Foreign Animal Disease Guidance #4: Biosecurity Measures

Section 1: Overview

Slaughter facilities implement measures every day to ensure the safety of the people and animals involved in their operations. However, in the event of a foreign animal disease (FAD) outbreak, biosecurity measures on all facilities which house animals for even a brief period of time will be heightened. Existing procedures may not account for these increased precautions.

This guidance document will aid beef, pork, and lamb slaughter establishments on the proper biosecurity measures to take in the event of a foreign animal disease outbreak in the United States. Both structural and operational biosecurity measures must be considered. Since much of the structural biosecurity in slaughter facilities is already in place and cannot be changed, this document will focus on operational measures to prevent FADs from entering a slaughter facility, or more importantly, from leaving a slaughter facility and spreading to other slaughter facilities, livestock production facilities, or to livestock at the homes of employees.

1a. Biosecurity Manager

Each facility should designate a Biosecurity Manager who is in charge of developing the enhanced biosecurity plan, keeping the plan updated, and training employees on biosecurity measures and how they will be implemented in the event of a FAD outbreak. The Biosecurity Manager should have authority to ensure compliance with biosecurity protocols and take corrective action as needed.

1b. Written Biosecurity Plan

The specific enhanced biosecurity measures implemented will depend upon the location and extent of the outbreak, but regardless of where the outbreak occurs, all facilities will be affected in some way. To prepare for such an event, every slaughter facility should have an enhanced site-specific, written biosecurity plan ready for implementation. This plan should address the specific layout and standard operating procedures of the plant, and how the slaughter facility will implement the heightened biosecurity measures defined in this document.

The enhanced biosecurity plan should clearly define the slaughter facility premises and the animals and animal housing associated with the premises. All
slaughter facilities should obtain and keep a premises identification number (PIN) in their biosecurity plan. See Section 3 for more details on obtaining a PIN.

The Biosecurity Manager should conduct a documented review of the plan at least annually, or whenever the slaughter facility implements a change in operations (i.e. expands, adds a new aspect of the business, etc.). The plan must be continuously adapted to address changing risks or recommendations. The plan should be accessible to authorized individuals with responsibility for implementing the plan, and should be made available to USDA FSIS upon request.

Section 2: Training

The Biosecurity Manager should be well-versed in the content of the United States Department of Agriculture’s Foreign Animal Disease Preparedness and Response Plans.\(^1\) They should use these resources and the facility’s biosecurity plan to train essential personnel (i.e. animal handlers, live animal transporters, plant management, etc.) annually about biosecurity in and around the facility and the importance of implementation of the plan during a FAD outbreak. Non-establishment employees such as truck drivers can be made aware of proper biosecurity measures by taking species-specific driver certification courses, or the establishment may choose to post its biosecurity plan in an area where drivers can see it.

Section 3: Components of the Biosecurity Plan

3a. Visitors/international travel

Establishments should have in place a requirement that visitors and contractors spend adequate downtime between international travel and any visits to the establishment. Currently, the USDA Foreign Animal Disease Diagnostic Laboratory on Plum Island recommends a 5-day downtime for anyone planning to have contact with susceptible species after working with diseases and animals in an affected area. If a FAD outbreak occurs in the United States, establishments should restrict the number of visitors accepted on the premises to the best of their ability, and apply the 5-day downtime to domestic visitors as well.

If the establishment must allow visitors or contractors on the premises during an outbreak, those individuals should be aware of the current FAD outbreak.

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\(^1\) USDA APHIS FAD Preparedness and Response Materials and References. [https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_fadprep/util/p/z1/04_iUIc4tKPFJAlbpSAA0fReY1llmemJJZn5eYk5-hH6kVfM8xGzu4GFiaGP6uLoOIGh6Wn4e5mYG686G-l5eQ091Bp664iA6oAgh1P6kUZFvs6-6fpRYkIGbqZeWn5-hJJFfpiSkFRakF-gXZUZEAtfRGiw!!/](https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_fadprep/util/p/z1/04_iUIc4tKPFJAlbpSAA0fReY1llmemJJZn5eYk5-hH6kVfM8xGzu4GFiaGP6uLoOIGh6Wn4e5mYG686G-l5eQ091Bp664iA6oAgh1P6kUZFvs6-6fpRYkIGbqZeWn5-hJJFfpiSkFRakF-gXZUZEAtfRGiw!!/) Accessed September 19, 2018.
situation, and be informed that they have to follow the establishment’s enhanced biosecurity procedures, including but not limited to: boot changing or thorough cleaning, changing of clothing, and cleaning of vehicles at the establishment or at the nearest car/truck wash.

