Texas Dairy Farm  
Biosecurity Guide



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# Executive Summary

The Texas dairy industry is a major contributor to both the Panhandle’s economy. According to the Texas Department of Agriculture’s *Texas Livestock Directory*, Texas is one of the top ten dairy states and milk sales generate $729 million and have approximately a $2.3 billion economic impact on the state.

Facility biosecurity is an important element of any disease prevention program. Biosecurity means taking appropriate precautions and implementing best management practices to reduce the likelihood of an infectious disease from being introduced to or carried away from a dairy by people, animals, equipment, or vehicles.

At the national level, the United States relies on import regulations, point-of-entry surveillance, customs and border inspections, and trade restrictions with Foreign and Emerging Animal Disease (FEAD) affected nations to prevent FEADs from entering the country. Locally, facility biosecurity measures prevent the introduction and spread of disease by minimizing movement of harmful organisms onto and off of a facility. If an outbreak occurs in North America, individual facilities should be prepared. Pre-disaster mitigation actions will lessen the impact of a FEAD and enhance preparedness at facility, regional, and national levels.

This *Texas Dairy Biosecurity Guide* contains dairy biosecurity information, and provides templates to help Texas dairy facilities prepare and implement biosecurity plans

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# Acronyms

AI Artificial Insemination

AIDS Acquired Immune Deficiency Syndrome

APHIS Animal and Plant Health Inspection Service

AVIC (USDA APHIS) Area Veterinarian-in-Charge

BLV Bovine Leukemia Virus

bTB Bovine Tuberculosis

BVD Bovine Viral Diarrhea

CBP U.S. Customs and Border Protection

C&D Cleaning and Disinfection

CDC The Centers for Disease Control and Prevention

CERC Crisis and Emergency Risk Communication Manual

CIP Clean-In-Place

FADD Foreign Animal Disease Diagnostician

FAD PReP Foreign Animal Disease Preparedness & Response Plan

FAST First Assessment and Sampling Team

FDA Food and Drug Administration

FEAD Foreign and Emerging Animal Disease

FMD Foot and Mouth Disease

HIV Human Immunodeficiency Virus

HVAC Heating, Ventilation, Air Conditioning

IPM Integrated Pest Management

ID Identification

IT Information Technology

MSDS Material Safety Data Sheets

NAHEMS National Animal Health Emergency Management System

NCBA National Cattleman’s Beef Association

NPDES EPA National Pollutant Discharge Elimination System

OIE World Organization for Animal Health

PPE Personal Protective Equipment

PRPC Panhandle Region Planning Commission

RFID Radio Frequency Identification

RVF Rift Valley Fever

SOPs Standard Operating Procedures

TAD Texas Association of Dairymen

TAHC Texas Animal Health Commission

TCEQ Texas Commission on Environmental Quality

USDA U.S. Department of Agriculture

USEPA US Environmental Protection Agency

# Instructions

The goal of this guide is to assist dairy owners and managers with developing and implementing dairy biosecurity plans. Diseased animals reduce profitability. Thus, it is in the industry’s best interest to adopt a biosecurity plan designed to prevent and control diseases whether they are dealing with routine bovine respiratory disease, Foot and Mouth Disease (FMD), or anything in between.

Dairy management is responsible for cow and heifer health and production and thus is responsible for deciding the final content of the biosecurity plan. The provided plans help reduce or eliminate the introduction and spread of disease on a dairy.

## Guide Objectives

1. Establish operational standards for biosecurity
2. Create data retention and recordkeeping systems
3. Provide training and education to improve biosecurity
4. Provide disease-specific information to help prevent or limit disease impact

## Guide Organization

The *Dairy Biosecurity Guide* contains fifteen chapters detailing the following operational areas:

1. Biosecurity Overview
2. Biosecurity Assessment
3. Employee Policies
4. Crisis and Risk Communication
5. Coordination with Animal Health Agencies and Local Government
6. Visitor Control
7. Foreign Travel
8. Movement On and Off the Property
9. Zoonotic Diseases
10. Record Keeping
11. Animal Handling and Contact
12. Disease Detections and Surveillance
13. Feral Animals and Wildlife Management
14. Physical Security
15. Vector Control
16. Cleaning, Disinfection, and Sanitization

## Chapter Sections

The Biosecurity Overview chapter provides a background on biosecurity, the goals of biosecurity measures, and the key objectives of biosecurity.

Remaining chapters help diary managers develop a plan that addresses both routine and heightened biosecurity operations. Each chapter begins with a “Background” section followed by a customizable “Plan” section. Some chapters also contain a “Forms” section.

The **Background** section is identifiable by a blue banner in the header. It provides a general topic overview including management best practices to help eliminate, reduce, or identify biosecurity risks. Use this information as employee training material.

The **Plan** section is distinguishable from the background information by a clear banner in the header. Dairy managers can customize a plan by checking the box next to the recommended biosecurity measures they choose to implement. Boxes that are marked become the specific dairy biosecurity plan. Measures that are not marked will remain in the plan for potential future consideration of good biosecurity practices.

The **Forms** section is formatted without headers or footers so it can be printed and used. The forms are designed to aid management with collection and/or dissemination of information. These documents can be customized for a specific dairy. Alternatively, if the dairy already is using similar forms to collect information, those forms can be inserted into the appropriate section of the guide.

## Plan Elements

A comprehensive biosecurity plan addresses both routine biosecurity and heightened biosecurity and should include the following elements:

* How to receive and manage new animals
* How to regulate movement on and off the facility
* How to clean and disinfect equipment to reduce pathogen levels
* How to monitor animal health

**Routine** biosecurity measures apply during normal day-to-day operations and lower the risk of a disease brought onto a facility.

**Heightened** biosecurity measures supplement routine biosecurity measures and apply when confirmed or suspected highly contagious diseases, such as FMD, occur in the region or in the country. Heightened measures provide a greater level of protection for the dairy.

**Chapter 1: Biosecurity Overview**

Chapter 2: Biosecurity Assessment

Chapter 3: Employee Policies

Chapter 4: Crisis and Risk Communications

Chapter 5: Coordination with Animal Health Agencies and Local Government

Chapter 6: Visitor Control

Chapter 7: Foreign Travel

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# Chapter 1: Biosecurity Overview

**Biosecurity Background**

Biosecurity is a collection of management practices designed to minimize the risk of disease introduction and spread within an operation. Such practices may include, but are not limited to: new arrival management, wildlife and rodent control, equipment cleaning and disinfection, and minimizing visitor interaction with cattle. Because dairies routinely obtain cattle from more than one source, biosecurity practices are especially important for preventing the introduction and spread of diseases.

*“In today’s world where people travel and trade so much internationally, we need to remember that the introduction of FMD to Texas livestock is an ongoing threat. Producers should always be aware of who’s coming in contact with their livestock and where those people may have been previously.”*

*- Dr. Dee Ellis, Texas State Veterinarian, (2011)*

Responsibility for dairy biosecurity rests with the dairy owner and/or management team, through the implementation of measures designed to prevent introduction of any disease that is not already present on the dairy as well as limiting the spread of existing diseases. Personnel working with livestock must take steps to ensure a reasonable level of biosecurity is practiced to protect themselves, other producers, and the livestock industry. **It is essential that all personnel exercise the utmost thought, patience, persistence, and care in carrying out a biosecurity plan—both under normal circumstances and during an outbreak.**

Due to the high volume of movement of animals throughout North America and the time it takes to diagnose disease, a positive diagnosis of a FEAD anywhere in the country should trigger a reevaluation of the biosecurity risk and heighten operative biosecurity measures. More stringent measures may seem costly and inconvenient but implementation of these measures can help protect operations and prevent potentially major financial loses.

If disease enters the dairy despite precautionary measures, government officials and regulations may require even greater biosecurity measures to prevent disease spread from the dairy to other facilities with susceptible livestock. These measures and procedures become part of a FEAD response plan; a template for this is not contained in this guide, but is included as a part of the state and/or federal government’s response plans.

Every dairy manager has the ultimate responsibility to protect the health of the animals under their control. Diagnosing certain infectious diseases can be time consuming and difficult; the loss in production, and the expense of eradicating disease can be financially devastating and emotionally exhausting. Biosecurity is only useful if all dairy personnel strictly adhere to the guidance as written.

A proactive approach to biosecurity that prevents the introduction of disease onto the dairy, rather than reacting to an outbreak, is the safest and least costly method of protecting cattle and business.

**Goal of Biosecurity**

The goal of biosecurity planning is to minimize the risk of a disease being introduced and spread in a diary.

The development of a biosecurity plan is voluntary. However, it demonstrates to customers, dairy processors, consumers, and government regulators that dairy managers are actively working to assure a safe milk and cheese supply. The authors encourage dairy management to study this guide, to adopt its suggestions, and to employ the practices recommended.

**Objectives of Biosecurity**

1. Prevent the introduction of infectious disease agents to cattle
2. Prevent the spread of disease agents from affected areas to unaffected areas
3. Minimize the potential impact of disease on cattle productivity and business operations

**Training**

The goal of biosecurity training is to make dairy employees and management aware of the risks to dairy operations and their role in preventing, and responding to a disease outbreak. Training employees and management on the material contained within the biosecurity guide will help achieve operational effectiveness, efficiency, and organizational knowledge.

The *Dairy Biosecurity Guide* can be used to develop a training program for employees. The authors recommend that, at a minimum, dairy managers review each chapter with employees and encourage managers to use handouts, outdoor (hands-on) training, and interactive methods such as asking the employees questions to ensure they are engaged. By training staff on one chapter a month (to include both routine and heightened security components) for approximately one hour, initial training will be completed in a little over a year. Use the training schedule in [Table 1.1](#_Table_1.1_Training) to implement training on-site. After training on all of the chapters is complete, begin the cycle again. Off-cycle training may be needed when there are changes to the routine or heightened biosecurity plan or when new employees are hired. Further, dairy managers are encouraged to refer to the supplemental references contained on the CD/website to learn about biosecurity best practices. These references offer increased depth and breadth of biosecurity training material for staff. Finally, record individual training attendance using the [Employee Training Log](#_Employee_Training_Log) in [Chapter 10: Record Keeping](#_Chapter_10:_Record_2).

