In order to achieve the USDA Animal and Plant Health Inspection Service (APHIS) goals of a foreign animal disease (FAD) response, critical activities must be implemented. This document provides an overview of these science- and risk-based approaches that will work to protect animal health, public health, and the environment and stabilize animal agriculture, the food supply, and the economy in an FAD event. Further information can be found in the associated standard operating procedures (SOP) and National Animal Health Emergency Management System (NAHEMS) Guidelines.

List of Selected Critical Activities during an FAD Response

- Surveillance
- Diagnostics
- Epidemiological Investigation and Tracing
- Information Management
- Communication
- Health & Safety and Personal Protective Equipment (PPE)
- Biosecurity
- Quarantine and Movement Controls
- Continuity of Business
- Regionalization for International Trade
- Mass Depopulation and Euthanasia
- Disposal
- Cleaning and Disinfection
- Vaccination
- Logistics
- Wildlife Management & Vector Control
- Animal Welfare
- Appraisal and Compensation
- Modeling and Assessment Tools
- Incident Management

Critical Activities in the First 72 Hours of U.S. FAD Response

Presumptive positive detection of FAD in the United States

- Establish quarantine, hold orders, movement restrictions, and standstill notices (e.g., 24–72 hours) for relevant zones and regions
- Initiate appraisal process
- Begin depopulation activities
- Notify States, industry, trading partners, media
- Implement increased biosecurity measures
- Start tracing activities (epidemiological investigation)
- Begin confirmatory diagnostics and further virus typing
- Initiate incident management organizational structures and processes
- Decide to deploy Incident Management Team (IMT) to field
- Begin data collection and information management in Emergency Management Response System (EMRS)
- Initiate virus identification for a vaccine if applicable

- Evaluate quarantine and movement controls
- Continue depopulation and disposal activities
- Ensure compensation process moves forward for indemnity
- Proceed with surveillance and tracing activities
- Execute timely and accurate data entry in EMRS
- Initiate public awareness messaging and communication campaign
- Implement and enforce increased biosecurity measures
- Initiate continuity of business plans
- Continue confirmatory diagnostics
- Prepare for arrival of IMT with affected State
- Continue virus identification for a vaccine if applicable

- Continue ramping up Incident Command and Incident Coordination Group
- Ensure compensation process proceeds
- Continue any ongoing depopulation and/or disposal activities
- Continue timely and accurate data entry in EMRS
- Continue surveillance and tracing activities
- Implement and enforce increased biosecurity activities
- Continue public awareness campaign
- Ramp up permitting and continuity of business activities
- Continue agent identification for a vaccine if applicable (as appropriate)

Use of appropriate critical activities and tools continues throughout FAD response
Surveillance

Surveillance activities for an FAD occur throughout the outbreak response. Surveillance plans are intended to (1) define the present extent of the FAD, and (2) detect unknown Infected Premises as quickly as possible. Surveillance information is used to evaluate whether outbreak control mechanisms are working and to provide information for animal and product movement during the outbreak. Surveillance activities will continue to demonstrate disease freedom and regain disease-free status after eradication of the outbreak.

Diagnostics

Effective and appropriate sample collection, diagnostic testing, surge capacity, and reporting are critical to an effective FAD response effort. All of these activities require extensive resources. Surveillance plan requirements must be fully integrated with current diagnostic sample collection, sample testing, surge capacity, and reporting capabilities. The National Veterinary Services Laboratories (located in Ames, Iowa and Plum Island, New York) will confirm the index case for any FAD outbreak in the United States. In an incident, the Unified Incident Command will provide specific instructions regarding the direction and collection of samples, including sending samples to the National Animal Health Laboratory Network laboratories during the course of the outbreak.

Epidemiological Investigation and Tracing

Epidemiological investigation and movement tracing during an FAD outbreak are critical activities in controlling, containing, and eradicating the disease. Epidemiology and tracing activities involve identifying cases of disease, locating other animals that may be infected, tracing all contacts with infected animals and premises, and designating zones, areas, and premises. Typically, trace-back and trace-forward activities are conducted for at least two times the maximum incubation period for highly contagious FADs. Tracing activities include all movements onto and off of Infected Premises with consideration given to potential modes of transmission such as aerosol, direct/indirect contact, and potential wildlife contact. Additionally, the epidemiological investigation will help to elucidate the nature and distribution of the disease, risk factors of transmission, and other outbreak characteristics which will in turn shape the response effort, including the extent of regulatory intervention. These activities will be used to evaluate the effectiveness of the control measures. More information on the definitions and sizes of zones and premises is included in a separate ready reference guide.