3b. National Premises Identification Number (PIN)

All livestock operations are encouraged to obtain a National Premises Identification Number from the office of the state animal health official. This number should be listed in the biosecurity plan. A PIN includes a valid 911 address and a set of matching coordinates (latitude and longitude) reflecting the physical location of the animals on the premises. A PIN will be required for continuity of business during an outbreak, as it will help state and federal government officials identify a premise quickly and easily, and records for that premises will be more readily available. A PIN can be obtained by contacting the state animal health official (usually the state veterinarian) of the state in which the plant is located.² Please note a PIN is not the same as the establishment number issued by the Food Safety Inspection Service upon receiving a Grant of Inspection. A PIN is issued by the state animal health official, while an establishment number is issued by FSIS. An establishment should have both numbers listed in the biosecurity plan.

3c. Premises map

An important part of the written document is the premises map. A premises map should be an up-to-date diagram or schematic of the facility, with the following clearly labeled:

- Line of separation (a boundary around the premises to limit movement of the virus; movement of livestock, employees, supplies, and products should only cross this line via dedicated access points in controlled direction)
- Access points (in and out)
  - Livestock
  - Employees
  - Supplies
  - Human food product
  - Other products (rendered materials, pharmaceutical product, etc.)
- Cleaning and disinfection stations for biosecurity purposes
- Designated parking areas
- All vehicle movements (all vehicle movements should be labeled for the movement they would take if the biosecurity plan was being implemented)

² To download a list of all state animal health officials, please visit this website: http://www.usaha.org/federal-and-state-animal-health.
3d. Establishment’s control area status

To implement a sound biosecurity plan, an establishment should determine its proximity related to the control areas designated by APHIS. In the event of a FAD outbreak in the U.S., APHIS will establish control areas around any livestock operation infected with the disease (infected zone) or at heightened risk for the disease (buffer zone).

Depending on the establishment’s location relative to the control areas, components of a biosecurity plan will differ. Establishments outside the control area or not accepting infected animals should focus on prevention of the disease in their facilities. Establishments inside the control area accepting infected animals should focus upon the containment of the disease within their facilities.

3e. Establishments outside of control areas

Establishments outside of control areas which are at minimal risk for receiving animals originating near control areas should continue normal operations, with enhanced biosecurity measures. Efforts should be made to prevent receipt of animals within or around the established control areas. The use of the Secure Food Supply Plans can be used to manage the risk of receiving infected animals. Animals originating from livestock facilities which operate under a Secure Supply plan will be less likely to pose a risk of bringing infected animals onto establishment premises.

Flow of products

If an establishment has not done so already, it should create traffic maps to determine animal, product, and employee movement in the plant. This can be done before a FAD outbreak even occurs. Access-in and access-out points should be determined, and, if possible, flow of all animals, products, and employees should be one-way. Efforts should be made to eliminate cross-contamination of products and trucks. All biosecurity plans should include flow charts for the following:

- Live animals
- Incoming products
  - Supplies/raw materials
    - Of animal origin and otherwise
  - Chemicals
  - Equipment
- Outgoing products
  - Human food
    - Raw
    - Cooked

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▪ Animal feed/feed ingredients
▪ Pet food
▪ Pharmaceutical products
▪ Hides
▪ Other byproducts (fertilizer ingredients, tallow, etc.)

- Employees
  - Employee vehicles
- Contractors and Visitors
- Other traffic
  - Laundry service
  - Garbage service
  - Recycling service

Employees
Employees should be made aware of the outbreak and the establishment should provide general education about the disease. Such education can include the fact that the FAD does not pose a risk to food safety and people cannot get sick from handling live animals, carcasses, products, or consuming products. Employees should also be made aware of the establishment’s biosecurity plan. Other disease-specific information can be distributed as the biosecurity manager and the plant management deem fit.