#### Table 1.1 Training Schedule

| Biosecurity Chapters | Date Completed | Signature |
| --- | --- | --- |
| Chapter 3: Employee Policies |  |  |
| Chapter 4: Crisis and Risk Communications |  |  |
| Chapter 5: Coordination with Animal Health Agencies and Local Government |  |  |
| Chapter 6: Visitor Control |  |  |
| Chapter 7: Foreign Travel |  |  |
| Chapter 8: Movement On and Off the Property |  |  |
| Chapter 9: Zoonotic Diseases |  |  |
| Chapter 10: Record Keeping |  |  |
| Chapter 11: Animal Handling and Contact |  |  |
| Chapter 12: Disease Detection and Surveillance |  |  |
| Chapter 13: Feral Animals and Wildlife Management |  |  |
| Chapter 14: Physical Security |  |  |
| Chapter 15: Vector Control |  |  |
| Chapter16: Cleaning, Disinfection, and Sanitization |  |  |

Chapter 1: Biosecurity Overview

**Chapter 2: Biosecurity Assessment**

Chapter 3: Employee Policies

Chapter 4: Crisis and Risk Communications

Chapter 5: Coordination with Animal Health Agencies and Local Government

Chapter 6: Visitor Control

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# Chapter 2: Optional Biosecurity Assessment

**The purpose of this self-assessment** is to help operations involved in the livestock industry assess operational risk to FEAD. It contains a list of biosecurity measures that may affect biosecurity risk during routine and heightened operations.

If you choose not to complete, this self-assessment, proceed to [Chapter 3: Employee Policies.](#_Chapter_2:_Physical)

**This self-assessment is designed for dairy operations and their facility managers** to take as the first step toward developing a biosecurity plan. It will give dairy management a quick overview biosecurity and facility risk. The results of this self-assessment do not need to be shared or distributed.

For each of the measures, select a response (yes or no) that best describes current operational practices. Select Not Applicable (N/A) only if the statement does not apply.

**The next step after completing this self-assessment** is to write a customized biosecurity plan.

**Employee Policies**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 1 | References are checked for all new employees to 1) ensure appropriate skills, responsibility and aptitude and 2) to exclude applicants with a history of inappropriate workplace behavior |  |  |  |
| 2 | Employees are trained regularly about the importance of biosecurity and the role they play in maintaining the health and safety of the animals |  |  |  |
| 3 | Employees must inform management if they own livestock at their homes |  |  |  |
| 4 | Employees, other than veterinarians, must report when they visit other animal facilities while working at this facility |  |  |  |
| 5 | Employees are restricted from relieving one’s self anywhere other than a bathroom facility |  |  |  |

**Crisis and Risk Communication**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 6 | Facility has identified communication spokesperson, and communication resources |  |  |  |
| 7 | Employees know to not talk to the media unless authorized to do so |  |  |  |
| 8 | Facility has prepared crisis communication scripts for a FMD or other FEAD incident |  |  |  |
| 9 | Facility has contact information for the key industry groups, law enforcement, emergency management, and animal health officials |  |  |  |

**Coordination with Animal Health Agencies and Local Government**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 10 | Facility management knows local emergency management, law enforcement, and animal health officials |  |  |  |
| 11 | Facility management has a facility map and it is posted for use of employees and first responders |  |  |  |
| 12 | Facility management has an emergency contact list with phone numbers that have been updated in the last year |  |  |  |

**Visitor Control**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 13 | Visitors enter at the main entrance |  |  |  |
| 14 | The entrance is clearly marked |  |  |  |
| 15 | All visitors are required to sign in and out when visiting the facility |  |  |  |
| 16 | There is a designated parking area for visitors |  |  |  |
| 17 | Visitors are prevented from driving through manure hauling or feed delivery lanes |  |  |  |
| 18 | Visitors are prevented from having contact with animals, manure and feed unless necessary (e.g., veterinarians and other animal service providers) |  |  |  |
| 19 | Veterinarians and other animal service providers who have contact with animals, organize their work from healthy to sick, and youngest to oldest in addition to wearing Personal Protective Equipment (PPE) if warranted |  |  |  |

**Foreign Travel**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 20 | Employees are required to notify management when they are traveling outside of the United States |  |  |  |
| 21 | There is a written employee policy regarding international travel |  |  |  |
| 22 | There are measures in place to control access to visitors and staff who have recently visited at risk foreign countries. |  |  |  |
| 23 | Visitors are asked about recent travel |  |  |  |
| 24 | Employees are aware of what countries’ visitors pose a high risk for bringing FEAD into the facility |  |  |  |

**Movement On and Off the Property**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 25 | Staff is aware of the potential for introduction and transmission of disease by vehicles, machinery, and equipment |  |  |  |
| 26 | All vehicles, machinery, and equipment entering the facility area are directed to specified locations based on the function of the vehicle |  |  |  |
| 27 | Dedicated equipment is used (e.g., shovels, skid steer, dump buckets) for manure management |  |  |  |
| 28 | Anyone coming onto the facility is required to clean and disinfect their equipment prior to coming in contact with animals |  |  |  |
| 29 | There is manure management plan in place to control and prevent overflow |  |  |  |
| 30 | Dedicated equipment is used (e.g., shovels, skid steer, dump buckets) for feed handling and distribution |  |  |  |
| 31 | Deadstock is disposed of using dedicated or cleaned equipment and properly documented. |  |  |  |
| 32 | There is an established dead animal pickup point away from housing areas and not in dairy vehicle traffic patterns so that rendering trucks do not contaminate the operation |  |  |  |
| 33 | A veterinarian, or other trained professional, performs a necropsy on any animals that die from suspicious causes |  |  |  |

**Zoonotic Diseases**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 34 | Employees are educated about zoonotic disease risks |  |  |  |
| 35 | Zoonotic disease information handouts are provided to employees |  |  |  |
| 36 | Employees are trained to report any suspicious illness or symptoms in themselves or their families to management |  |  |  |
| 37 | Staff are reminded to wash their hands before and after coming into contact with animals |  |  |  |
| 38 | Employees are provided with appropriate personal protective equipment (PPE) and trained how and when to use it |  |  |  |

**Record Keeping**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 39 | Accurate records are maintained to facilitate trace-in and trace-out to determine the possible source and spread of a disease |  |  |  |
| 40 | An access log is maintained for product storage areas and employees are required to sign in when accessing the storage area |  |  |  |
| 41 | Records are kept of all sales, transfers, and purchases of commodities and equipment at the operation |  |  |  |
| 42 | Inventory records are kept of all supplies brought onto the premises |  |  |  |
| 43 | Records are kept of the visitor sign-in sheets |  |  |  |
| 44 | Herd health records are kept for animal treatment |  |  |  |
| 45 | Records are kept of all semen and/or embryos brought onto the premises |  |  |  |
| 46 | Records are kept of all saleable products moved off the farm |  |  |  |

**Animal Handling**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 47 | Facility cleanliness protocols are followed with special attention to avoiding cross contamination of feeding equipment with manure handling equipment |  |  |  |
| 48 | An animal health management/treatment plan is developed with the aid of a veterinarian, reviewed, routinely updated, and followed |  |  |  |
| 49 | Instruments used for procedures such as dehorning, implants, vaccinations, etc. are cleaned and disinfected between different groups of animals |  |  |  |
| 50 | New animals arriving at the facility are individually tagged for identification |  |  |  |
| 51 | New animals arriving at the facility are isolated from other animals |  |  |  |
| 52 | New animals are acquired directly from preferred domestic suppliers who maintain a quality assurance program that includes a biosecurity component |  |  |  |

**Disease Detection and Surveillance**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 53 | Stacking of stressful events (e.g., handling animals multiple times on the same day, vaccinations, dehorning, etc.) is minimized |  |  |  |
| 54 | All animals are monitored daily by workers trained to recognize the signs of disease and workers know to report any suspicious disease symptoms to management |  |  |  |
| 55 | Animals are evaluated/inspected for disease when they arrive at the facility |  |  |  |
| 56 | There is a clean area for restraint, treatment and isolation of sick animals |  |  |  |
| 57 | Healthiest animals are worked first and sick last in an attempt to decrease cross-contamination |  |  |  |
| 58 | A veterinarian develops the treatment protocols and monitors response rates on routine visits to the facility |  |  |  |
| 59 | A veterinarian has trained the crews to monitor treatment response rates and stays aware of treatment success even when not on the facility |  |  |  |

**Feral Animals and Wildlife Management**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 60 | There are periodic checks for rodent, or other wildlife infestation |  |  |  |
| 61 | Supplies are protected from rodent and wildlife infestation/contamination |  |  |  |
| 62 | There is an integrated pest management program in place and best practices are followed |  |  |  |
| 63 | Appropriate insecticides and other products are used as needed |  |  |  |
| 64 | Fencing is built in a way that prohibits feral animals and wildlife from entering the facility |  |  |  |

**Physical Security**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Measures | Yes | No | N/A |
| 65 | There is perimeter fencing separating the facility from public access areas |  |  |  |
| 66 | Security cameras are used to monitor the facility |  |  |  |
| 67 | Entry gates and doors (other than the main entrance) are kept locked so that only authorized personnel have access |  |  |  |
| 68 | Alarms and other security equipment are installed |  |  |  |
| 69 | Hazardous materials, chemicals, pharmaceuticals, and/or additives are secured in a storage area for authorized access only |  |  |  |
| 70 | There is a watchperson on site after hours |  |  |  |
| 71 | Colostrum is heat treated and waste milk is pasteurized prior to feeding to calves |  |  |  |
| 72 | There are quality control protocols in place to verify that adequate temperature and time requirements are satisfied for treatment of saleable raw milk, colostrum and waste milk |  |  |  |
| 73 | There are protocols in place to clean and disinfect Automated Milking Systems |  |  |  |
| 74 | Teats are dipped with disinfectant and anti-septic solution before and after milking |  |  |  |
| 75 | There are protocols in place to clean and disinfect bottles, nipples, milk storage tanks, buckets for milk, water, and feed |  |  |  |

**Vector Control**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 76 | Sources of standing water are eliminated or treated with larvicide to prevent mosquitoes |  |  |  |
| 77 | An Integrated Pest Management Plan is followed under the direction of a licensed pest control specialist |  |  |  |
| 78 | Vegetation and grass on the facility is kept short. |  |  |  |
| 79 | Pets and other domestic animals at the facility are treated with anti-tick products |  |  |  |
| 80 | Baits and fly traps are used |  |  |  |

