to allow for the listing of all animals and materials to be destroyed. The VS Form 1-23 is used as the basis for recording appraisals and compensating owners.
- Copies of required State forms.
- Premises census forms (to be made up at the time the emergency occurs so as to include disease-specific information).

- Miscellaneous equipment, e.g., a metal clipboard, pens, pencils, blank paper, and flashlight.
- Computer, if required for an appraisal calculator.
- Protective clothing (e.g., disposable coveralls and hat and disposable or rubber boots) for each member of the Appraisal Team.
- An adequate supply of appropriate disinfectant and the equipment necessary to apply it (e.g., boot pan, boot brush, and garden sprayer).
- Plastic garbage bags to store appraisal packets and protective clothing.

Coordinating Appraisal Activities

The Appraisal Team Leader should determine the order in which animals and materials will be appraised. In general, animals should be appraised first, and materials—including animal products and feed—should be appraised last. Appraisal should be performed before depopulation, and thus the Appraisal Team should plan to stay ahead of the euthanasia and disposal teams.

Conducting an Appraisal

The appraisal process consists of a number of steps or tasks, each of which is essential to a successful appraisal and prompt owner compensation. Some key tasks are outlined below.

Name and Address— One of the Appraisal Team’s first tasks is to determine the correct name and address of the owner(s) of the animals on the premises and to record this information on VS Form 1-23.

Purpose of Compensation— The USDA pays compensation because it is required by law and because compensation encourages owners to participate in disease control programs. However, compensation is not designed to make the owner whole, i.e. suffer no financial consequence because of the disease affecting his animals. The USDA is not authorized to compensate for the entire loss by an animal owner.

Compensation Eligibility—Before proceeding with the appraisal make sure of what is eligible for compensation. In general, appraisals should be made and compensation awarded in the following situations:

- Animals/materials are required to be destroyed because these are affected/contaminated by or have been exposed to diseased animals.

As stated in 9 CFR 53, USDA will not allow claims involving:

- A payee who has not complied with all quarantine requirements.
- Expenses for the care and feeding of animals held for destruction.
- The destruction of animals or materials unless these have been appraised as described and the owner has signed the VS Form 1-23.
- The destruction of animals or materials that have been moved or handled in violation of a law or regulation.

Appraisal of Animals— An animal’s fair market value is estimated using either sales comparison approach, cost-of-production approach, or income approach. In assessing the market value of an animal, the Appraisal Team should consider the purpose for which the animal is being reared as well as its age, conformation, physical condition, pregnancy status, and—for dairy cows, sheep, and goats—lactation stage and milk production records.

Special consideration may be needed to establish the fair market value of exotic species of animals, e.g., llamas or koi carp.

Appraisal of Materials—Materials are defined as being “parts of barns or other structures, straw, hay, and other feed for animals, farm products or equipment, clothing, and articles stored in or adjacent to barns or other structures” (9 CFR 53). Additional examples include products (e.g., milk, cheese, and butter) and items (e.g., board fences and wooden feed racks).

Materials to be appraised and destroyed will have been contaminated by or exposed to diseased animals and will be incapable of being cleaned and disinfected adequately. Inputs, such as feed, and outputs, such as eggs, should be appraised using the sale comparison approach. Permanent assets such as fences and barns can be appraised using the cost-of-production approach with depreciation.

Owner-Claimant Mortgage Certification—The Appraisal Team must ensure that the owner or owner’s representative(s) is aware of the Owner-Claimant Mortgage Certification on VS Form 1-23 concerning liens and mortgages. The Owner-Claimant Mortgage Certification is to be signed by the owner and by each person holding a mortgage on the animals or materials.

Inventory of Animals and Materials to be Destroyed— Obtain an accurate inventory of animals and materials to be destroyed for which indemnity will be paid.

Reporting and Notification

After completing the appraisal forms, the Appraisal Team Leader should cross-check all figures, as errors are difficult to correct after the appraisal has been submitted for processing. Once cross-checking is complete, the Team Leader should obtain the signature of the owner or the owner’s representative on the forms, forward the forms to the Appraisal Officer, and notify the Appraisal Unit Leader that the appraisals for both the animals and the materials have been completed.

Visual Records

Comprehensive visual records of animals and property made with a film, digital, or video camera may be helpful. The Appraisal Team Leader should keep necessary video and photographic equipment available for the Appraisal Team’s use in making its own photographic records as appropriate.

Handling Disputes

In the event that an extraordinary emergency is declared, disputes over appraisal and compensation should not be allowed to stand in the way of the destruction of animals and materials. In such cases, the Department is authorized by the Animal Health Protection Act to seize the animals to prevent the dissemination of the pest or disease, and the owner is required to follow the order of the Secretary.

Processing

Finance/Administration Section personnel will check the VS Form 1-23 and will then complete the "Indemnity Claim Transmittal" (i.e., VS Form 1-31). Under normal circumstances, the package then will be forwarded, after final approval and securing required signatures, to APHIS' Marketing and Regulatory Programs Business Services for final processing. This process should take 3 to 4 weeks. However, during a major disease outbreak, alternative procedures may be used.

Alternative Procedures— During a major disease outbreak, alternative indemnity payment processes may be implemented to expedite owner compensation.

During an outbreak, USDA's Farm Services Agency (FSA) may provide check issuance services, based on a Memorandum of Understanding currently pending between APHIS and FSA. Upon reporting to the Field Operations Center, the Appraisal Officer should contact the Finance/Administration Section Chief to determine locally arranged procedures for processing the VS Form 1-23's.

Euthanasia

Euthanasia is practiced during a major disease outbreak to help prevent or mitigate the spread of the disease through the elimination of infected or contact animals. Qualified personnel must be used to perform euthanasia procedures in the quickest, safest, and most humane way possible.

Responsibilities of Euthanasia Personnel

Euthanasia personnel provide services that are essential to an effective animal health emergency response, including the need to control and eradicate a FAD.

The Euthanasia Unit, which is located within the AERO Operations Section, works closely with other units to ensure a smoothly functioning operation. The Euthanasia Unit:

- Provides advice and recommendations to Incident Command and the general staff in the planning of euthanasia activities;
- Notifies owners or operators of Infected or Contact Premises (potentially exposed) of euthanasia procedures that will be used and secures acceptance for these procedures;
- Coordinates euthanasia activities with the Appraisal and Compensation Unit and the Disposal Unit; and
- Performs other services as appropriate.

Key Personnel

Key Euthanasia Unit personnel include:

- The Euthanasia Unit Leader, who is based at the Incident Command Center and who plans and conducts euthanasia activities in consultation with the Operation Section Chief (to whom he or she reports) and the Incident Command; and
- Multiple Euthanasia Team Members, working in teams. Each Euthanasia Team is led by a Euthanasia Team Manager and works at multiple premises. Ideally, each Euthanasia Team Manager is a veterinarian, and the Euthanasia Team Members composing the teams are individuals who have training and/or experience with the species to be euthanized.

Euthanasia must be performed by competent personnel trained and experienced in species-specific euthanasia methods. The animals must be restrained in a manner that does not elicit injury or undue pain. If the method used is dangerous to the operator then the operation must be carried out according to guidelines established by the Safety Officer.

Euthanasia of Poultry and Birds

Humane standards will be utilized to depopulate flocks. These humane standards are defined in the documents of the American Veterinary Medical Association and include inhalant agents, inhalant anesthetics, and physical methods. APHIS would also consider new humane depopulation methods as described in the World Organization for Animal Health manual.