To avoid confusion, only designated employees should be educated on specific signs of FADs and to whom they should report to if they observe such signs. When a designated employee observes such signs, he/she should communicate to supervisory personnel, who can then follow the NAMI FAD Guidance Document #1, FAD Investigation, to report the observations to the proper authorities.

3f. Transition from outside to inside a control area

If an establishment receives animals showing clinical signs of the FAD, authorized personnel should follow the guidance in NAMI FAD Guidance Document #1. Establishment employees should work with their in-plant inspection personnel to ensure that USDA APHIS is contacted immediately. Authorities from APHIS will determine whether or not the establishment becomes an infected premises requiring the establishment of a new control area, and will communicate that determination to the establishment and to FSIS.

3g. Establishments within control areas

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4 At this time, this is true for the foreign animal diseases that affect swine and ruminants. Foreign animal diseases that affect other species, such as avian influenza, can be transmitted to humans. Additionally, emerging diseases that affect swine and ruminants may be transmissible to humans in the future. Communication about disease transmission to humans will be based on the specific disease that is implicated at the time of the outbreak.
Establishments inside control areas receiving animals from affected farms should implement all aspects of their Foreign Animal Disease Biosecurity Plan. Additionally, the establishment should communicate with FSIS that the biosecurity plan is available for review upon request, if necessary.

Flow of products

If an establishment has not done so already, it should create traffic maps to determine animal, product, and employee movement in the plant. This can be done before a FAD outbreak even occurs. Access-in and access-out points should be determined, and, if possible, flow of all animals, products, and employees should be one-way. Efforts should be made to eliminate cross-contamination of products and trucks. All biosecurity plans should include flow charts for the following:
  o Live animals
  o Incoming products
    ▪ Supplies/raw materials
      • Of animal origin and otherwise
    ▪ Chemicals
    ▪ Equipment
  o Outgoing products
    ▪ Human food
      • Raw
      • Cooked
    ▪ Animal feed/feed ingredients
    ▪ Pet food
    ▪ Pharmaceutical products
    ▪ Hides
    ▪ Other byproducts (fertilizer ingredients, tallow, etc.)
  o Employees
    ▪ Employee vehicles
  o Contractors and Visitors
  o Other traffic
    ▪ Laundry service
    ▪ Garbage service
    ▪ Recycling service

Cleaning and Disinfection

The plant should have cleaning and disinfection protocols in place or ready to be implemented when it is determined that the establishment is within a control zone and/or receiving infected or exposed animals. The level and scope of cleaning and disinfection will depend upon traffic patterns and logistics of the plant. For example, livestock trailers should go through a thorough cleaning before leaving the plants, but an employee vehicle that is in a designated parking lot, away from livestock areas, may only need to drive through a sanitizing station. Cleaning and
disinfection of trucks/trailers hauling both live animals and product, employee vehicles, and any other vehicle or conveyance should occur before they leave the plant premises. Again, the level of cleaning and disinfection will vary—trucks carrying product will likely need sanitation of the wheels, wheel wells, and undercarriage, while empty livestock trailers will need a thorough cleaning.

Establishments are encouraged to set up cleaning and disinfection sites at all access points for movement into and out of the premises. Employees operating the cleaning and disinfection stations should be well-versed in the company’s enhanced biosecurity plan, the safe use of disinfectants, and the personal protective equipment necessary to protect themselves from any harmful effects of the disinfectants (which will be stated on the product label). A list of effective disinfectants can be found in Appendix A of this document.

It is imperative that no contaminated clothing or equipment be brought home with plant personnel. Laundry collection bins can be placed in the dirty side of locker rooms to collect contaminated clothing from employees. All plant-issued clothing should be washed with standard detergent and bleach. All plant-issued equipment should be collected and disinfected at the end of each shift.

Flow of animals and products
The establishment should enforce all traffic maps developed for flow of animal, product, and employee movement in the plant. If possible, flow of all animals, products, and employees should be one-way. These efforts should be made to eliminate cross-contamination of products and trucks.