**Cleaning and Disinfection (C&D)**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 81 | All vehicles are cleaned before entering an facility |  |  |  |
| 82 | Employees are trained to read and follow the labels on all disinfectants |  |  |  |
| 83 | There is a dedicated area for cleaning and disinfection with a runoff collection plan |  |  |  |
| 84 | Employees are trained in how to C&D vehicles, equipment and facilities |  |  |  |
| 85 | Equipment is C&D after it is used on animals, deadstock or for manure management |  |  |  |
| 86 | Clean, functional restrooms are provided for staff and facility visitors |  |  |  |
| 87 | Clean-in-Place (CIP) system protocols are followed for the cleaning of milking, storage and processing equipment |  |  |  |

**Heightened Biosecurity Operations**

| # | Measures | Yes | No | N/A |
| --- | --- | --- | --- | --- |
| 88 | Employees are provided with information on high threat diseases (including signs and symptoms) for increased monitoring and surveillance |  |  |  |
| 89 | There is a mechanism for information sharing and updates for heightened biosecurity threats |  |  |  |
| 90 | There are procedures in place to alert other facilities/individuals that they may have come into contact with (or could be the source of) disease |  |  |  |
| 91 | There is a plan to ensure all vehicles coming from off-site are appropriately cleaned and disinfected prior to entering and leaving the premises |  |  |  |
| 92 | There are pre-established work zones/routes to be utilized during heightened biosecurity situations to prevent contamination from outside the facility |  |  |  |
| 93 | There is an area set up for visitors to clean and sanitize their boots with disinfectant prior to entry onto the facility |  |  |  |
| 94 | During a heightened security situation there is a plan in place so that visitor and employee vehicles are not parked on the premises |  |  |  |
| 95 | Visitors are provided with disposable plastic boots (or clean rubber boots which remain at the facility) and coveralls as an added precaution if they come into contact with animals, feed, or manure in a heightened biosecurity situation |  |  |  |
| 96 | During a heightened security situation, access gates are kept closed to monitor the entrance of all vehicles and ensure they only go only to designated areas |  |  |  |
| 97 | During a heightened security situation, there is a plan in place to work with law enforcement, local, state and federal animal health officials and emergency management officials |  |  |  |
| 98 | There is a communication plan in place for when the media may be interested in the operation due to a FEAD outbreak |  |  |  |
| 99 | Employees have been advised NOT to speak with the press or officials unless specifically authorized to do so during an FEAD incident |  |  |  |
| 100 | If a disease is suspected that poses a biosecurity threat, the facility knows who to contact |  |  |  |
| 101 | There are high pressure washers that could be used on feed silos and bins, milk silos and tanks, storage areas, mixing and delivery equipment and feeding areas along with proper disinfectants |  |  |  |
| 102 | A suitable location is identified to run decontamination activities at the facility |  |  |  |
| 103 | Employees are trained to use personal protective equipment such as eye protection or respiratory protection in case they are determined to be needed |  |  |  |

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# Chapter 3: Employee Policies

**Routine Biosecurity Considerations for Employee Policies**

Special consideration must be given to protect, educate, and inform one of the dairy’s most important assets, its people. Employee policies are important in all stages of the employee lifecycle including hiring, training and awareness, and separation.

**Hiring** the best individuals for operations requires sufficient commitment from management to attract and select the most qualified employees for the dairy. Rigorous employee screening contributes to overall site safety. Employing an individual with intent or potential to do harm is a direct threat to the livestock enterprise. Dairies can employ a service to screen applicants or independently obtain records for applicants through social networking sites, the department of motor vehicles, past employers, and educational institutions. Records can be used to search for connections to or affiliation with animal rights or terrorist groups. Proper selection can prevent costly issues and protect existing staff and company assets. After candidates are hired, develop and retain staff to reduce potential employee replacement costs. For more information on references and background checks, consult the [Texas Workforce Commission website](http://www.twc.state.tx.us/news/efte/references_background_checks.html).

**Training and awareness** programs, focused on teaching staff to identify serious diseases early and how to minimize the risk of disease spread, are an important part of a biosecurity program. Training programs can include topics such as what to look for in sick animals, what and who to report concerns such as tampering or unauthorized personnel, and when to contact a veterinarian. Education programs reduce uncertainty and enhance employee confidence in decision-making. Protection of the dairy property and livestock requires employees to be vigilant in observing the workplace and surrounding environment.

If employees’ primary language is not English, consider translating materials to ensure the messages are clearly communicated and understood by all employees.

**Employee owned livestock** can be a source of disease brought onto the property. Some employees raise livestock at home. Educate employees on the potential risks associated with tracking disease both to and from work. Consider creating an employee policy that requires employees to notify management about the types of animals raised at home.

**Employee foreign travel** may affect the biosecurity of the property. Visitors to foreign countries can transport FEAD back to the United States on their shoes and clothing. These diseases may cause major health and economic problems to a facility. See [Chapter 7: Foreign Travel](#_Chapter_7:_Foreign_1) for information to give to employees when traveling abroad.

**Employee separation** involves resignation or involuntary termination of employment. Regardless of the reason, take precautions to protect site infrastructure and operations from disgruntled employees. Disgruntled employees could be motivated to cause damage to the facility or introduce disease(s) to cattle. Consider implementing some basic precautions contained in the plan to maximize safety, protect assets, and prevent harm to the company. Handle employment terminations professionally and cautiously.

**Routine Biosecurity Plan for Employee Policies**

|  |  |
| --- | --- |
| **Hiring Process:** | |
| ☐ | Conduct applicant screening:  ☐ Interview applicants  ☐ Perform personal and professional reference checks  ☐ Consider doing a background check using one of the options described below |

|  |  |
| --- | --- |
| **Background Check Options:** | |
| ☐ | Option 1: Hire a service to perform the background check |
| ☐ | Option 2: Perform a background check in house  ☐ Call past employers to verify the employment status of the prospective employee  ☐ Have applicant fill out the [Applicant Background Check Permission Form](#_Applicant_Background_Check_1) if conducting a in house background check  ☐ Review applicant’s social network (e.g., Facebook and Twitter) activity  ☐ Obtain a driving record from the Texas Department of Public Safety  ☐ Call educational institutions to verify the prospective employee’s certificates, degrees, experience, and any other education-related information disclosed on the resume |

| **Biosecurity Training and Awareness:** | |
| --- | --- |
| ☐ | Educate employees and customers to be alert for signs of possible tampering with livestock, supplies, equipment, and facilities |
| ☐ | Encourage employees to report suspicious activity or unauthorized personnel on or near the facility |
| ☐ | Emphasize early identification of serious diseases can help minimize the risk of disease spread at facility |
| ☐ | Provide reporting instructions if disease or illness is suspected/detected |
| ☐ | Ensure employees know and understand the warning signs of FEAD including the identification of FMD lesions |
| ☐ | Ensure training includes a description of how diseases may be introduced and transmitted by:  ☐ Livestock and feedstuffs  ☐ Visitors and employees  ☐ Vehicles, machinery and equipment  ☐ Manure and effluent  ☐ Feral animals and wildlife |
| ☐ | Direct employees to be vigilant for signs of cattle disease (coughing, weight loss, excretions from the nostrils and eyes, excessive saliva, difficulty breathing, etc.) |
| ☐ | Alert all employees and their family members to watch for sick animals, including wildlife, both at home and in surrounding areas |
| ☐ | Require employees who have contact with livestock at other locations (including home) to use the same biosecurity measures as visitors on the site |
| ☐ | Require employees who have livestock at home to report any animals with illness to management |
| ☐ | Train employees on what to expect during a heightened biosecurity situation  ☐ Individual roles and responsibilities  ☐ Notification, warning, and communications procedures  ☐ Emergency response procedures  ☐ Location and use of cleaning and disinfection equipment |
| ☐ | Have new employees complete the [Employee Biosecurity Risk Factors Form](#_Employee_Biosecurity_Risk) as part of new hire training |
| ☐ | Have current employees update the [Employee Biosecurity Risk Factors Form](#_Employee_Biosecurity_Risk) on an annual basis |
| ☐ | Record personnel data on the [Employee Biosecurity Information Form](#_Employee_Biosecurity_Information) |
| ☐ | Train employees to report foreign travel  Refer to [Chapter 7: Foreign Travel](#_Chapter_7:_Foreign_1) |
| ☐ | Regularly train employees on chapters in the *Dairy Biosecurity Plan* |
| ☐ | Track employee training using the Routine Employee Training Log in [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) |
| ☐ | Ensure translated training materials are available for non-English speaking employees |

| **Employee Separation:** | |
| --- | --- |
| ☐ | Return company property including company books and materials, keys, ID badges, computers, cell phones and any other company-owned items  See [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) |
| ☐ | Disable computer access, and employee building and property access |
| ☐ | Notify staff of any adverse terminations (e.g., suspected disgruntled former employees) in order to protect the facility |
| ☐ | Remind departing employee of responsibility to not share company confidential information or trade secrets |

**Heightened Biosecurity Considerations for Employee Policies**

For employee safety, security, and continuity of operations, management should know what to expect of employees during a potential or confirmed incident and how to manage operations. A real or perceived danger or threat to health can lead to employee hesitancy to report to work. Prepare for these situations in advance through regular employee training and communications.

**Determine staffing needs** to maintain optimum functionality of operations during a crisis. Designate employees in advance as either:

* Essential Personnel - Employees required for critical functions
* Non-Essential Personnel—Employees not required to report to work during an heightened event (i.e., not involved in the direct care of animals during an event)

**Implement employee recall and call-back procedures** during a heightened biosecurity situation. Procedures help managers clearly communicate expectations and, most importantly, continue operations. Consider setting up a team conference call, calling staff individually, or using a service to systemically communicate to employees. It is important to maintain two-way communications. Use the [Employee Biosecurity Communication Form](#_Employee_Biosecurity_Communication_1) to develop communication points.

**Emergency responsibilities** include actions employees may need to take to protect the region as a whole.During a period of heightened biosecurity, management may need to work with neighboring facilities. This may include:

* Assisting with communication and information flow to neighboring producers
* Serving as local Subject Matter Experts and assist in identification of needs
* Providing labor, feed and/or equipment resource to help meet the immediate needs of an emergency response

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Employee Policies**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

| **Communication Measures:** | |
| --- | --- |
| ☐ | Employ one or more of the following communication methods:  ☐ Activate an Automated Emergency Alert and Notification System, to automate rapid delivery of phone and text messages  ☐ Set up a conference call with all hands at a scheduled time  ☐ Call each employee individually with updates |
| ☐ | Determine if employees are essential or non-essential to operations in the event of a FEAD |
| ☐ | Complete the [Employee Biosecurity Communication Form](#_Employee_Biosecurity_Communication_1) to communicate essential situation updates and employee expectations |
| ☐ | Collect updated employee contact information to communicate essential information |
| ☐ | Offer time for questions and answers, ask employees if they have any questions relating to the heightened event or employee expectations |

| **Biosecurity Risk Factors Considerations:** | |
| --- | --- |
| ☐ | Have employees complete the [Employee Biosecurity Risk Factors Form](#_Employee_Biosecurity_Risk) |

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##### Applicant Background Check Permission Form

(Please read and sign this form in the space provided below. Your written authorization is necessary for completion of the application process.)