Disposal

Effective disposal of animal carcasses and materials is a key component of a successful response to an animal health incident. The overall goal of disposal operations is to eliminate in a timely, safe, biosecure, aesthetically acceptable, and environmentally responsible manner, all animal carcasses that result from an animal health incident. If a disease agent is involved, disposal of materials potentially contaminated with that agent must be accomplished as well, if those materials cannot be cleaned and disinfected.

In discussing disposal activities during animal health emergencies, “Disposal” focuses on evaluation of disposal sites, selection of optimal disposal procedures, and disposal of miscellaneous materials. Common methods used to dispose of carcasses and materials include burial, incineration, (including pathology incineration), air-curtain incineration, land filling, rendering, composting, and alkaline hydrolysis.

On-Site Disposal

In most situations, the most expeditious method of disposal on a premises where animals are dying or being depopulated is that of burial at a single on-premises site. Compared to other disposal methods, burial is simpler, more expeditious and economical, and, depending on the seasonal high water table level and soil conditions, less likely to cause

adverse environmental effects. On-site burial also minimizes biosecurity concerns involved in moving contaminated carcasses, animal products, and other materials off an affected premises.

In general, a single centrally located disposal site on a premises is preferable to multiple sites for reasons of disease containment (e.g., to minimize the chances of multiple-site and/or groundwater contamination and potential disease spread by feral animals). An additional consideration is the time and effort required to secure required permissions and approvals for multiple sites.

Safety Concerns - Consultation with local, county, State, and Federal environmental officials will be necessary to obtain specific information on a number of the above factors. It also is important to consult with environmental authorities to minimize any negative environmental effects associated with the disposal of contaminated material.

Use of a Common Disposal Site - A single on- or off-site disposal location generally is preferable to multiple on- or off-site disposal locations. Material from more than one affected premises may be disposed of at a common site if necessary or convenient.

Off-Site Disposal

In cases where conventional on-site disposal methods (e.g., burial or incineration) are deemed infeasible, plans should be made for the safe, efficient transfer of carcasses and material to another site for disposal. Examples of situations in which off-site disposal may be considered include the following:

- Infectious material from laboratories in need of disposal and on-site disposal facilities are limited or unavailable;
- On-site constraints such as insufficient space, unsuitable soil, a high water table, or seasonal conditions make on-site disposal infeasible;
- All on-site locations are too close to areas of human habitation;
- Carcasses can be land filled or rendered off-site more efficiently than they can be disposed of on the premises.

Additional Disposal Strategies

Additional disposal strategies, including off-site disposal and temporary storage, may be necessary under certain circumstances. In some cases, for example, a strategy of off-site disposal may be necessitated by climate.

In other cases, carcasses or materials may need to be stored temporarily until conditions are more amenable to disposal activities (e.g., until the threat of a disease agent is reduced or until premises are more accessible).

Transporting Infected Material

When transporting contaminated material from affected premises to off-site locations, special procedures must be followed to prevent the spread of disease agents. Such

procedures include disinfectant appropriate for the pathogen, leak-proof transportation, and polyethylene plastic sheets.

The transport vehicle(s) must be accompanied by one or more designated Government representatives for biosecurity reasons. Depending on State law, special escort vehicles also may be required. The designated Government representative(s) should bring an appropriate disinfectant and liquid-absorbing material in addition to other tools or equipment needed to clean up any spills occurring on the way to the destination.

Temporary Storage

Prompt carcass disposal after euthanasia may be impossible for a variety of reasons, especially in a major outbreak involving a large number of animals. In such situations, carcasses and other items awaiting disposal should be secured to prevent unauthorized access and potential disease spread to susceptible species.

Burial

The digging of the burial pit should begin as soon as possible after confirmation of a disease diagnosis. The advice of a soil scientist as to site feasibility should be sought early in the planning stage. Contaminated hatching eggs and hatchery waste should be buried after verifying that the eggs are no longer viable. Landfilling may also be an acceptable option for disposal if transporting the material leads to an unacceptable biosecurity risk.

Incineration

Incineration should be used only when burial is infeasible because burning tends to be difficult and expensive in terms of labor and materials. However, the choice of disposal method may depend on local and/or State regulations. Environmental protection considerations, or conditions such as a high water table or rocky soil, may favor use of incineration over burial.

Composting

The composting of diseased animal carcasses on an affected premises is a suitable alternative method of disposal if an appropriate site and the proper supplies (e.g., wood chips, sawdust and biosolids) are available. Although the composting process appears to be simple, it is an exceedingly complex process that requires good management to be successful. Most pathogens are rapidly deactivated by temperatures reached early in the composting process. While the primary objective of composting diseased animal carcasses is deactivation of disease organisms, another advantage of composting is the minimal effect on the environment and produces a useful end product.

Commercial Landfills

Perhaps the most significant advantage to landfills for carcass and material disposal is the fact that the infrastructure already exists and the capacity (depending on the landfill) can be relatively large. Landfill sites, particularly Subtitle D landfills, will have been evaluated for suitability and the necessary environmental precautions designed and implemented. Landfills therefore pose little risk to the environment. In the event of an

emergency or catastrophic event, time is a very important factor and landfills offer preexisting sites for disposal of carcasses/materials with the necessary equipment, personnel, procedures, and containment systems. It is important to note that some landfills might have a limited capacity because of the particular containment system used, especially small arid landfills that rely on natural processes to manage waste byproducts.

Rendering

Rendering is the most economical method of disposing of carcasses, though satisfactory rendering plants are not always available. The movement of carcasses to the rendering plant poses some additional risk of spreading a disease agent.

Cleaning and Disinfection (C&D)

The correct implementation of C&D is a cost-effective means to lessen the threat of animal diseases by reducing the presence of pathogenic microorganisms. Cleaning and disinfecting is critical in the prevention of the spread of disease through movement of fomites which have been in contact with live animals, animal products, or areas where they have lived or been stored.

Correctly applied, C&D will prevent the movement of microorganisms on fomites and prevent the contamination of fomites or infection of animals that come in contact with areas where infected animals were housed. Cleaning is a major part of sanitation procedures in veterinary preventive medicine. Disinfection is the procedure in which a physical agent or chemical agent is used to destroy vegetative forms of harmful microorganisms.

Over time, multiple repetitions of C&D might reach the point of sterility but from a practical point of view the aim when disinfecting is to diminish the population of microorganisms to a level where these are not harmful (and not to eliminate these entirely).

Poultry Premises Cleaning and Disinfection

Breeder and Broiler Houses

- **Residual Birds** - Any live birds loose or remaining from the previous flock should be destroyed and placed in the dead bird disposal area. Dead birds or carcasses remaining from depopulation on the floor or in the litter should be removed and placed in the dead bird disposal area. Free flying wild birds in the house should be removed and entrance areas of these closed.
- **Vector Control** - An insect control plan should be in place and effective to reduce fly and beetle movement to adjacent premises while the house is being cleaned. This may be a combination of insecticides and methods such as sprays, foggers and baits. Rodent control efforts need to be increased and effective as the organic material is removed from the house to prevent rodent migration to adjacent farms and return to the cleaned house. This may be in the form of bait stations, trapping or other methods as deemed appropriate.

- **Cleaning and Disinfection of Fomites** - Highly contagious diseases can be spread to susceptible species either directly from animal to animal, indirectly via fomites (i.e., mechanical carrier contaminated with a pathogen but not infected or susceptible to it), and via arthropod vectors that may serve either as fomites or as an important part of the life cycle of the agent. The direct route of spread will have been eliminated by disposal of the susceptible animal population.