Trucks carrying livestock
The highest risk for contamination spread is likely trucks/trailers carrying live animals that are infected or have been exposed to the FAD. The exterior of the trucks/trailers carrying exposed or infected animals will be contaminated by feces, urine, saliva, and bedding that can contaminate road surfaces outside the plant. Every effort should be made to clear the truck of the majority of the gross debris (e.g. bedding, large amounts of feces, etc.) at a designated area on establishment premises. Feces and urine can be handled in the manner designated by the establishment’s manure management plan. Bedding may be rendered, if need be.

The incoming route for trucks carrying live animals to the plant should be separated from the routes by which trucks leave the plant, whether they are carrying live animals or products. All trucks bringing live animals to the establishment should be washed and disinfected before leaving the plant premises, or should go directly to a designated truck wash established in the control area. The location of such a truck wash will be determined by the location and size of the control area.
Additionally, truck drivers should follow proper biosecurity measures such as boot washing, shedding of contaminated outerwear, and disinfection of livestock driving tools. If this is not possible, consider excluding the driver from unloading animals. Additionally, no live animals should be allowed to leave the premises for any reason during a FAD outbreak.

**Trucks carrying finished or rendered product**

To facilitate movement of finished product, the establishment must ensure that there is no cross-contamination of incoming and outgoing routes of trucks which carry live animals. All incoming and outgoing truck routes should be termed “clean” or “dirty” and proper enforcement of the use of these routes should be in place. If such routing cannot be achieved, outgoing trucks/trailers carrying finished product should go through a cleaning and disinfection process for the wheels, wheel wells, and undercarriage before leaving the establishment. This process can be completed by ensuring all gross debris is removed from the truck/trailer, then simply obtaining a hand-held sprayer(s) and applying the proper disinfectants for the disease in question.

**Employees**

Employee foot and driving traffic routes should also be considered when implementing a FAD biosecurity plan. Parking areas for personal vehicles should not overlap with routes by which contaminated trucks can enter the establishment. Footpaths should be established for all employees to follow when entering/exiting the plant. All street clothing and shoes should be stored in the locker room, and a clean/dirty line should be established in each locker area. Designated plant clothing and footwear should be removed before entering the clean locker area. Employees should leave the locker area and the plant via the designated clean footpaths established to avoid cross-contamination. Much care should be taken to keep employees from coming into contact with infected or exposed animals outside the work environment.

Establishments should also account for employees who may not be assigned to a specific station or area of the plant (such as FSQA, management, maintenance, etc.). This may involve shifting responsibilities or limiting access to certain areas of the plant, or designating certain employees only to certain areas of the plant.

**Lairage**

The lairage area is the area where the highest risk of cross contamination and disease spread occurs. All employees who work in the receiving and lairage areas should be required to wear plant-issued clothing/outerwear, and to shower and change into clean clothes before leaving the plant premises.

A plan for disposal of animals/carcasses that do not pass inspection should be in place. Each state is charged with developing a carcass disposal plan in the event
of a FAD outbreak, and the establishment should follow the plan that the state has put in place if it is necessary to dispose of a carcass in lairage. As stated previously, when a plant is determined to be in a control area, it is imperative that no live or dead animals leave the facility after they have been brought onto establishment premises, unless given specific consent and direction from APHIS and state animal health officials.
## Appendix A: List of Disinfectants for Specific FADs*