I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_hereby authorize\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to investigate my background and qualifications for purposes of evaluating whether I am qualified for the position for which I am applying. I understand that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will utilize an outside firm or firms to assist it in checking such information, and I specifically authorize such an investigation by information services and outside entities of the company's choice. I also understand that I may withhold my permission and that in such a case, no investigation will be done, and my application for employment will not be processed further.

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Signature of Employee |  | Date |
|  |  | |
| Employee Name Printed |  | |

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##### Employee Biosecurity Communication Form

Communicate information with employees during a heightened event by completing and distributing the form below:

| **Employee Biosecurity Communication for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| --- |
| **Situation Update** |
| *Provide latest update on the situation* |
| **Work Roster** |
| *Communicate who is required to report to work (i.e., essential and non-essential personnel)* |
| **Work Assignment Information** |
| *Tell employees the following: when and where to report to work, expected duration of shift, and roles and responsibilities during heightened event* |
| **Updates to Facility Operational Plan** |
| *Provide information on changes to the facility operations* |
| **Next Situation Update** |
| *Inform employees of next planned update meeting* |

##### Employee Biosecurity Information Form

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employee Information** | | | | | |
|  | | |  | | |
| Department Assigned | | | Date | | |
|  |  | | | |  |
| Last Name | First Name | | | | MI |
|  |  | |  |  | |
| Home Address | City | | State | Zip | |
|  | |  | | | |
| Home Phone |  | Cell Phone | | | |
|  | |  | | | |
| Email: |  | Best way to reach you | | | |
|  | |  | | | |
| Personal Vehicle Make |  | Personal Vehicle Model | | | |
|  | |  | | | |
| Personal Vehicle Year |  | Personal Vehicle Plate | | | |

##### Employee Biosecurity Information Form (cont.)

| **Emergency Contact Information** | | | |
| --- | --- | --- | --- |
|  | | |  |
| Primary Contact Name | | | Relationship |
|  | |  | |
| Home Phone | | Cell Phone | |
|  | | |  |
| Alternate Contact Name | | | Relationship |
|  | |  | |
| Home Phone |  | Cell Phone | |

##### Employee Biosecurity Risk Factors Form

To be updated annually. For use in a heightened biosecurity event

1. Do you have regular contact with other premises, feedyards, dairy, processing plants, or livestock slaughtering facilities?

Yes  No If yes, what premises? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If yes, do you clean and disinfect your vehicle?  Yes  No

If yes, do you change outer clothes?  Yes  No

If yes, do you disinfect footwear or change into footwear assigned to the premises upon return?  Yes  No

1. Do you have livestock at your home?

Yes  No

If yes, what kind?

Beef Cattle  Dairy Cattle

Swine Sheep and Goats

Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Please report all illness in animals to management.**

1. Do you live with someone who works at another livestock premises, feedyard, dairy, processing plant, slaughter facility, or rendering plant?

☐Yes ☐No

If yes, what premises? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If yes, who? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

##### Employee Biosecurity Risk Factors Form (cont.)

1. Do you work at another livestock premises?

Yes  No

If yes, where? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is your job description? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Have you been outside the United States in the past week?

Yes  No

If yes, where? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and also complete Notification of Foreign Travel form in [Chapter 7: Foreign Travel](#_Chapter_7:_Foreign_1).

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# Chapter 4: Crisis and Risk Communication

**Routine Biosecurity Considerations for Crisis and Risk Communication**

Risk communication is vital to any crisis response. Ideally, a risk communication plan involves all relevant stakeholders, develops key messages, and monitors the effectiveness of communication. Stakeholder interests’ and responsibilities may be significantly affected by regulatory risk management decisions throughout all phases of the response.

**Stakeholders** include employees, cattle owners, packers, and commodity and livestock haulers among others. All disasters and emergencies require immediate response; as a result, different agencies and groups may become involved. Anticipate the involvement of law enforcement, emergency management officials and state and federal officials such as the Texas Animal Health Commission (TAHC), and industry groups such as the Texas Association of Dairyman (TAD) by incorporating communication and coordination with outside agencies in any risk communication plan. See [Chapter 5: Coordination with Animal Health Agencies and Local Government](#_Chapter_5:_Coordination_1).

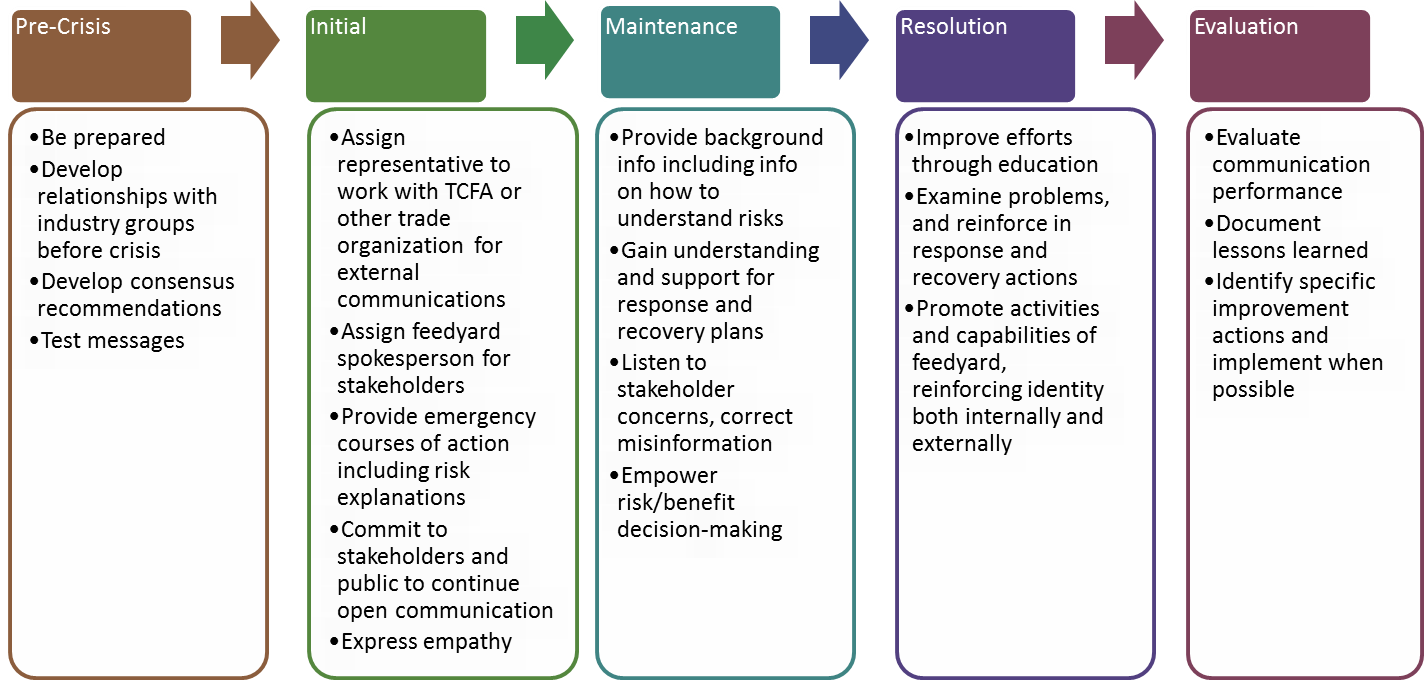
In 2012, the Centers for Disease Control and Prevention (CDC) published the *Crisis and Emergency Risk Communication Manual (CERC)*, which describes five distinct phases that occur in Crisis and Emergency Risk Communications. The routine biosecurity section addresses the first phase, or the pre-crisis phase. The heightened biosecurity section discusses the remaining four phases: initial, maintenance, resolution, and evaluation. The phases are illustrated in [Figure 4.1](#_Figure_4.1_–).

**Pre-crisis** phase recommendations include: 1) fostering alliances with stakeholders and 2) developing, training, and testing communication messages. Develop initial communication strategies and messages in advance. [The Center for Food Security and Public Health](http://www.cfsph.iastate.edu/Infection_Control/index.php) is a great source of readily available biosecurity communication materials:

#### Figure 4.1 – Crisis and Emergency Risk Communication Lifecycle

**Heightened**

**Routine**



Pre-crisis activities include:

* **Designating a person or team** responsible for risk and crisis communication. The designated employee or team must be able to respond to the needs of, and communicate with, very different audiences. These include various branches of government, the public, media, industry, and employees. The goal of crisis communications is to promote and encourage openness, transparency, flexibility, and consistency in communication messages and activities.
* **Establishing and maintaining relationships** with local law enforcement and emergency management officials. See [Chapter 5: Coordination with Animal Health Agencies and Local Government](#_Chapter_5:_Coordination_1) for more information.
* **Educate employees** about biosecurity risks and how to protect the facility from a foreign animal disease outbreak. To be effective, risk communication plans must be understood, supported, and adopted by every employee. This may require translating materials into additional languages most familiar to employees (e.g., Spanish). Training and familiarizing personnel with crisis communications plans prior to an incident will ensure employees are prepared to react appropriately during a heightened biosecurity situation. For more information about training, see [Chapter 3: Employee Policies](#_Chapter_2:_Physical).