Equipment Handling

- **Water Systems** - Water lines, nipple drinkers, cups or troughs should be flushed, sanitized and drained prior to either raising or removing from house. Bell drinkers should be removed and disassembled for removal of organic debris to permit proper cleaning and disinfection. Reservoirs should be flushed, sanitized and drained during the house cleaning procedures.
- **Feeding Systems** - Feed remaining in the pans, feed lines, chains, augers or hoppers should be removed and placed on the floor for removal with the litter. These lines and equipment must be removed or raised prior to removal of litter and floor material.
- **Ventilation** - Fans, casings, motors, belts, curtains, ventilation pads and louvers should be individually cleaned free of manure, debris, dust and feathers prior to disinfection. Equipment such as thermostats, scales, time clocks, electrical panels, switches and light bulbs, etc may need to be individually wiped, cleaned, sanitized and protected from the more severe effects of cleaning such as high pressure sprayers and disinfectant chemicals and protected from recontamination during the cleaning process.
- **Slats** - Slats should be scraped of adhering caked manure and debris before being removed from the house and then subjected to high pressure washing and disinfection.
- **Egg belt, egg flats, egg buggies and packing machines** - Adherent yolk, egg material and shell debris should be removed prior to washing and disinfection of this equipment.
- **Egg room, storage areas** - Mechanical equipment, supply rooms, egg rooms and storage areas should be cleaned of materials, debris, equipment and supplies for proper removal of organic materials and disinfection.
- **Floor areas litter and manure** - All removable and obstructive equipment such as feeders and watering systems need to be raised or removed prior entry of back hoes, bobcats and other house cleaning equipment into the house. All litter, manure and organic debris should be removed from the house and disposed of by previously approved handling procedures for this material. Approved methods may be land application, composting (shed or under plastic) or possibly burial. Equipment used to clean houses must be cleaned and disinfected prior to leaving farm.
- **Dry Cleaning** - Once litter and manure material is removed from the house and disposed of the house, air blowers/vacuums should be used to remove dust, cobwebs and other material on ceilings, rafters and other areas. Floor areas should be blown down and broom clean prior to the wash down step.
- **Washing** - Houses should be washed down with high pressure water with detergent to remove remaining dust and organic debris. Curtains should be exposed

to permit correct cleaning and removal of adherent feathers, dust and organic material.

- Exterior of house - A perimeter of 10 feet around the exterior of the house free of uncut grass, materials and obstructions is necessary. Areas of rodent entrances or penetration should be sealed at this time. Roof areas and eaves with holes or nesting areas for wild birds should be addressed at this time.
- House Disinfection - After the washing step the house should be permitted to dry out prior to the spray disinfecting all surfaces in the house with appropriate disinfectant. A reasonable down time after disinfection should be given prior to repopulation and resumption of normal procedures. Main doors should not remain open with out proper screening to prevent reentry of wild avian population.

Personnel Requirements

- Personal protective equipment should be used, including boots, coveralls, rain suits (including both pants and jackets with hoods), gloves specific to the materials being handled, face shields when applying disinfectants, and goggles when handling concentrate powders or solutions. Respirators and chemical-resistant suits may be required for some solutions. During all C&D operations, respirators should be available if the personnel are at risk from a disease organism or chemical hazard, if significant amounts of dust are generated, or upon individual request.
- The number of personnel required to C&D premises will vary depending upon the total number of buildings, size and separation of the buildings, size of the area, sanitary conditions of the premises, and the timeframe within which the work is to be performed. One or more C&D teams of about 10 persons each is recommended for disinfecting large farms and stockyards or sale barns. The VS C&D team will secure the necessary equipment and supplies, schedule work, and certify work accomplished on the affected premises.
- Entrances - VS personnel should make sure all entrances to the premises (except for those being monitored) are securely closed. Equipment for C&D of personnel moving to or from the premises should be available at the entrance. A tent, metal shed, trailer with shower, or other shelter should be available for changing clothes.
- Vehicle Cleaning and Disinfection - Vehicle cleaning and disinfection can be divided into four phases—dry cleaning; cleaning and sanitizing; trailer and cab exterior disinfection; and cab cleaning and disinfection.
- The dry cleaning phase involves removal of all visible organic material (e.g., manure and refuse) using brushes, shovels, forks, or mechanical scrapers.
- The cleaning and sanitizing phase involves the use of a detergent cleanser that may be applied using a backpack sprayer or pressure washer. This action will assist in removing high levels of infectious material that may remain after the removal of the soiled bedding and refuse. The cleaning and disinfection of the trailer and outside of the cab involves application of disinfectant to these surfaces.
- Personnel Disinfection - Once the situation has been stabilized and reasonable controls are in place, personnel and vehicles can leave the infected premises provided they can meet acceptable biosecurity standards. No equipment or supplies that can carry disease should be allowed to move off of the premises from a quarantined animal production unit. Persons who have been working in a quarantined animal

production unit and who absolutely must leave the premises before euthanasia and disposal activities are complete should be subjected to a complete personal disinfection. Even after complete personal disinfection, persons who leave the premises must not come in contact with susceptible animals for a period of 5 days and must certify this requirement in writing.

- Downtime - The period of downtime can begin as soon as the premises can be certified as clean and disinfected. The period of downtime should be at least three times the longest expected incubation time of the disease.

Biosecurity

During a FAD outbreak, biosecurity measures are implemented to prevent or mitigate pathogen spread. Although biosecurity measures should be implemented on an ongoing, day-to-day basis in all agricultural operations, such measures truly are critical during a FAD outbreak. This document describes the biosecurity measures that are necessary during an animal disease emergency to (a) keep disease agents out of livestock and poultry populations in which the agents do not already exist and (b) prevent the spread of disease agents already in the population to uninfected groups within the population. Properly implemented, these measures will reduce the risk of pathogen transmission during the movement of personnel and material necessary for the extensive activities of a disease campaign.

Biosecurity: General Considerations

An outbreak of a FAD, particularly one that is highly contagious, has a potentially serious impact on the agricultural industry and, if the disease is zoonotic, on public health. Accordingly, veterinarians, owners, and other personnel in contact with animal enterprises should implement strict biosecurity measures to prevent or slow the spread of the disease agent.

In outbreaks with zoonotic potential, personal protective equipment (PPE) will be provided to emergency workers. This equipment is considered an additional biosecurity measure. The successful use of PPE and devices in an animal health emergency is extremely important to the health and well-being of the equipment users and to their effectiveness as emergency responders. Needs for PPE and related supplies will be determined at the time of an animal health emergency by a safety officer in consultation with appropriate incident command officials. It should be noted that the choice of PPE could present additional biosecurity challenges.

Biosecurity measures also should be implemented routinely as part of an overall livestock health program. A sound biosecurity plan should be followed in daily practice. During an outbreak, adherence to a biosecurity plan becomes even more critical. This plan should reflect biosecurity principles and procedures concerning the movement of people, animals, vehicles, and equipment; animal handling, examination, treatment, euthanasia, and necropsy; and disposal of animal carcasses, animal products, feed, water, straw, hay, and other materials potentially carrying the disease agent.

As mentioned earlier, FADs may be spread to susceptible species (a) directly, via animal contact with an infected animal or its products, secretions, excretions, epidermal outgrowths, and breath, or via arthropod vectors that may serve either as mechanical carriers of a disease agent or as an important part of the life cycle of the agent or (b) indirectly, via contact with feed, water, fomites, and people or other animals that are contaminated with a pathogen but not infected by or susceptible to it. Effective biosecurity measures are essential to the prevention of pathogen spread via these means.