Information Management

Information management systems at the local, State, Tribal, and Federal level 1) facilitate the collection, management, reporting, analysis, and dissemination of critical emergency response information, and 2) give emergency response providers access to shared, accurate, and timely data needed for decision making. Information including, but not limited to, epidemiological information, diagnostic test results, and resource requests, must be available at intervals as prescribed by Incident Command. Effective information management requires robust information technology systems. The Emergency Management Response System (EMRS) is the system of record in any animal health incident or outbreak. Data should be entered into EMRS in as close as real-time as possible; at a minimum, data should be entered in 12-hour intervals during an outbreak. It is critical that data entry is both timely and accurate across field operations.
Communication

Communication, both among responders and to the public, is critical for a successful response effort. Effective communication involves briefing the media, public, industry, Congress, trading partners, and other stakeholders on the status of the outbreak and actions being taken to control and eradicate the disease. Communication also involves coordinating with Federal, State, and local agencies, Tribal entities, and others to ensure consistent messaging regarding animal health, public health, and food safety. It is imperative that a network of stakeholders and systems for communication are established prior to an FAD incident. More information on communication and key communication messages are included in disease-specific plans and ready reference guides.

Health and Safety and Personal Protective Equipment

During the FAD response, any number of physical, environmental, and psychological hazards can occur. The specific hazards encountered will depend on the disease agent, type of activities required, the location, the terrain, and time of year. Physical hazards include animal related incidents, musculoskeletal injuries, and fatigue. Environmental hazards include extreme weather and temperatures as well as insect vectors. Responders could be subject to psychological hazards associated with long, unusual hours and emotional stress from activities like depopulation. If the disease agent is zoonotic, personnel should be aware of transmission risks and avoid unnecessary exposure or implement protective measures (vaccination, where appropriate). Additionally, training in animal handling, proper use of PPE, and self-awareness will go a long way to protecting responder health.

Biosecurity

In an FAD incident, biosecurity measures will be implemented to (1) contain the agent on infected premises (biocontainment), and (2) prevent the introduction of the agent via movement of personnel and materials to naïve animals and premises (bioexclusion). Biosecurity measures will be implemented within 24 hours of the identification of an index FAD case, or as soon as possible. In FAD outbreaks, a biosecurity plan is created with information on the roles and responsibilities of key personnel, site security and safety, and biosecurity practices. In many responses, personnel may be asked by Incident Command to not travel directly between Infected or Suspect Premises to unknown or non-infected premises. However, it is important to ensure a careful balance is maintained between facilitating response activities and ensuring personnel do not expose naïve animals and premises to the FAD.

Quarantine and Movement Control

By restricting the movement of infected animals, animal products, and contaminated fomites, quarantine and movement control can be a powerful tool in controlling and containing an FAD outbreak. Transmission of an FAD can occur through infected animals, animal products, and fomites (e.g., equipment, vehicles, bedding, clothing). Immediately after the detection of an FAD, a regulatory Control Area, comprised of an Infected and Buffer Zone, will be established. Within this regulatory Control Area, Infected, Contact, and Suspect Premises are subject to individual premises quarantines; At-Risk and Monitored Premises are subject to movement control restrictions. Quarantine and movement control will be implemented simultaneously with continuity of business plans, which facilitate the managed movement of non-contaminated animal products and non-infected animals without creating an unacceptable level of risk. At all times, consideration will be given to critical movements, such as feed trucks.
Continuity of Business

Outbreak control measures have a direct effect on the ability of a farm or food processor to continue key operations for production and distribution of food and products. As such, continuity of business plans focus on the managed movement of non-infected animals and non-contaminated animal products that exist on non-infected premises within regulatory Control Areas. Plans are intended to maintain a continuous supply of animals and animal products to market and reduce negative economic consequences of stalled production. Continuity of business plans involve risk assessments, surveillance, biosecurity, and movement controls through permitting. The Secure Milk Supply, Secure Beef Supply, Secure Turkey Supply, Secure Pork Supply, Secure Broiler Supply, and Secure Egg Supply plans are in progress.

Regionalization for International Trade

In the event of an FAD outbreak in the United States, international trade of animals and animal products may be adversely affected for a significant period of time. This would have serious economic implications for the affected industries, as well as the country as a whole. Regionalization is one possible way to facilitate the reestablishment of international trade as soon as possible after an outbreak. Regionalization is the concept of separating subpopulations of animals in order to maintain a specific health status in one or more disease-free regions or zones. This risk-based process, based on sound science, can help to mitigate the adverse economic effects of an FAD outbreak.