**Routine Biosecurity Plan for Crisis and Risk Communication**

**The Pre-Crisis Phase**

|  |  |
| --- | --- |
| **General Practices:** | |
|  | Monitor and recognize emerging risks on the site |
|  | Create pre-scripted communication messages by completing the [Disease Assessment Report](#_Disease_Assessment_Report) See [Chapter 12: Disease Detection and Surveillance](#_Chapter_12:_Disease) for use in the heightened biosecurity event |
|  | Anticipate and develop likely preliminary answers to stakeholder questions |

|  |  |
| --- | --- |
| **Designate a Person or Team:** | |
|  | Identify spokespersons, resources, and resource mechanisms well ahead of time |
|  | Ensure messages are coordinated with the industry including the source farm, milk processors, TAHC, and TAD so that they share “one voice” |
|  | Ensure employees know not to talk to the media |

|  |  |
| --- | --- |
| **Establish and Maintain Relationships:** | |
|  | Establish relationships with key industry groups such as TAD |
|  | Work with experts to develop consensus recommendations |

|  |  |
| --- | --- |
| **Educate Employees:** | |
|  | Educate employees about biosecurity risks and how to protect the facility from a FEAD outbreak |
|  | Train personnel on crisis communications plans prior to an incident |
|  | Practice following the measures in the biosecurity plan, using the messages already created, and refining the plan and messages as needed |
|  | If necessary, translate education material |

**Heightened Biosecurity Considerations for Crisis and Risk Communications**

Some of the procedures and recommended measures may not be applicable to every situation or specific facility. Choose objectives to implement based on the situational need. The recommended measures for a heightened biosecurity incident are scalable and customizable.

The remaining phases of crisis and risk communication, as outlined in *CERC*, are **initial**, **maintenance**, **resolution**, and **evaluation**. These four phases may occur during a heightened biosecurity incident. Highlights of these phases are outlined in [Figure 4.1](#_Figure_4.1_–).

**The initial phase** of a crisis can be characterized by confusion, uncertainty, and intense media interest. Information is usually incomplete and the facts scattered. Recognize that information from the public, the media, other organizations, and from within the facility may not be accurate. Situational awareness is key. During this phase: 1) collect information about what happened, 2) interpret and separate the factual information from rumors, 3) determine the communication response, 4) coordinate with other response groups and agencies and 5) verify the magnitude of the event as quickly as possible. Use the [Risk and Crisis Communication Talking Points](#_Risk_and_Crisis_1) to prepare the message.

**The maintainance phase** begins when most or all of the direct harm from the disease outbreak is contained or the disease is now recognized as endemic. During the maintenance phase the intensity of the crisis begins to subside. As one crisis communicator commented, “You know you have reached the maintenance phase when you get to go home and take a shower.” Communication objectives during this phase include the following:

* + - 1. Provide background and encompassing information to those who need it
      2. Work to answer questions such as the following:
* “How did this happen?”
* “Has this happened before?”
* “How can we keep this from happening again?”
* “Will we be all right in the long term—will we recover?”
  + - 1. Generate understanding and support for response and recovery plans
      2. Listen to feedback and correct misinformation
      3. Explain emergency recommendations
      4. Empower decision-making ability involving risk and benefit analysis

**The resolution phase** and the maintenance phase often blend into one another as the crisis subsides. Acknowledge the resolution phase may take considerable time as details of the event and especially responsibility and blame are addressed. Objectives for this phase include:

* 1. Examine problems and mishaps, reinforce what worked and address what did not work during the recovery and response efforts
  2. Promote the activities and capabilities of the facility
  3. Help reinforce the reputation of the dairy as capable and responsive

As the crisis resolves, there is a return to some form of normalcy. Often this is a new normal, which includes an increased understanding of risks and new ways to avoid them. While in some cases complete recovery takes years, most of the recovery systems are put in place in the resolution phase. This phase is also characterized by a reduction in public and media interest.

**The evaluation phase** occurs when the crisis is over. During this phase the effectiveness of the communciation plan is evaluated. This phase will likely be led by industry groups, TAHC, and USDA with input from the livestock community and those involved in the crisis and recovery effort. A crisis is a very important learning opportunity. Failure to learn the lessons from it increases the chance of a failed response in the future. Responders typically focus on tactics and implementation, not on the overall communication strategy. When the crisis is over:

1. Evaluate responses, including communication effectiveness
2. Document and communicate lessons learned—what worked and where were the challenges
3. Determine specific actions to improve crisis communication and thus the overall crisis response capability

When in an heightened risk communication situation, there are some risk perceptions that must be considered. See [Annex C: *Seven Cardinal Rules of Risk Communication*](#AppendixC)*.*

Understanding the nuances of Crisis and Risk Communications is critical to effective message development and delivery. This chapter only touched on the high points of the art of communication. Please see the 2012 [Crisis and Emergency Risk Communication Manual](http://emergency.cdc.gov/cerc/) published by the CDC for complete detail and explanation of this topic.

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Crisis and Risk Communication**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Initial Phase**: | |
|  | Present information that is simple, credible, accurate, consistent, and delivered in a timely manner. Use the [Risk and Crisis Communication Talking Points](#_Risk_and_Crisis_1) to prepare the message for stakeholders. |
|  | Ensure messages convey empathy and reassurance to reduce emotional turmoil |
|  | Use spokespersons identified in the pre-crisis phase, and identify methods of communication |
|  | Establish general and broad-based understanding of the crisis circumstances, consequences, and anticipated outcomes based on available information |

| **Maintenance Phase**: | |
| --- | --- |
|  | Provide background and supportive information to those who need it (including employees) |
|  | Encourage support and cooperation with response and recovery efforts |
|  | Gather feedback from the affected public and employees—listen, learn, and assess |
|  | Correct misunderstandings, rumors, or unclear facts |

| **Resolution Phase**: | |
| --- | --- |
|  | Explain ongoing remediation, recovery, and rebuilding efforts to stakeholders |
|  | Facilitate honest and open discussion about causes, blame, responsibility, resolutions, and adequacy of the response |
|  | Improve individual understanding of new risks |
|  | Promote behaviors that avoid risks |
|  | Promote personal preparedness |
|  | Promote activities and capabilities of the dairy by reinforcing positive messages and images |

| **Evaluation Phase:** | |
| --- | --- |
|  | Discuss, document, and share lessons learned with stakeholders |
|  | Determine specific actions to improve crisis communication and crisis response capability at the dairy |
|  | Evaluate the effectiveness of the biosecurity plan and make adjustments as needed |

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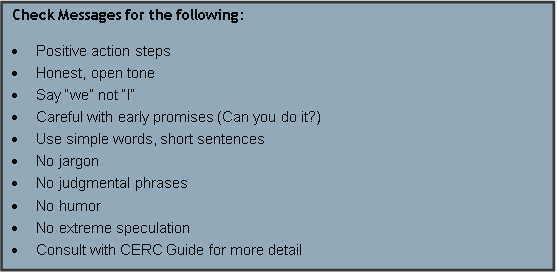


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##### Risk and Crisis Communication Talking Points

*Use this form to construct a message to convey situation to stakeholders.*

|  |
| --- |
| **Express Empathy** |
| *Describe how you are concerned for anyone impacted by this situation* |
| **Share Facts** |
| *Share what you know about the situation*  *Who*  *What*  *Where*  *Why*  *When*  *How* |
| **Share Unknowns** |
| *Share what facts are unknown about the situation* |
| **Share Actions Taken and are Taking** |
| *Explain the steps you are taking to get answers to the unknown* |
| **Share Statement of Commitment** |
| *Explain how you are committed to getting answers and solving the problem* |
| **Referrals** |
| *Provide name, number, or website to obtain situation updates and information* |
| **Next Update** |
| *Indicate when next update will be given* |

*Source: Adapted from CERC 2012 Manual*

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# Chapter 5: Coordination with Animal Health Agencies and Local Government

**Routine Biosecurity Considerations for Coordination with Animal Health Agencies and Local Government**

Disease outbreaks can occur naturally or through acts of terrorism. Both scenarios require management to communicate and coordinate with a multitude of government agencies (state and local), and organizations including, but not limited to, industry partners, animal health agencies, human health agencies, emergency management and law enforcement. Most of these organizations have the same ultimate goal in a disease emergency: to protect human health, to protect the food supply, and to protect the health and well-being of animals. However, their perspectives and roles differ.

**An intentional introduction** of a FEAD occurs when the disease is purposely introduced into the animal population. It is important to note that safety considerations during an outbreak are important to all responders, but approaches are different. In the animal health community the objective is to stop the spread of disease, clean and disinfect the affected area, protect the welfare of the animals, and return to normalcy. Law enforcement, however, has a different focus which is to collect evidence, seek attribution, and prosecute offenders. It is important to work closely with all response agencies in the event of an intentional introduction of disease on the facility.

**Natural or accidental outbreaks** occur when the FEAD is native to or is introduced into the country accidentally or unknowingly. However, there may still be an investigation if there is proof of extreme negligence or accidental breaking of a law (e.g., importing prohibited agricultural goods into the country). During a natural or accidental outbreak, animal health officials with, support from state or local government officials, will play a critical role in controlling and eradicating disease.

**Regular coordination** with local animal health officials and local government agencies is important. The first time to contact these officials is not when a site is in crisis. Relationships should be established and on-scene actions should be coordinated between response organizations prior to a biosecurity incident to minimize conflicts or confusion between first responders in the event of an actual emergency. Take steps to understand agency concerns, roles and responsibilities. Direct and effective cooperation with local officials is crucial. Invite the Emergency Management Coordinator for your community to review and refine the *Dairy Biosecurity Plan*. Familiarity with dairy functions will be important if local officials are ever needed to respond to a situation at the facility. Establishing and maintaining an active working relationship with local officials and familiarizing representatives with the facility before an incident will expedite response during a heightened incident.

**Facility maps** need to be created and updated regularly, so that in the event of an emergency, they can be shared with animal health agencies, and local government. This information will help aid in the development of response strategies, zone-in premise designations, and critical activities for controlling, containing, and eradicating the FEAD. Dairy management should consider identifying pre-designated staging areas to be used in the event of a FEAD (such as areas for cleaning and disinfection, delivery of feed, carcass management, etc.).