Biosecurity Hazards

Identification of biosecurity hazards is a key element in preventing the introduction of disease pathogens onto a premises. Common hazards include:

- **People, animals, vehicles, and equipment.** All movements of people, animals, vehicles, and equipment on and off the property must be controlled to reduce the risk of pathogen transmission.
- **Contaminated feed and/or water.** Feed should be purchased only from suppliers that have a quality assurance program in place for the safe manufacturing, storage, and delivery of their products.
- **Contact with other animals.** Exposure to pathogens can occur at livestock shows, in hospital pens, in situations involving contact with wildlife or insects/pests (e.g., deer, rodents, birds, insects, and ticks), and during introduction or reintroduction of animals into a herd.

Mitigating Biosecurity Risk

The potential impact of major risk factors for introduction of a FAD or FAD arthropod vector can be mitigated with appropriate biosecurity actions that include:

- Cleaning and disinfection of premises, vehicles, equipment, and materials, or disposal of contaminated materials that cannot be adequately cleaned or disinfected.
- Equipment should be cleaned and disinfected before using for another purpose.
- Accounting for the recent history of all animals at the premises of origin through accurate recordkeeping.
- Accounting for the recent history of potentially contaminated equipment and animal transport vehicles that could infect the premises, including rendering trucks that may be used to haul carcasses away from the premises.
- Institution of appropriate hygienic precautions for people (employees, family, salespersons, veterinarians, farriers, repairmen, meter readers, visitors, etc.) before and after contact with animals, animal products, and animal secretions and excretions.
- Pick-up locations for dead stock should be separated from rearing areas. The locations should have no cross traffic with farm personnel and vehicles.
- Quarantine and isolation of animals or birds being added or returned to herds or flocks.

Housed Animals

Under most circumstances, housed susceptible animals are at reduced disease risk and should remain housed if possible. Biosecurity measures should be instituted at entry points of buildings. Preventing wild bird entry into housing or eliminating wild birds from housing is necessary to avoid disease spread. Housing should also be designed to

prevent rodents and protect from ground water entry. Animals should not be moved into barns or other facilities that have housed infected or potentially infected animals unless these buildings have first been thoroughly cleaned and disinfected.

Animals Penned Outside

If susceptible animals are penned outside at all times or if they must be turned out from a housed environment, biosecurity personnel should encourage owners to reduce the risk of pathogen transmission by observing the following guidelines:

- Keep groups of animals separated by a distance sufficient to prevent pathogen transmission (e.g., at least one empty field away from any other stock).
- Not permit close or direct contact between groups of animals.
- Not put animals in pastures that have been grazed by potentially infected animals.
- Inspect susceptible livestock and poultry regularly for signs of disease, and discuss any concerns with a veterinarian. If the presence of a FAD is suspected, the veterinarian should report this to the State Veterinarian or APHIS/VS Area Veterinarian in Charge.
- Make every effort to avoid moving animals.
- Minimize visitor contact and ensure they follow biosecurity procedures.
- When visiting multiple sites in one day, visit the youngest animal group first. An exception to this is poultry. Poultry breeding stock should be visited before other commercial birds.
- Ensure that if travel between premises is necessary, each site is treated as a separate, biosecure unit (e.g., with observance of biosecurity and disinfection procedures for personal hygiene, clothing, footwear, vehicles, and equipment—both upon arrival and departure).

Clothing

Careful attention to clothing is an essential element of a successful biosecurity plan. Outerwear may be either disposable or reusable, as discussed below.

Disposable outerwear—It is highly recommended that all visitors and employees regardless of risk level—be provided with disposable coveralls, boots, hats, and gloves for use before coming into contact with animals.

Reusable outerwear—If reusable (non-disposable) clothing is used, it must be machine washable. Waterproof or nylon coveralls may be purchased for use in wet, dirty conditions. Although nylon coveralls are not completely waterproof, they are less permeable than cotton and are less apt to soak through with moisture. They are also light and wind resistant and can withstand repeated machine washings well. Nylon coveralls may be damaged in automatic dryers if the heat is too high, but they air dry quickly.

A Biosecurity Plan

A good biosecurity plan is important both for the eradication and control of disease during an animal health emergency and for the routine maintenance of livestock health. Ideally, biosecurity measures minimize the risk of pathogen spread via people, animals, vehicles, and equipment from premises to premises during animal disease control and

eradication efforts. Biosecurity plans should include planning for unavoidable breaks in biosecurity due to need to protect life or property such as ambulance or fire truck entry. A basic biosecurity plan for attaining these goals—both in an emergency situation and in routine practice—consists of four essential elements:

Biosecurity Awareness

Fatigue, stress, distraction, and lack of forethought all can cause even the most conscientious individual to lose focus on the crucial importance of biosecurity measures. Thus, it is essential that all personnel exercise the utmost thought, patience, persistence, and care in creating and carrying out a biosecurity plan—both under normal circumstances and during a disease outbreak.

Cleaning and Disinfection

C&D refers to a combination of physical and chemical processes that kill or remove pathogenic microorganisms—a combination that is vital for the protection of animal health and the eradication of disease. In the extensive activities essential to a disease eradication campaign, strategically placed C&D stations should be set up in and around the control or quarantine area to minimize pathogen transmission.

Flock Management

Practices related to the control of movement of people, animals, vehicles, and equipment are critical to the maintenance of biosecurity during a disease outbreak or other animal emergency.

Maintaining a Closed Herd/Flock—To the extent possible, owners should maintain herds and/or flocks that are “closed” to the introduction of new animals (with population increase occurring only from herd/flock offspring), thus decreasing the potential for transmission of disease agents from “outside” animals.

Identifying Animals—Individual animal or group identification is essential to the effective implementation of biosecurity measures. Identification:

- Enables the owner to keep track of each animal or group of animals so that each animal’s location and movement within the premises and its movements on or off the premises can be documented accurately.
- Can be used to identify herd or flock mates that had direct contact with—and therefore exposure or potential exposure to—an animal known to be infected.
- Permits tracking of individual animals or animal groups and facilitates the keeping of records on health, vaccination, pedigree, and production.

Keeping Records—Accurate records are essential during a disease outbreak to facilitate accurate tracing of individual animals to determine possible source and potential spread of disease. Newly purchased animals should be accompanied with records that include the vaccination history. Use of the National Animal Identification System (NAIS), which has a standardized numbering system that would allow one number to be used for several purposes, would be ideal. Such information can be useful during an outbreak in tracing animals’ possible exposure to disease (e.g., from embryo and semen sources). Records

also can help the owner keep track of feed, other supplies, and equipment that have entered or left the premises.

Protecting Animals from Wildlife—Rodents and most other forms of vermin and wildlife are very mobile and can biologically or mechanically spread disease agents on a premises.

Isolation—Bringing animals onto a premises poses a risk for introducing an infectious disease agent into the resident population of that premises. Animals should be purchased from herds known to have high health status, and bedding and feed should be obtained from sources known to be reputable.

Ideally, newly purchased animals or animals being returned to the herd should be isolated for 30 days. This can be accomplished by confining the new animals to pens that do not permit any form of contact with other animals or with their excretions or secretions.

If vaccination is to be used, newly purchased animals should be vaccinated within the first week of the 30-day isolation period to bring them up to the vaccination level of the herd. This will allow at least 21 days for the new animal to develop adequate immunity before joining the main herd.

The caretaker of new or returning animals that are in isolation should, at a minimum, have separate coveralls and boots available for use while caring for the animals. This individual should care for the isolated animals *after* taking care of the other animals and should not return to the main herd until he or she has taken a shower and donned clean clothing and boots.