<table>
<thead>
<tr>
<th>Active ingredients</th>
<th>Product name</th>
<th>Manufacturer</th>
<th>EPA #</th>
<th>Susceptible virus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chlorite, potassium peroxymonosulfate</td>
<td>Virkon S</td>
<td>E.I. DuPont de Nemours &amp; Company</td>
<td>71654-6</td>
<td>FMD, CSF, ASF</td>
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<tr>
<td>Hydrogen peroxide, peroxyacetic acid</td>
<td>Oxonia Active</td>
<td>Ecolab, Inc.</td>
<td>1677-129</td>
<td>FMD</td>
</tr>
<tr>
<td>Alkyl dimethyl benzyl ammonium chloride, didecyl dimethyl ammonium chloride, octyl decyl dimethyl ammonium chloride, dioctyl dimethyl ammonium chloride</td>
<td>Lonza DC 101</td>
<td>Lonza, Inc.</td>
<td>6836-86</td>
<td>FMD</td>
</tr>
<tr>
<td>Sodium chlorite, sodium dichloroisocyanurate dihydrate</td>
<td>Aseptrol S10-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>70060-19</td>
<td>FMD</td>
</tr>
<tr>
<td>Sodium chlorite, sodium dichloroisocyanurate dihydrate</td>
<td>Aseptrol FC-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>70060-30</td>
<td>FMD</td>
</tr>
<tr>
<td>o-phenylphenol, potassium salt; p-ter-amylnphenol, potassium salt; potassium 2-benzyl-4-chlorophenate</td>
<td>Pheno Cen Germicidal Detergent</td>
<td>Central Solutions, Inc.</td>
<td>211-25</td>
<td>CSF, ASF</td>
</tr>
<tr>
<td>o-Pheynylphenol, ethyl alcohol</td>
<td>Pheno-Cen Spray Disinfectant/Deodorant</td>
<td>Central Solutions, Inc.</td>
<td>211-32</td>
<td>CSF</td>
</tr>
<tr>
<td>p-tert-amylphenol, sodium salt; sodium 2-benzyl-4-chlorophenate; sodium o-phenylphenate</td>
<td>Tri-Cen</td>
<td>Central Solutions, Inc.</td>
<td>211-36</td>
<td>CSF</td>
</tr>
<tr>
<td>Alkyl dimethyl benzyl ammonium chloride, didecyl dimethyl ammonium chloride, octyl decyl dimethyl ammonium chloride, dioctyl dimethyl ammonium chloride</td>
<td>Q5.5-5.5NPB-2.5HW</td>
<td>Central Solutions, Inc.</td>
<td>211-50</td>
<td>CSF</td>
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<tr>
<td>o-phenylphenol, 2-benzyl-4-chlorophenol</td>
<td>Low pH Phenolic 256</td>
<td>Central Solutions, Inc.</td>
<td>211-62</td>
<td>CSF, ASF</td>
</tr>
<tr>
<td>Glutaral</td>
<td>Ucarsan Sanitizer 420</td>
<td>Dow Chemical Company</td>
<td>464-689</td>
<td>CSF</td>
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<tr>
<td>Glutaral</td>
<td>Ucarsan Sanitizer 4128</td>
<td>Dow Chemical Company</td>
<td>464-696</td>
<td>CSF</td>
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<tr>
<td>2-benzyl-4-chlorophenol, o-phenylphenol, 4-tert-amylnphenol</td>
<td>1-Stroke Environ</td>
<td>Steris Corporation</td>
<td>1043-26</td>
<td>CSF</td>
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<tr>
<td>Chlorhexidine diacetate</td>
<td>Nolvasan Solution</td>
<td>Zoetis</td>
<td>1007-99</td>
<td>CSF</td>
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<tr>
<td>Sodium dichloro-s-triazinetrione</td>
<td>Klor-Kleen</td>
<td>Medentech Ltd.</td>
<td>71847-2</td>
<td>ASF</td>
</tr>
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*Adapted from the USDA APHIS document entitled “Potential Pesticides to Use Against the Causative Agents of Selected Foreign Animal Diseases in Farm Settings”: [https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/cf_disinfectants/?utm/z1AVNLe5swEP4tPeTaBEKfKewHcDgdd-xWvY110hBeGA4tD99RWuZ9pYqeHVrld_aSa7yEUo0xUS3a91yVjeVRxnxnczMgQ-MnJE_GprgBk44CagNMDDR5gwY-G5SaaAQBhGEhI44wpM4UI1Rm1fJeYBND3DoL5wrHP1w5RFIJoHBKIJKGlh1UEVaM3PRdlopEqkygpyrT17ek0OOp4022SN-](https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/cf_disinfectants/?utm/z1AVNLe5swEP4tPeTaBEKfKewHcDgdd-xWvY110hBeGA4tD99RWuZ9pYqeHVrld_aSa7yEUo0xUS3a91yVjeVRxnxnczMgQ-MnJE_GprgBk44CagNMDDR5gwY-G5SaaAQBhGEhI44wpM4UI1Rm1fJeYBND3DoL5wrHP1w5RFIJoHBKIJKGlh1UEVaM3PRdlopEqkygpyrT17ek0OOp4022SN-)