Training workers in safety, security, and recognizing outbreaks is an important component of biosecurity and emergency preparedness. See [Chapter 3: Employee Policies.](#_Chapter_2:_Physical)

**Routine Biosecurity Plan for Coordination with Animal Health Agencies and Local Government**

|  |  |
| --- | --- |
| **Regular Coordination:** | |
|  | Discuss specific facility risks with local and state animal health officials |
|  | Arrange for local law enforcement or the insurance agent to perform a security survey of the facility |
|  | Request local law enforcement become familiar with facility’s perimeter and monitor it occasionally |
|  | Immediately report any unusual or suspicious persons, vehicles, or activity to local law enforcement |

| **Facility Map** (create a facility map that includes the following information) | |
| --- | --- |
|  | The name, phone number, and address of the owner/proprietor and relationship of the facility to adjacent facilities, fields, or structures |
|  | Buildings/structures, including offices, houses, barns, outbuildings, silos, grain bins, chemical and fertilizer storage, manure storage/pits (indicate sizes and locations of entrances), including appropriate access points |
|  | Transportation routes, including access roads, highways, crossroads, etc. |
|  | Storage areas for machinery or other equipment |
|  | Fences and gates (indicate dimensions) |
|  | Well and/or municipal water supply, hydrants, and ponds |
|  | Electric, gas, and phone lines and shutoff |
|  | Location of chemicals including Material Safety Data Sheets (MSDS |
|  | Septic tanks, wastewater systems, and cisterns |
|  | Drainage ditches, culverts, and surface drains |
|  | Fields, pastures, hutches, and barns including areas where animals are located |
|  | Fuel storage tanks |

|  |  |
| --- | --- |
| **Develop Emergency Contact List:** | |
|  | Create an [Emergency Contacts List](#_Emergency_Contacts_List) that has numbers for animal health agencies, local law enforcement, and public health |
|  | Post list around facility near telephones and on bulletin boards. Have employees program these numbers in cell phones |

**Heightened Biosecurity Considerations for Coordination with Animal Health Agencies and Local Government**

Relationships with animal health officials and local government agencies are critical during a heightened biosecurity event. These relationships are crucial to the timely response to a disease outbreak (regardless of cause) on a site. Be prepared to accommodate requests for information and access by animal health officials and other government agencies.

Report suspected FEAD outbreaks to TAHC and, or the Veterinary Service unit of U.S. Department of Agriculture’s Animal and Plant Health Inspection Service (USDA-APHIS).

Coordinationbetween management and local/State officials is essential during a FEAD outbreak occurring anywhere in the country. Federal and state health officials and regional and local emergency managers will have access to important information on quarantines and movement control restrictions. For example, officials can advise dairies how to ensure the safe movement of livestock around controlled areas. Emergency managers can coordinate with state and federal responses and are an invaluable line of communication during any type of crisis.

Response to an FEAD will be managed from the top down, meaning initial control will be under the USDA with support from TAHC, and the Texas Department of Public Safety. Government authorities will determine if and when to activate local, regional, state, and federal emergency management plans. For more information on the Texas response plane see: [State of Texas, Annex O](http://www.tahc.state.tx.us/emergency/StateFEAD_Plan.pdf) (Agriculture Production and Companion Animals) Appendix 3 (Foreign and Emerging Animal Diseases Response Plan)

In most situations, a foreign animal disease diagnostician (FADD) will be assigned to investigate the health status of animals. FADDs are qualified through formal USDA training at Plum Island, NY and are generally federal and state veterinarians and laboratory diagnostic staff. The FADD will be responsible for: 1) obtaining samples and submitting them for analysis, 2) establishing movement restrictions and increasing biosecurity, and 3) activating the First Assessment and Sampling Team (FAST), if needed through the state veterinarian or USDA-APHIS.

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Coordination with Animal Health Agencies and Local Government**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Recommended Measures** | |
|  | Accommodate requests for information and access by local law enforcement, animal health and emergency management officials |
|  | Contact veterinarian with any concern or suspicion of a FEAD. For example, diseases causing abnormal rates of morbidity or mortality, diseases occurring in an abnormal group of animals (pneumonia), or suspicious lesions (blisters around mouth or feet). |
|  | Report any suspicious diseases to a veterinarian and ensure that all cases of reportable diseases (see [Annex A: Disease Table](#AppendixA)) are reported to:  Texas Animal Health Commission (TAHC) (800) 550-8242  USDA-APHIS Area Veterinarian-in-Charge (AVIC) (512) 383-2400 |
|  | Maintain open communications as requested by local emergency management, animal health and law enforcement officials |



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##### Emergency Contacts List

| Emergency Contacts | Phone Number |
| --- | --- |
| Hospital |  |
| Police Department |  |
| County Sheriff |  |
| County Emergency Management Office |  |
| Texas Animal Health Commission | (800) 550-8242 |
| USDA APHIS AVIC | (512) 383-2400 |
| Poison Control Center |  |
| Veterinarian |  |
| Gas Company |  |
| Electric Company |  |
| Chemical Suppliers |  |
| Feed Suppliers |  |
| Vehicle / Equipment Dealers |  |
| Ambulance |  |
| Fire Department |  |
| State Veterinarian |  |
| Neighbors |  |
| County Public Health Department |  |
| Milk Plant |  |
| Calf Ranch/Heifer Grower |  |

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Chapter 1: Biosecurity Overview

Chapter 2: Biosecurity Assessment

Chapter 3: Employee Policies

Chapter 4: Crisis and Risk Communications

Chapter 5: Coordination with Animal Health Agencies and Local Government

**Chapter 6: Visitor Control**

Chapter 7: Foreign Travel

Chapter 8: Movement On and Off the Property

Chapter 9: Zoonotic Diseases

Chapter 10: Record Keeping

Chapter 11: Animal Handling and Contact

Chapter 12: Disease Detection and Surveillance

Chapter 13: Feral Animal and Wildlife Management

Chapter 14: Physical Security

Chapter 15: Vector Control

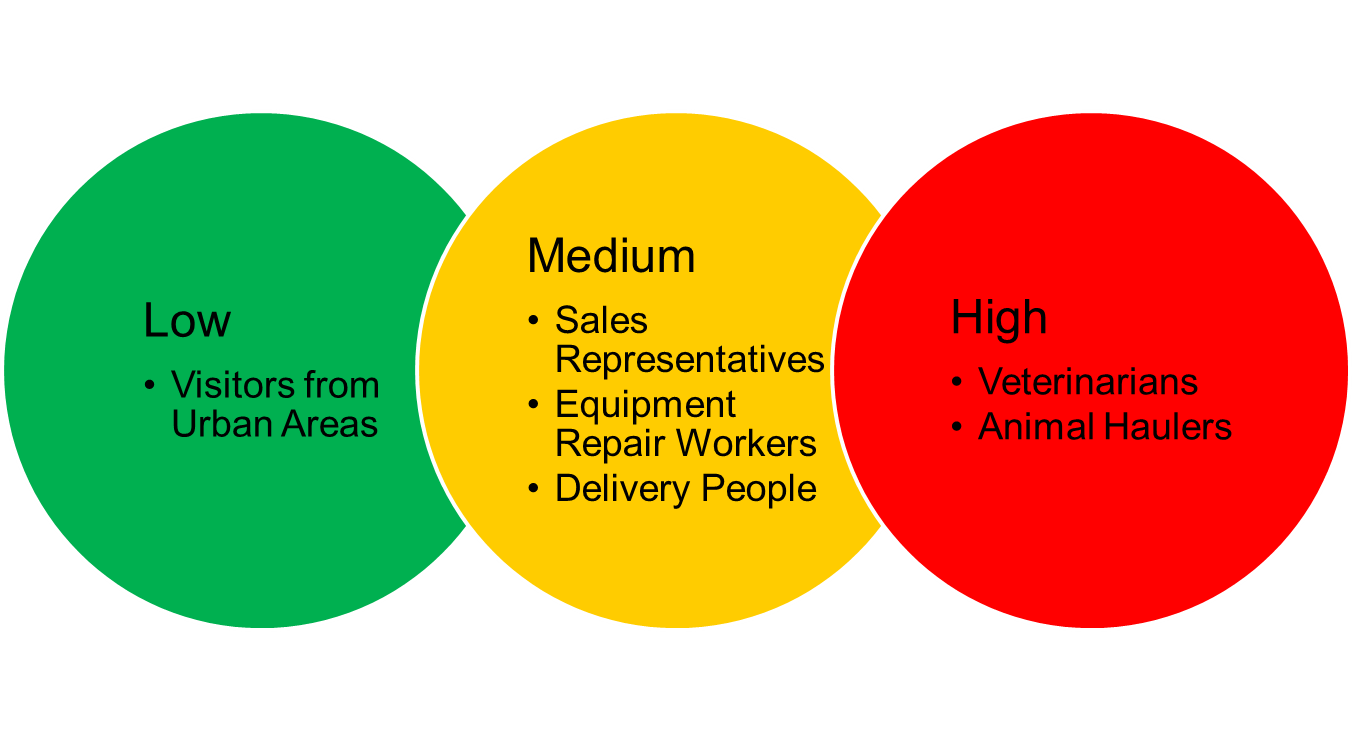
Chapter 16: Cleaning, Disinfection, and Sanitization

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# Chapter 6: Visitor Control

**Routine Biosecurity Considerations for Visitor Control**

Visitors to a diary can pose a significant disease risk to cattle and operations. Visitors can be grouped into low-, medium-, and high-risk visitors (see [Figure 6.1](#_Figure_6.1_–)) based on their exposure to animals and how closely they come in contact with animals at the dairy. Biosecurity for employees not 100% dedicated to the facility is considered the same as for non-employee visitors.



#### Figure 6.1 – Visitor Risk

**Low-risk** visitors are individuals who have not had recent contact with livestock prior to the visit and will not enter into livestock areas of the diary. Some examples of this type of visitor are inside office employees, and other visitors who do not enter livestock areas.

**Medium-risk** visitors are individuals who do have previous exposure to livestock but do not have access to animals or animal holding facilities at the dairy. Examples of this type of visitor include sales representatives and delivery people.

**High-risk** visitors are individuals who have had previous close contact with animals and will also enter the animal handling portions of the dairy. Examples of this type of visitor include employees who work at other facilities or have animals of their own, veterinarians, animal health/brand inspectors, and customers who enter into handling facilities. Additionally, visitors who recently traveled to foreign countries and enter into animal handling areas should be evaluated for their potential risk.

The majority of the visitors at a dairy routinely work with livestock; therefore, they pose a risk because of their interaction with other herds and potential exposure to the diseases that animals in these herds may carry. Even if management knows individuals and works with them regularly, it is important that the dairy manage the actions and interactions of these visitors on the premise. People and equipment that interact with other herds pose a significant threat of animal disease transmission to an operation.

**Visitor biosecurity goals** aim to decrease the risk posed by visitors (such as milk truck drivers, company representatives, and veterinarians) as much as possible. The simplest way to mitigate these risks is through the development of rules that, when adhered to, place the greatest number of visitors into the low to moderate risk categories as those categories’ requirements are relatively simple to enforce. This allows the majority of the biosecurity resources to be targeted towards lowering the risk of the high-risk category.

In order to keep visitors as low or medium risk, dairies must designate which areas of the facility do not pose a significant biosecurity concern and, develop procedures to keep visitors contained in those locations. For simplicity, consider portions of the premise that do not allow access to animals, animal handling or housing areas, or feed, equipment, or other low risk materials. Examples include the parking lot, inside the office, conference room, and parlor viewing area.