Visitor Biosecurity

Visitors can come to a premises for a wide variety of reasons, from social calls to reading the electric meter, delivering feed, or vaccinating an animal. Each visit provides an opportunity—however inadvertent—for the transmission of pathogens to premises animals. This section focuses on risks posed by visitors—both under normal circumstances and during a disease outbreak.

Visitor Risk under Normal Circumstances

Under normal circumstances (i.e., nonoutbreak conditions), visitors often are classified in terms of low, medium, or high risk, according to the likelihood of pathogen transmission resulting from the visit.

Examples of the biosecurity measures appropriate *under normal circumstances* for the three risk levels are provided below. These levels of biosecurity measures are then considered in the context of biosecurity decisions to be made by individuals during an outbreak (a) outside the control area and (b) within the control area.

Low-Risk Visitors—Under normal circumstances, low-risk visitors are individuals who have had no other contact with livestock or poultry or with animal premises.

- Visitor's vehicles ideally should not be allowed on the premises.

Moderate-Risk Visitors—Moderate-risk visitors include individuals such as salespeople, farm equipment mechanics, property appraisers, and workers responsible for functions such as electrical power, plumbing, fuel, construction, and feed delivery. Minimal animal contact typically is unavoidable in the course of such visitors' duties.

High-Risk Visitors—Visitors in the high-risk category include individuals such as veterinarians, artificial insemination personnel, maintenance personnel having contact with animals, processing crews, animal transporters, and neighbors who have close contact with animals.

Visitor Risk in an Outbreak

In an outbreak situation, all visitors should be considered high risk—especially within a control area. When an outbreak occurs, officials typically establish a control area around infected and contact premises. As a general rule, the closer a premises is to a known infected premises, the greater the hazard for exposure to the pathogen and thus the greater the necessity for implementation of rigorous biosecurity and C&D measures.

Visitor Biosecurity Outside a Control Area—If an outbreak has occurred in the United States, and a premises is located *outside* the control area, premises owners should ensure that visitors observe biosecurity and C&D measures commensurate with the level of perceived threat.

Visitor Biosecurity Within a Control Area—If a given premises is located within a control area, all visitors should be considered “high risk.” Therefore, premises visits must be kept to a minimum. Veterinary practitioners should limit their premises visits to one premises per day within a control area. Livestock/poultry owners and even children that visit other premises in the control area should be regarded as high risk and strict biosecurity measures should be implemented.

Vaccination

Implementation of an animal vaccination program for contagious disease as part of a national or regional eradication effort is a complex undertaking involving myriad considerations and decisions. Key aspects of such a program, include the responsibilities of Vaccination Unit personnel; assembling and equipping a vaccination team; organizing and staffing a Vaccination Center; ordering, storing, and using vaccine; following effective on-premises vaccination procedures; and keeping accurate, complete vaccination records.

Responsibilities of Vaccination Personnel

Vaccination personnel provide services that are essential to an effective animal health emergency response, including the need to control and eradicate a foreign animal disease. Key vaccination personnel include:

- The Vaccination Unit Leader, who plans and conducts the vaccination program in consultation with the Incident Commander(s), to whom he or she reports;

- Vaccination Team Managers, each of whom serves as leader for a Vaccination Team;
- Vaccination Team Members (made up of individual Vaccination Unit Members).

The Vaccination Unit Leader is based at the Incident Command Post, and each Vaccination Team works on multiple premises sequentially. As an integral part of the overall animal health Animal Emergency Response Organization (AERO), the Vaccination Unit works closely with other units to ensure a smoothly functioning operation. The Vaccination Unit is based in the Operations Section.

Designating Personnel - The Vaccination Unit Leader should coordinate the designation of required personnel with the AERO Logistics Section. The availability of both APHIS and non-APHIS personnel should be monitored.

Accredited veterinarians for potential AERO employment can be identified using lists obtained from APHIS' National Veterinary Accreditation Program and/or VS Area Offices. Similarly, lists of State employment agencies can be used to identify personnel to assist with animal handling.

Needs for vaccination personnel, vehicles, and equipment will be determined at the time of the animal health emergency by the Vaccination Unit Leader in consultation with Vaccination Team Managers. The Vaccination Unit Leader will work with State emergency management agencies to identify euthanasia personnel with the required expertise from multiple Government and private sources.

Vaccination Center Site

A number of factors need to be considered in choosing the site for the Vaccination Center. Local emergency coordinators can be helpful in identifying and evaluating suitable locations.

Location—Ideally, the Vaccination Center will be located centrally within the Vaccination Zone. Two or more Vaccination Centers may be necessary if the Zone and number of Vaccination Teams is large, if natural physical boundaries inhibit ease of mobility, or if multiple sites are identified. The Vaccination Unit Leader and Operations Section Chief will make the final decisions as to the location of the Vaccination Center site(s).

An important consideration in site evaluation is the availability of water and of wastewater handling facilities. Preferably, waste water should be directed to a municipal waste-handling facility.

Storage—Preferably, the Vaccination Center site will have ample room for indoor and outdoor storage. The storage areas should be secure or should be capable of being made secure.

Utilities—Potential Vaccination Center sites should be evaluated for power line capacity and adequacy of electrical distribution (e.g., for multiple computers). In addition, multiple telephone lines will be needed for computer modems. If automobiles and large equipment are to be cleaned and disinfected at the Vaccination Center, the adequacy of outdoor drainage also should be considered.

Facilities—In choosing a Vaccination Center site, the use of currently existing facilities (e.g., armories, Veterans Administration hospitals, school gymnasiums, and empty slaughter plants) are preferred.

Equipment—Equipment ordered for use at the Vaccination Center (e.g., autoclaves, washing machines, and dryers) should be purchased as self-contained units (to maintain maximum portability). Such equipment can be purchased or leased in large sizes if needed.

If large equipment is purchased, portability should be kept in mind as the Vaccination Center may be moved to new vaccination areas over time. Some large equipment (e.g., portable corrals, chutes, gates, and trailers) will be kept at the Vaccination Center and assigned as needed.

Refrigeration—Refrigeration equipment in which to store at least a 1-day vaccine supply should be maintained at the Vaccination Center. Basic monitoring equipment will be used to document proper refrigeration.

Personal Safety Equipment—The Vaccination Center will store and distribute personal safety equipment. Almost all of this equipment will be disposable. First aid kits, to be issued by the Center, will be kept in Vaccination Team vehicles and will be used on a site only if needed. Should the kits be used, they will be disposed of by incineration.

Vaccine Suitability

Decisions as to the antigen strain to be used for vaccine will be made by USDA and APHIS personnel. Although they have little input into these decisions, Vaccination Unit Leaders and Managers have an essential role to play in owner and public education about vaccination.

Accordingly, it is important that these personnel have a basic understanding of the complex interactions of homologous or heterologous strains and serotypes as well as the limitations of the particular vaccine strain administered—both in and of itself and in relation to various species. Heterologous serotype vaccination, for example, may require more frequent “booster” vaccinations to obtain a desired immune response than does homologous serotype vaccination.

Vaccine Security

The area surrounding the vaccine storage unit should be secured. Access to the unit should be restricted to a select group of personnel approved by the Vaccination Unit Leader, the Incident Commander(s), and the Operations Section Chief.

For purposes of vaccine accessibility, one person must be within a readily accessible distance of the vaccine storage unit 24 hours per day, 7 days per week.