Mass Depopulation and Euthanasia

In an FAD outbreak, it may be necessary to depopulate animals on Infected Premises as soon as possible after FAD confirmation. Euthanasia or mass depopulation should be provided to the affected animals as safely, quickly, efficiently, and humanely as possible. In addition, the emotional and psychological impact on animal owners, caretakers, their families, and other personnel should be minimized.APHIS recognizes that in a disease outbreak, it may be necessary to depopulate large numbers of animals quickly and efficiently with as much consideration given to the welfare of animals as practicable, given the extenuating circumstances. Humane treatment is always provided to the animals until they are depopulated. Qualified personnel should perform mass depopulation using the safest, quickest, and most humane procedures possible. Incident Command provides more information on preferred methods given the disease, incident, resources, and animal species.
Disposal

Proper disposal of animal carcasses and materials (e.g., bedding, manure, litter) is important for preventing or mitigating pathogen spread and containing, controlling, and eradicating the FAD. Disposal must be completed in a manner that does not allow the FAD to spread, that minimizes negative environmental effects, and conserves meat or animal protein if logistically supportable from a biosecurity standpoint. Local and state regulations must be observed or memorandums of understanding must be obtained to ensure disposal capability. Cost effectiveness and stakeholder acceptance must also be considered.

Cleaning and Disinfection (Virus Elimination)

Many FADs can survive for extended periods of time on both organic and inorganic materials. Therefore, aggressive cleaning and disinfection (virus elimination) measures may be necessary to control and eradicate the disease agent. Appropriate methods should be selected, based on the characteristics of the disease agent, premises, temperature, and other factors. Virus elimination should be completed in the most cost-effective manner possible. If available personnel or materials are insufficient for cleaning and disinfection efforts, the Incident Commander can request contracted emergency support from the National Veterinary Stockpile (NVS).

Vaccination

Emergency vaccination can be an effective means of controlling the spread of disease. It can be used either in conjunction with depopulation or not. If vaccination is employed it may be necessary to use a vaccine with differentiation of infected and vaccinated animals (DIVA) capabilities, which is often necessary for proving disease freedom. Deciding to vaccinate will take into account economic factors, vaccine suitability, nature of the farm operation, species involved, extent and projected duration of the outbreak, resources available, and public acceptance.

Logistics

Both personnel and materials should be deployed to the incident site for response activities within 24 hours of an outbreak. The National Veterinary Stockpile (a part of the Surveillance, Preparedness, and Response [SPRS] Logistics Center) also has contracted access to veterinary countermeasures, including vaccine, as well as contractor support for disposal, depopulation, and decontamination activities in an outbreak. Support can be requested through Incident Command. The surge response capacity of commercial responders is a response to the site in 24 hours, and 500-600 people within 72 hours. All deployed resources are monitored throughout the FAD response effort.

Wildlife Management and Vector Control

In order to effectively contain, control, and eradicate an FAD in domestic livestock and poultry, the response effort must consider the role that wildlife may play. Wild animals may become exposed to the FAD, serve as a reservoir, or spread the disease to naïve domestic livestock or poultry, which may complicate emergency response. In the event that wildlife play a role in an FAD outbreak, APHIS will cooperate with other Federal, State, and Tribal agencies that have primary jurisdiction over wildlife. A wildlife management plan will be developed as soon as possible after identification of the index case in livestock or poultry, based on an assessment of the risk that wildlife poses for the transmission of the FAD to susceptible domestic livestock and poultry.

Animal Welfare

During any outbreak or incident, humane treatment of animals must be provided given the specific circumstances of the outbreak, particularly from the time animals are identified for destruction or vaccination activities until they are depopulated, euthanized, or slaughtered as prescribed by veterinary authorities of the affected States or Tribal nations.

Modeling and Assessment Tools

Models and risk assessments can give decision makers valuable insight in a response effort. During an outbreak, one or more multidisciplinary teams will be developed to perform risk assessments or other analyses as requested by the Incident Commander.
Appraisal and Compensation

The Animal Health Protection Act gives APHIS authority to establish and implement an indemnification program in the event of an FAD outbreak. Indemnity can be a key component of APHIS’s disease control programs in that the promise of fair compensation helps to ensure cooperation from the owners of affected livestock or poultry. Such cooperation is important for rapid disease control and eradication.

Incident Management

National Response Framework (NRF)

The NRF is a guide to how the Nation conducts all-hazards response. It describes specific authorities and establishes a comprehensive approach for responding to domestic incidents that range from serious but purely local events to large-scale terrorist attacks or catastrophic natural disasters. It builds in the National Incident Management System, which provides a consistent template for incident management. The NRF is available [http://www.fema.gov/national-response-framework](http://www.fema.gov/national-response-framework).

National Incident Management System (NIMS)

NIMS is a companion document to the NRF, provides a systematic, nationwide, proactive approach guiding departments and agencies at all levels of government, the private sector, and non-governmental organizations. Its goal is to help these organizations work seamlessly to prepare for, prevent, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, to reduce the loss of life, liberty, property, and harm to the environment. NIMS provides a core set of concepts, principles, procedures, organizational processes, terminology, and standard requirements. NIMS information is available at [https://training.fema.gov/nims/](https://training.fema.gov/nims/).

Surveillance, Preparedness, and Response Services (SPRS)

SPRS provides animal health incident management within USDA APHIS and is organized into 6 districts to carry out Veterinary Services critical activities in the field during an FAD response.