**Routine Biosecurity Plan for Visitor Control**

|  |  |
| --- | --- |
| **Signage:** | |
|  | Post a sign marked “Visitor Entrance” |
|  | Post signs directing visitors to the front office |
|  | Post signs to designate a parking area for visitors and ensure the parking area is located away from livestock and feed |

|  |  |
| --- | --- |
| **Low and Moderate Risk Visitor Containment:** | |
|  | Require all visitors to park their personal vehicles in designated visitor parking areas |
|  | Keep gates locked unless attended to by an employee |
|  | Instruct employees to enforce that authorization is required to enter in the animal handling areas |

|  |  |
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| **High Risk Visitor Control:** | |
|  | Only allow employees and others with a significant need to enter the livestock holding facilities |
|  | Restrict access to animal housing areas unless absolutely necessary |
|  | Require visitors bringing equipment onto the premise to clean and disinfect equipment before and after each use |
|  | Do not allow visitors to proceed to cattle areas with food or drink |
|  | Require visitors be accompanied by staff except when going to or from the parking lot to the main office unless otherwise approved by management |

**Heightened Biosecurity Considerations for Visitor Control**

During an animal disease outbreak, the movement of animals on and off the dairy and milk shipments may be halted in order to control disease. Even during an animal disease outbreak, people may have a need to visit the facility. During times of heightened biosecurity, visitors pose a significant disease risk to cattle and operations.

**Essential visitors** are individuals who need to come onto the facility to perform a function necessary to maintain facility operation and animal health. Examples of essential visitors include employees, repairmen, veterinarians, and animal health authorities.

**Non-essential visitors** are individuals who wish to visit the dairy, but whose visit is not required for its operation. Examples of non-essential visitors include media and vendors.

During an animal disease outbreak emergency review all visit requests to ensure they are essential and deny those that are not. Strictly monitor and practice heightened biosecurity measures.

**Zoonotic diseases** can be transmitted between animals and humans. With a zoonotic disease, there is risk that visitors carrying the disease could transmit it to cattle, or that diseased cattle could infect unexposed visitors. When there is heightened risk of a zoonotic disease, coordinate biosecurity measures with [Chapter 4: Crisis and Risk Communication](#_Chapter_4:_Crisis). For more information see [Chapter 9: Zoonotic Diseases](#_Chapter_9:_Zoonotic_1).

**Maintain heightened visitor control protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Visitor Control**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Signage:** | |
|  | Post a sign marked “Controlled Area. Do not enter without permission” at the dairy entrance  See [Heightened Biosecurity Signs](#_Examples_of_Heightened_1) for an example. |

|  |  |
| --- | --- |
| **Visitor Check-in:** | |
|  | Require visitors make appointments or provide advance notice of arrival |
|  | Review all visit requests and invitations, and only allow essential visitors access to the dairy |
|  | Delay non-essential visits or relocate off-site until the threat level is no longer heightened |
|  | Question visitors about any recent travel, focusing on visits to the outbreak location |
|  | Delay the visit of anyone who has traveled to the outbreak area or find a replacement for the service provided by anyone who has traveled to the outbreak area |
|  | Direct visitors to a location where they can put on and take off boots and coveralls and clean up before and after animal contact |

|  |  |
| --- | --- |
| **Visitor Personal Vehicle Control:** | |
|  | Do not allow visitor personal vehicles access to the dairy; direct visitors to park at the entrance/designated parking areas away from the animal housing and feed storage areas |
|  | Provide facilities for cleaning and disinfecting vehicles and equipment before entry into the sale barn. See [Chapter 16: Cleaning, Disinfection, and Sanitization](#_Chapter_16:_Cleaning,) for more information. |
|  | Spray disinfectant on vehicle wheel wells and undercarriage prior to entry and again upon leaving if a vehicle must enter into the animal housing part of the facility. See [Chapter 16: Cleaning, Disinfection and Sanitization](#_Chapter_16:_Cleaning_2) for more information. |

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##### Routine Biosecurity Visitor Sign-in Form

| **Date** | **Time In** | **Time Out** | **Visitor’s Name** | **Cell Phone Number** | **Company Name** | **Vehicle Make/ Model** | **State and License Plate #** | **Reason for visit** | **How recently have you had contact with other livestock?** | **What foreign country have you visited within the past week?** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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##### Routine Biosecurity Visitor Policy and Procedures Agreement Form

As a visitor to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, I agree to the following listed practices:

1. I agree not to drive my vehicle anywhere beyond the entryway and visitor parking area without permission of dairy management.
2. I agree that I will not attempt to come into direct contact with animals or feed without permission from dairy management.
3. If I do have permission to come into contact with animals or feed, I will wash my hands thoroughly before and after doing so.
4. I will inform dairy management if I have had contact with livestock or poultry prior to my visit. This includes:
   * regular close contact with animals, their excretions, and secretions, and
   * limited contact with animals due to the location of worksites on other premises.
5. I will inform management if I own or care for livestock or poultry.
6. I will inform management if I have recently traveled outside of the United States.
7. I will not proceed into the cattle areas with food, drink, gum or tobacco.

Visitor Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Visitor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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##### Examples of Routine Biosecurity Signs to Place at Site Entrances

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##### Heightened Biosecurity Visitor Sign-in Form

| **Date** | **Time in** | **Time out** | **Visitor’s Name** | **Cell Phone Number** | **Company Name** | **Vehicle Make/Model** | **State and License Plate #** | **Reason for visit** | **How recently have you had contact with other livestock?** | **What foreign country have you visited within the past week?** | **Have you visited *area of concern within the past week*?** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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##### Heightened Biosecurity Visitor Questionnaire Form

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of Visit: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reason for Visit: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Circle one)

|  |  |
| --- | --- |
| 1. Can your visit be postponed? | Yes or No |
| 2. Can your business be conducted off-site or via telephone? | Yes or No |
| 3. Does your visit require viewing or handling the animals at this facility? | Yes or No |
| 4. Have you traveled to the “outbreak area” recently?   * If yes, did you visit a livestock area or have animal contact while there? | Yes or No  Yes or No |
| 5. Have you had contact with livestock within the past week?   * If yes, what species and when? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | Yes or No |
| 6. Will you use the protective clothing (for example, rubber boots) provided? | Yes or No |

Visitor Signature Date

Approval Signature Date

If you answered yes to question #1 or #2, your visit may not be allowed.

If **yes** to question #3 or #4, contact with animals may not be allowed.

If you answered **yes** to question #4 and/or #5, and your visit is deemed necessary, protective clothing must be worn.

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##### Examples of Heightened Biosecurity Signs to Place at Site Entrances



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# Chapter 7: Foreign Travel

**Routine Biosecurity Considerations for Foreign Travel**

Foreign and emerging animal diseases constitute the primary threat to the health of livestock herds. Increases in free market economies and relaxation of restrictions on foreign imports and exports have resulted in animals and animal products moving around the world in unprecedented numbers and at record rates. People are also traveling around the world to increasingly exotic locations.

This increase in world travel and animal traffic elevates the risk of introduction of disease causing organisms to the dairy. Such foreign disease agents are not limited to agricultural areas and can also be encountered at zoos, rural areas, fairs, animal exhibitions, and meat markets. Animals used for transportation and feral animals are also sources of risk.

**Employee notification of foreign travel** requirements exist to make dairy management aware of employee travel prior to departure. Notification provides the opportunity for management to discuss risks and advise employees on biosecurity before departure and to determine when the employee will be allowed to return to work. Require all employees to give notification of employee intent to travel to foreign countries prior to departure. This includes both personal and professional travel, as well as travel to Canada and Mexico. Have employees fill out the provided [Notification of Foreign Travel](#_Notification_of_Foreign_1) form.

U.S. Customs and Border Protection (CBP) enforces a ban on bringing food and other agricultural items into the country in baggage or on person as these items may carry animal and plant pests, and diseases. Remind employees visiting foreign countries of these restrictions before their departure.

**Visitors to foreign countries** may transport diseases back to the United States that can cause major health and economic problems to dairies. Disease organisms may live in soil, manure, animal carcasses or buildings. Some organisms can survive for long periods in moist, shaded locations. Animals that have had a disease may shed the organism for weeks or months after recovery. In many parts of the world, farm animals are found in cities and urban areas, not just in farming areas. Additionally, animals may be used for transportation, may be pets, or may be driven to market (i.e. to a dairy or processing facility).

FEADs are endemic in many parts of the world. For example, FMD is endemic to parts of South America. Visitors to South America could bring the FMD virus onto the dairy thus compromising the United States’ coveted World Organization for Animal Health (OIE) “FMD free” status. An FMD outbreak could devastate the entire dairy operation and the United States economy.

**Shoes** are particularly hard to clean and disinfect. Disease organisms can be brought into the country even if there are no visible signs of debris (e.g., feces) on footwear. Advise employees who plan on visiting agricultural sites to take footwear that can easily be disinfected (e.g., rubber boots). Any footwear worn during foreign travel should be cleaned and disinfected before wearing them on the dairy. See [Chapter 16: Cleaning, Disinfection](#_Chapter_16:_Cleaning_2), and Sanitization for more information.

**Clothing** can also be a source of animal disease. For example, there have been documented cases of travelers bringing screw worm larvae into the United States on clothing. Contact with foreign livestock or farms can potentially contaminate footwear, clothing and equipment with infectious disease agents; thus providing a venue to infect domestic animals.

**Routine Biosecurity Plan for Foreign Travel**

|  |  |
| --- | --- |
| **Signage:** | |
|  | Post a sign marked “If you have traveled outside the United States in the past fourteen (14) days, you may inadvertently transmit a Foreign or Emerging Animal Disease to our dairy. Please call (xxx)xxx-xxxx before entering the premises.” |

|  |  |
| --- | --- |
| **Visitors to Foreign Countries:** | |
|  | Before foreign travel, fill out [Notification of Foreign Travel](#_Notification_of_Foreign_1) form |
|  | Avoid visiting farms, sale barns, fairs, stockyards, zoos and any other animal facilities |
|  | Check the following websites for surveillance information:  <http://www.oie.int/en/alerts-disease-information/>  <http://www.glews.net/disease-events/> |

**Heightened Biosecurity Considerations for Foreign Travel**

Be aware of the disease status (disease alerts, or countries where disease is endemic) of countries where employees and visitors may travel. Disease reporting and investigative systems in some countries may be inadequate, and information is often not up to date. Assume anyone who travels to a foreign country may come into contact with disease organisms.