Designating the Vaccination Area

Upon confirmation of a disease outbreak, the AERO Incident Commander(s) will establish a Quarantine Zone for surveillance, control, and eradication of the disease. The Quarantine Zone or area will consist of two parts: the High-Risk Zone and the Buffer Zone. Designation of High-Risk and Buffer Zones reflects many considerations, including the extent of the known infection, natural barriers, and readily recognizable landmarks such as rivers, roads, and major highways.

Establishing the Vaccination Zone

Typically, the Vaccination Zone is considered as covering the same area as the Quarantine Zone. Once the Vaccination Zone has been determined, all premises within it should be identified, including premises with borders extending outside the zone. If a premises is partially within the zone, the entire premises must be considered to be within the zone.

Refusal to Allow Vaccination

Owners who refuse to allow their animals to be vaccinated will be reported to the Operations Section Chief, who will determine appropriate action in consultation with the AERO Incident Commander(s) and State and/or USDA legal advisors.

The premises of owners who refuse to allow vaccination must be noted clearly on the Vaccination Unit Leader's maps and lists indicating the status of poultry within the Vaccination Zone.

Follow-up Vaccination

The ultimate goal of a vaccination program is to use all appropriate "stamping out" procedures simultaneously to eradicate the epidemic as quickly and efficiently as possible. In making decisions about follow-up vaccination, factors such as depopulation and use of newborns as sentinels must be considered.

Disposition of Vaccinated Poultry

Decisions on the disposition of vaccinated animals and animal products within the Vaccination Ring will be made by USDA Emergency Programs staff in consultation with individual States. The States are the primary source of laws restricting the movement of such materials.

Vaccinated animals will be held on their premises by State quarantines. The movement of such animals within a Vaccination Zone will occur by permit only. Animal movement within a Vaccination Zone may be allowed under permit after thorough documentation of

the area's immune status and of the risk associated with such movement. Movement of animals outside the Vaccination Zone will occur by special permit only. The sole exception to this rule involves movement, under permit, directly to a slaughter plant.

Wildlife Management

Wildlife is defined for this manual as all free-ranging native, feral, and exotic animals in the United States. Wildlife may be involved in the maintenance and/or transmission of livestock and poultry diseases, and may complicate demonstration of freedom from such diseases at the conclusion of an eradication program.

There is a paucity of information available for decision-making in regards to wildlife and FADs, and development of epidemiological information regarding wildlife will be necessary during a FAD/Emerging Disease Incident (EDI).

Wildlife Management Objectives

Goal:

To prevent transmission of a FAD/EDI between domestic animals and wildlife:

Objectives:

- Assess the presence of susceptible wildlife in the affected areas.
- Assess the potential for spread of the disease agent to wildlife.
- Determine if wildlife surveillance is needed.
- Develop a protocol for wildlife surveillance.
- Determine if the infection has spread to wildlife.
- Determine if the disease agent is spreading via wildlife.
- Determine if disease control within wildlife is necessary.

Where disease control within wildlife is necessary, additional objectives will apply:

- Minimize risk of dispersal of wildlife from infected premises.
- Reduce density of susceptible wildlife populations in affected areas if necessary.
- Implement measures to prevent mechanical spread of the disease agent via wildlife.
- Develop protocols for long-term surveillance.
- Develop information on the current role of wildlife in the epidemiology of the disease.
- Develop information on the current impact of the disease on wildlife.
- Develop information on the impact of disease control and eradication measures on wildlife.
- Provide justification for wildlife surveillance and control measures.
- Assist the state wildlife agency and emergency response system in developing public support for Wildlife Section actions.
- Evaluate and recommend hunting season and public lands closings.
- Assist in appraisal of wildlife resources destroyed in disease control operations.

Personnel and Equipment

The Wildlife Section will include a Wildlife Coordinator (WC), one or more Wildlife Officers (WO), a State Wildlife Liaison Officer (SWLO) from each affected State, and field personnel.

The WC will be assigned and located at the Emergency Management Operations Center (EMOC), APHIS, USDA. The WC will be a wildlife health specialist with AERO training and experience.

Wildlife Officers are assigned by the Eastern and Western AEROs, and will be located at the AERO headquarters or other AERO units. Wildlife Officers will be wildlife health specialists with AERO training and experience. SWLOs are assigned by their respective State wildlife agency. Field personnel will be selected from State and/or Federal wildlife agencies or other sources at the discretion of the WO and SWLO and the AERO.

Wildlife surveillance requires persons trained and proficient in wildlife capture, collection, and restraint. Wildlife surveillance also requires that specialized experience in handling wildlife be combined with all other aspects of the AERO including specimen collection, handling, and biosecurity. All Wildlife Section activities will be conducted within Federal, State, and local laws under the direction and authority of the AERO Director. Wildlife Section activities will be highly coordinated with other elements of the emergency response including Diagnosis and Investigation, Disposal, Cleaning and Disinfection, and Biosecurity, and must be in compliance with all protocols.

Quarantines and Movement Control

The geographic area in the vicinity of an infected premises will be identified and assigned a status relative to quarantines and movement control by the state and/or AERO. Wildlife Section activities will be conducted in these same identified quarantine areas, and all policies and procedures relative to quarantine and movement control will apply to all Wildlife Section activities.

Wildlife Risk Assessment

An initial objective of the Wildlife Section is to determine if there is a risk for infection of wildlife. This risk will be dependent upon the wildlife species present, susceptibility of these species to the disease agent, and the level of exposure to infected domestic animals and/or the disease agent. It will be critical to assemble all available information regarding wildlife in the affected area, and it may be necessary to conduct surveys to determine the presence of wildlife. Wildlife surveillance will be implemented when there is a potential for spread of the disease agent to susceptible wildlife. Surveillance of other potential wildlife vectors, including mechanical vectors, may also be implemented, but will be secondary to surveillance of susceptible wildlife.

Wildlife Surveillance

The protocol for surveillance of wildlife for a FAD/EDI must be adapted to the prevailing circumstances in the affected area. Wildlife surveillance will include active and passive

methods deemed appropriate by the Wildlife Section leaders, and approved by the state agency with authority over wildlife.

Active surveillance methods may include collection of susceptible wildlife, carcass searches, and road-kill surveillance. Passive surveillance may include investigation of reports of wildlife morbidity and/or mortality.

Wildlife Control

If wildlife is determined to be a significant risk factor for persistence or dissemination of a FAD/EDI, and/or infected wild animals are found, programs may be necessary to reduce local wildlife populations to a density at which transmission is unlikely (population reduction), or to reduce contact between infected livestock, wildlife, and uninfected domestic animals (population barriers).

The decision to begin control measures will be based on the risk assessment, results of surveillance, the prevailing circumstances in the area of concern, and the feasibility of conducting successful control measures. Feasibility of control is based on the species involved, density, geographic distribution, topography of the area, and the practicalities of applying control measures under the local circumstances.

Other wildlife-associated activities

Field trials, pigeon races and other wildlife-associated activities involving direct or indirect contact with wildlife occur throughout the United States. The Wildlife Section will identify all such activities, and determine whether they involve susceptible or non-susceptible species. Information regarding these activities will be provided to the Quarantine and Disease Control Sections, and the Wildlife Section will assist in communicating with the affected groups.

Public Relations

Public support for AERO activities is essential for success. The general public, including various constituency groups such as consumptive and non-consumptive wildlife users, sport-hunting interests, farmers, and animal welfare activists, will be affected by an FAD/EDI. Public Affairs is responsible for providing information to the general public and the media, and makes all public statements. The Wildlife Section will assist Public Affairs in understanding wildlife issues and Wildlife Section activities.

Appraisal

Wildlife surveillance and control may result in significant loss of wildlife resources and wildlife habitat in the affected areas. The Wildlife Section will assist the AERO in appraisal of such losses. Appraisals will be based on estimates of the cost for a State wildlife agency to develop and conduct management programs to re-establish lost wildlife and/or wildlife habitat in the affected areas.

Personal Protection and Safety

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Strategic Safety Stockpile for Avian Influenza (AI)

To protect the health of first responders and other personnel exposed to the disease, APHIS will stockpile prepackaged material and equipment ready for delivery within 24 hours to the site of an outbreak of AI. These safety “Push Packs” would contain a 10-day supply of personal protective equipment, safety equipment, and decontamination supplies. When an emergency is declared in response to an outbreak of AI, APHIS’ Safety, Health, and Employee Wellness Branch will notify the warehouse in Kansas City, Missouri, to send the Push Packs to the site of the emergency. The packs will be outfitted to provide equipment for 250 individuals for 10 days.

Veterinary Services (VS) Policy Memoranda on Personal Protective Equipment

Memorandum 580.18 details VS policy to ensure the safety of personnel engaged in HPAI control and eradication activities. The policy is based on the risk known to be associated with various levels and types of exposures to HPAI viruses and should be considered complementary to avian disease control and eradication strategies as determined by State government, industry, or the USDA.

Operational Guidelines: Personal Protective Equipment

“Personal protective equipment” (PPE) refers to equipment used as a barrier between an individual and a hazard that could result in an injury or occupational illness. For a complete discussion of PPE, please see Appendix B. This document discusses the use of PPE by foreign animal disease diagnosticians (FADDs) and associated personnel charged with investigating reports of animal disease in biologically hazardous environments. The guidelines also describe PPE-related personnel responsibilities in support of these activities.

The selection of PPE to protect workers in any given hazard situation should be based on consideration of at least three factors:

- Information (yielded by the hazard assessment) on the nature and magnitude of the hazard.
- Performance data on the PPE under consideration. Such data (e.g., protection factors for respirators or attenuation factors for hearing protection) is available from manufacturers and can be used to compare the relative degrees of protection afforded by various types and brands of PPE.
- The estimated level of residual risk resulting from the quantity or concentration of the hazardous agent(s) to which the worker will be exposed while the PPE is in use and a determination as to whether this level of risk is acceptable.

Careful recordkeeping, reporting, and documentation are critical to a successfully managed personal protection program. Document all PPE-related training provided to personnel, including hazard communication and training in the selection, use, and maintenance of PPE.

Overall responsibility for PPE availability, use, and effectiveness during an emergency is the responsibility of the senior APHIS manager and/or supervisor directly in charge. Assistance is available from the Safety Officer, associated safety personnel, and the FADDs who use the equipment.

- The personnel to fill the positions of Safety Officer and associated safety personnel roles should be identified well before an animal health emergency occurs. Safety Officers must be given the authority and time-allowances as necessary to carry out their assigned duties and responsibilities both prior to and during emergency situations.

Emergency Response Procedures for Biological Hazardous Environments

Before visiting a premises, the FADD should interview the premises owner or manager by telephone about the animal health situation for which the FADD is being consulted. The FADD should inquire not only about the health of the animals on the premises but also about the health of the owner's family and other human residents.

If the telephone interview suggests the possibility of the presence of a zoonotic illness on the premises, the FADD should consult with APHIS' Foreign Animal Disease Diagnostic Laboratories or Emergency Management staff as to whether use of PPE is indicated for the premises visit. Before any work involving PPE is initiated, FADDs should be briefed fully by the appropriate official as to the nature of the disease with which they are dealing. All specific safety and health precautions or requirements should be explained before personnel enter the premises. This is particularly important if a zoonotic disease is involved.

Observation of strict biosecurity and rigorous cleaning and disinfecting measures is essential to prevent the spread of pathogens on, off, and between premises.

Appendices

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Appendix A: Veterinary Services Memorandum No. 580.4 Procedures for Investigating a Suspected Foreign Animal Disease/ Emerging Disease Incident (FAD/EDI)

This memorandum states that the Area Veterinarian in Charge (AVIC) will initiate a timely investigation of all reported suspect FAD/EDIs.

The specific responsibilities of the AVIC include:

- Prepare a case report which will include a reference control number; suspected disease condition and species affected; date of initial report; species, breed, or type and number of animals on the premises; number of animals affected and duration of illness; the premises owner's or manager's contact information; contact information for private practitioner reporting the disease; and, for State or military foreign animal disease diagnosticians (FADDs), the web site address for access to the Emergency Management Response System (EMRS) FAD/EDI investigation database;
- Ensure an investigation is initiated within 8 hours of the initial report and the inspection of animals is done as soon as possible;
- Ensure the appropriate priority for the laboratory has been assigned when the FADD has completed the investigation. Emergency Management (EM) staff should be immediately contacted by telephone when Priority 1 or Priority A has been assigned to a specimen;
- Follow established reporting procedures;
- Ensure that preliminary information is entered into EMRS;
- Monitor investigation and provide follow-up until there is a determination of no FAD/EDI. Ensure the "status type" is changed to "diagnosis negative" for FAD to close a case and ensure the laboratory results are entered into the EMRS sample/lab report form;
- Forward preliminary and final results to the FADD and other involved parties for notification.

After the AVIC assigns the case to the FADD he or she must:

- Immediately contact the private veterinarian or owner/producer, initiate an investigation, and review EMRS FAD/EDI investigation summary information and Herd Exam form prior to performing the investigation;
- Assess the situation, including physical exam findings, vaccination history, herd health practices;
- Formulate a list of differential disease diagnoses;
- Contact the Foreign Animal Disease Diagnostic Laboratory (FADDL) or NVSL personnel and use their expertise;
- Conduct a thorough epidemiological investigation to include at minimum information about the duration of illness, potential exposures, temperatures from sampled live animals, vaccination history, animal movement, and human health (for possible zoonoses);

- Contact the AVIC to report findings of the investigation immediately after the investigation is complete, and in consultation with the AVIC, determine the laboratory priority for diagnostic specimens based upon investigative findings;
- Inform the AVIC of a decision to quarantine;
- Contact the appropriate laboratory by phone prior to shipping samples (regardless of priority) to provide priority number, tracking number, and day of arrival;
- Ship diagnostic specimens in good condition and in proper packaging to the proper laboratory (either FADDL; Plum Island, New York; or NVSL-Ames);
- Complete all appropriate follow-up forms immediately after submitting laboratory samples;
- E-mail the EMRS FAD/EDI investigation report to the AVIC when data entry is completed;
- Follow up with the AVIC to ensure closure of investigations within a week of receiving final laboratory results, along with any follow-up information that rules out a FAD/EDI.

A complete report is necessary whether or not diagnostic specimens are collected and submitted.

AVIC Reporting Responsibilities - The AVIC must:

- Immediately contact EM staff by telephone for all possible priority cases;
- Notify the Regional office;
- Inform and consult with the State Veterinarian and Tribal official;
- Ensure that a completed electronic EMRS FAD/EDI Investigation Summary and all forms are forwarded to the State Veterinarian's office.

FADD Reporting Responsibilities - The FADD must:

- Report initial findings of the investigation, as soon as the investigation is complete, to the AVIC;
- Immediately notify the appropriate laboratory (regardless of priority) that samples have been collected and are on their way to NVSL-Ames or FADDL;
- Notify the necessary State or Tribal officials to initiate quarantine, if appropriate;
- Update an electronic EMRS FAD/EDI Investigation Summary with verified information and GPS coordinates;
- Complete the necessary forms;
- Provide appropriate control and tracking numbers;
- Provide the following information:
 - City, county, and State of premises under investigation;
 - Name of the owner/manager;
 - Species, breed, or type, and number of animals on premises;
 - History of the disease;
 - Presumptive field diagnosis with differentials;
 - Priority of the samples;
- Send the AVIC by e-mail the updated EMRS FAD/EDI Investigations Summary before specimens arrive at the designated laboratory.

If the FADD is unable to immediately e-mail the FAD/EDI Investigation Summary, he or she should contact the AVIC to provide the tracking number, obtain a priority number, and indicate to which laboratory the specimens were submitted. The FADD should also consult and follow up with the veterinary practitioner and owner/manager to keep them informed of the investigation process.

Please note that EMRS must be used throughout the investigation. The AVIC, FADD, and laboratory personnel must enter all information specified in this document and any other pertinent information that emerges during the investigation into the EMRS.

NVSL-Ames and/or FADDL will report preliminary and final laboratory results to the AVIC and EM staff for all specimens, regardless of the assigned priority number. The FADD, after consultation with the AVIC, will inform the owner/manager and referring veterinarian of the laboratory test results as soon as possible once test results have been obtained. The AVIC will ensure that all laboratory results are listed on the Sample Lab Report form.

The NVSL Director will immediately report positive or suspect laboratory findings to the Deputy Administrator's Office and Associate Deputy Administrator for Emergency Management. EM Staff will coordinate a conference call with the Deputy Administrator's Office, RD, AVIC, FADD, State Veterinarian, appropriate laboratory personnel, and the Emergency Management Leadership Team (EMLT) for future action planning. This conference call will occur within 2 hours of when EM received notification.

Classifying an FAD/EDI investigation as a "presumptive case" or "confirmed case" is the responsibility of the Deputy Administrator. Investigations for suspected FAD/EDIs will be closed by the AVIC and/or the State Veterinarian. Cases should not be closed until a follow-up visit or phone call has been made by the FADD and the owner/manager is informed of the laboratory results. The electronic EMRS FAD/EDI Investigation Summary form will be used to record all follow-up information, laboratory results, quarantine release dates, etc.

The AVIC should ensure that a Sample Lab Report form is completed. The form should state the laboratory results. If the laboratory results are negative for an FAD/EDI investigation, following consultation and concurrence with the FAD and others, the AVIC will open the Status Form to designate the final diagnosis for the case and close the case.

Appendix B: Veterinary Services Memorandum No. 580.18
Policy to Ensure the Protection of Personnel Involved in Highly
Pathogenic Avian Influenza (HPAI) Control and Eradication Activities

This policy is based on what is currently deemed optimal precautions to protect individuals from illness and the risk of viral reassortment while they are involved in the response to a HPAI outbreak. Personnel involved in HPAI control and eradication activities on known affected or potentially affected premises are at increased risk for exposure to HPAI virus because those personnel frequently have prolonged and direct contact with infected birds and/or contaminated surfaces in an enclosed setting.

Guidance for At-Risk Poultry Workers

HPAI is a highly contagious disease of poultry. Despite the uncertainties, poultry experts agree that immediate culling of infected and exposed birds is the first line of defense to both reduce further losses in the agricultural sector and to protect human health. However, culling must be carried out in a way that protects workers from exposures to HPAI viruses and therefore reduce the likelihood of infection, illness, or viral reassortment.

Exposure to infected poultry, feces, and respiratory secretions and contact with contaminated surfaces is thought to result in transmission of virus to humans and subsequent infection; however, this is a rare occurrence. Although there is evidence of limited person-to-person spread of HPAI virus infection, sustained and efficient human-to-human transmission has not been identified.

The following summarizes recommendations for protecting workers at risk developed by the Centers for Disease Control and Prevention, the World Health Organization, and the Occupational Safety and Health Administration. Personnel involved in HPAI control and eradication activities must take these precautions.

1. All persons who have been in contact with poultry, feces, respiratory secretions, or contaminated surfaces should wash their hands frequently. Hand hygiene should also be performed immediately after gloves are removed and should consist of washing with soap and water for 15-20 seconds or the use of other standard hand-disinfection procedures as specified by State government, industry, or USDA outbreak-response guidelines.
2. All workers involved in the culling, transport, or disposal of HPAI virus-infected poultry should be provided with appropriate personal protective equipment:
 - Protective clothing capable of being disinfected or disposed of, preferably coveralls (plus an impermeable apron) or surgical gowns with long cuffed sleeves (plus an impermeable apron);
 - Gloves capable of being disinfected or disposed of; gloves should be carefully removed and discarded or disinfected and hands should be thoroughly washed. Gloves should be changed if torn or otherwise damaged;
 - Respirators: the minimum recommendation is a disposable particulate respirator (e.g., N95, N99, or N100) used as part of a comprehensive respiratory protection program. The elements of such a program are described in 29 CFR 1910.134. Workers shall be

- medically cleared and fit tested for the model and size respirator they wear and be trained to fit-check the seal of the face piece to the face at a minimum;
- Eye protection (e.g., goggles);
 - Boots or protective foot covers that can be disinfected or disposed of.
3. Environmental cleanup should be carried out in areas of culling, using the same protective measures as in items 1 and 2, above.
 4. Unvaccinated workers should immediately receive the current season's influenza virus vaccine to reduce the possibility of dual infection with avian and human influenza viruses.
 5. Workers should receive a daily influenza antiviral drug (that is approved for use as prophylaxis) for the duration of time during which direct contact with poultry, their secretions, or contaminated surfaces occurs and continuing 5 to 7 days after the last day of potential virus exposure. Antivirals should be administered in combination with the influenza vaccine (as mentioned above). The choice of antiviral drug should be based on sensitivity testing when possible. In the absence of sensitivity testing, a neuraminidase inhibitor (e.g., oseltamivir) is the first drug of choice since the likelihood is smaller that the virus will be resistant to this class of antiviral drugs than to amantadine or rimantidine.
 6. Potentially exposed workers should monitor their health for the development of fever, respiratory symptoms, and/or conjunctivitis (i.e., eye infections) for 1 week after last exposure to HPAI virus-infected or exposed birds or to potentially contaminated environmental surfaces. Individuals who become ill should seek prompt medical care and give notification prior to arrival at the health care provider that they may have been exposed to HPAI virus.
 7. It is important to take measures to prevent the virus from being spread to other areas. To do this, disposable items of personal protective equipment should be discarded properly, and non-disposable items should be cleaned and disinfected according to outbreak-response guidelines.
 8. To reduce the possible risk of transmission of HPAI virus to their contacts, especially household members, ill persons should practice good respiratory and hand hygiene.
 9. To report possible cases of zoonotic transmission of HPAI, patients or health care providers should consult with their local or State Department of Health.

Guidance for Veterinary Laboratory Workers

HPAI A viruses are classified as “select agents” and must be handled under Biosafety Level (BSL) 3 enhanced or BSL 3 agriculture laboratory standards. These include controlled access, double-door entry with change room and shower out, use of respirators when working with specimens outside a biological safety cabinet, and decontamination of all wastes. Laboratories working on these viruses must be USDA approved.

Clinical specimens from suspect HPAI virus cases may be tested by polymerase chain reaction (PCR) assays using standard BSL 2 work practices in a Class II biological safety cabinet. In addition, commercial antigen detection testing can be conducted under BSL 2 levels to test for influenza viruses.