Ask all visitors and employees to report foreign travel. Check the disease status of the country. Consult your veterinarian and/or state health authority for information about the disease status of a country. Additional resources for learning about active disease outbreaks worldwide are available on the following websites:

* <http://www.oie.int/en/alerts-disease-information/>
* <http://www.glews.net/disease-events/>

Any employees traveling to a high risk FEAD country should be treated with extra caution. Consult with your veterinarian and/or state health authority to determine when an employee who has traveled to a high risk area should be allowed to return to work, and what cleaning and disinfection measures they should undertake.

**Maintain heightened foreign travel protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Foreign Travel**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **At Risk Countries:** | |
|  | Ensure employees are aware of which countries are high FEAD risk areas |
|  | Consult your veterinarian and/or state health authority to determine when an employee who has traveled to an at risk area should be allowed to return to work |

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##### Notification of Foreign Travel

1. **Background:** 
   1. Travel outside of the United States is a matter of biosecurity interest to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dairy. Such travel includes points in Canada, the Caribbean, and Mexico as well as more distant places.
2. **Foreign Travel Briefing Information:**

As you prepare to travel outside the United States, you may find yourself visiting sites such as fairs and zoos, agriculture production areas including family farms, and other areas which might bring you into contact with Foreign and Emerging Animal Diseases (FEAD). The following tips and rules are provided to prevent you from placing the cattle at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dairy at risk.

* 1. Be aware that there are many diseases in addition to Foot and Mouth Disease (FMD) that can cause major health and economic problems to dairies. In many parts of the world, farm animals are often found in cities and urban areas, not just in farming areas. They may be used for transportation, they may be pets, or they may be in the process of being herded or driven to market.
  2. Many animal diseases can also cause disease in humans (zoonosis). Avoid touching or handling wild animals and be sure to wash hands thoroughly if you do come into contact with an animal. Be sure to only eat food that has been thoroughly cooked.
  3. Just because no major disease is in the news in the area to be visited, does not mean that the disease is not present. Disease organisms may live in the soil, manure, animal carcasses or buildings. They may survive for very long periods in moist, shaded locations. Animals that have had a disease may shed the organism for weeks or months after they recover themselves.
  4. Avoid visiting farms, sale barns, fairs, stockyards, zoos and any other animal facility.
  5. Educate yourself about any animal disease outbreaks in the area you plan on traveling to. The following websites contain surveillance information:
* <http://www.oie.int/en/alerts-disease-information/>
* <http://www.glews.net/disease-events/>
* <http://www.cfsph.iastate.edu/DiseaseInfo/index.php> (click on a disease to find distribution maps and news reports)
  1. If visiting a high risk for FEAD country, work with dairy management, a veterinarian, and/or state health authority to determine when it is safe to return to work.
  2. Before traveling to a high risk for FEAD country:
* Take footwear that can easily be disinfected (e.g., rubber boots)
* Take inexpensive, easily washed clothes

1. While in country:

* Use boots and coveralls while in the animal area, and change clothes immediately upon leaving the animal area
* Disinfect equipment and boots often
* Remove organic matter (dirt, manure) from luggage, cameras, cell phones and other personal items before returning to the United States
* Place all clothing and shoes in plastic bags before packing in your luggage

1. When you return from foreign travel:

* Any footwear worn during foreign travel should be cleaned and disinfected before wearing on the dairy
* Wash all clothing (including boots and hats) before returning to the diary
* Do not bring plant or animal products into the United States. This includes all types of food items, including canned foods
* Do not bring equipment used around foreign livestock or poultry into the United States

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| Name of Traveler (Printed) | | |  | | |
|  | | | |  |  |
| Signature of Traveler | | | |  | Date |
|  |  |  | |  |  |
| Name of Dairy Manager |  | Signature of Dairy Manager | |  | Date |

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# Chapter 8: Movement On and Off the Property

**Routine Biosecurity Considerations for Movement On and Off the Property**

Dairies are busy places with many employees and vehicles entering and leaving on a daily basis. Employees and contractors (e.g., haulers of milk, feed, and manure, electricians, parlor equipment servicers etc.) routinely travel through all areas of the dairy and may have access to many animals. Any movement on, off, or through the operation has the potential to transmit disease to and between cows.

**Visitor** **movement** documentation may be difficult, but it is a recommended biosecurity practice. [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) of this guide addresses visitor control and documentation, but most dairies do not include employees, parlor equipment servicers, and truck drivers in record keeping. Keep track of all products, vehicles, and people who come into contact with livestock, and require truck drivers, and all vendors to sign-in at the front office or check-in with the night watchman. Records of all people and product movement are essential for traceback in the event of an outbreak.

**Vehicles** present an opportunity for transportation of pathogens and delivery to susceptible animals. Require employees and all personnel (veterinarians, delivery, and service representatives) to sign-in (See [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) for more information). If vendors drive onto the facility, ensure their drive path is as far from animals as possible. If possible, designate lanes by functions so that, for example, milk hauler trucks do not drive the same paths as manure hauler lanes. Additionally, request that trucks are periodically cleaned at a commercial truck washing facility. Soiled vehicles should be restricted from driving near housing areas. For information on available truck washes on a state-by-state basis, visit the [National Biosecurity Resource Center for Animal Health Emergencies](http://www.biosecuritycenter.org/truckwash.php) website.

**Designated parking areas** should belocated onthe perimeter of the operation to prevent potential pathogen spread. Post signs directing visitors to the designated parking area. If visitors drive personal vehicles on the dairy, ensure their drive path is away from milk and feed storage areas and animal housing.

**Designate a limited access staging area** on the perimeter of the property, where equipment can be left for servicing and deadstock can be taken for pick-up if off-site disposal is utilized. Locate deadstock staging areas out of sight from main roadways and neighboring properties.

**Animal movement** is also a busy part of dairy operations. Strive to maintain clean transit areas that are free from manure and debris. Do not allow off-site vehicle paths to cross animal movement lanes. Ensure that all cow transfer alleys or return lanes are cleaned regularly. Animal transfer alleys should not cross vehicle movement pathways.

**Animal delivery/loadout facilities** should be located to prevent the crossing of animal lanes with other commodity movement. New arrivals should be placed in a quarantine area for 30 days before allowing contact with animals already on the farm. The quarantine area should be separated from other cattle.

Maintain parking and load-out areas with gravel, asphalt or concrete surfaces. Adequate drainage away from animal housing ensures that run-off, potentially containing contamination, is kept away from animal. Additional precautions can also be taken, such as providing a wash-down facility and/or a tire washing area with a disinfectant.

**Rendering** of carcasses is a common disposal method for many dairies. Rendering is frequently managed by a business independent of the dairy and often includes a “pickup” service. Because renderers pick up deadstock from multiple locations, there is a high biosecurity threat associated with these vehicles. Direct renderer’s trucks to a predetermined location; preferably at the edge of the facility away from main traffic areas and feeding or live animal areas.

**Composting and burial** are also acceptable methods for managing deadstock. Consult trained composting experts and soil engineers before undertaking these types of disposal methods. Ensure that compost windrows are well maintained. Prevent animals (wild, working, and other cows) from coming into contact with deadstock and disposal areas. Locate disposal areas away from cows and traffic areas.

**Human foot traffic** also poses a disease risk. [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) of this guide contains specific information about visitor control. Prevent any unnecessary direct contact between visitors and animals. To the extent possible, have employees work from the outside of animal housing. Prevent visitors from walking through feces, and urine. Soiled footwear can spread contamination to other areas.

Consider requiring all visitors to wear clean coveralls and overboots to protect cows from potential pathogens that may survive on visitor’s clothing or shoes. Alternatively, a boot bath may be installed at the main entrance with a requirement that all visitors disinfect their footwear. For more information on boot baths see [Chapter 16: Cleaning, Disinfection and Sanitization](#_Chapter_16:_Cleaning_2).

**Routine Biosecurity Plan for Movement On and Off the Property**

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| **Visitor Movement:** | |
| ☐ | Keep records of everyone entering the dairy  ☐ Employees (contract crews, veterinarians etc.)  ☐ Delivery Trucks  ☐ Visitors (sales people, friends, and family) |

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| **Vehicles and Equipment:** | |
| ☐ | Ensure staff is aware of the potential for introduction and transmission of disease by visiting vehicles, machinery and equipment |
| ☐ | Do not share equipment or vehicles between dairies and/or calf/heifer raisers  ☐ If equipment must be shared, remove all manure, wash equipment with warm water and soap, rinse, and disinfect. Rinse again before using equipment with animals from the dairy |
| ☐ | Ensure vehicles, machinery and equipment entering the dairy area are directed to specified locations and delivery areas within the operation |
| ☐ | Limit movement of non-dairy vehicles, machinery and equipment to areas of the operations beyond the specified delivery areas |

| **Designated Parking Area:** | |
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| ☐ | Designate visitor parking areas located on the perimeter of the dairy away from animals and loading areas |
| ☐ | Ensure the parking area has adequate drainage that flows away from the animal housing to prevent contamination |

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| **Animal Delivery/Loadout Facilities:** | |
| ☐ | Keep delivery alleys free of debris and animal waste |
| ☐ | Clean all transport trucks and trailers regularly |
| ☐ | Maintain parking and load-out areas with gravel, asphalt or concrete surfaces |
| ☐ | Ensure adequate drainage away from animal housing so that potentially contaminated runoff is kept away from animals |
| ☐ | Provide a wash-down facility and/or a tire washing area with a disinfectant. |

| **Deadstock Management:** | |
| --- | --- |
| ☐ | Establish a dead animal pickup point away from animal areas and not in dairy vehicle traffic patterns  Chose a location that:  ☐ Allows for pick-up without vehicle movement through feeding lanes or animal housing areas  ☐ Is clearly marked  ☐ Is located along the perimeter of the dairy  ☐ Is out of sight from main roadways, visitor parking and neighboring properties |
| ☐ | Communicate location of deadstock to drivers ahead of scheduled pick-up |
| ☐ | If choosing an onsite disposal method, consult trained experts  ☐ Soil hydrologist  ☐ Compost expert |
| ☐ | Obtain any necessary permits for on-site disposal methods |
| ☐ | Prevent animals from coming into contact with deadstock |
| ☐ | Prevent animals from disturbing compost piles or digging in burial pits |

| **Human Foot Traffic:** | |
| --- | --- |
| ☐ | Inform employees of the potential for introduction and transmission of disease by visitors |
| ☐ | Ensure all visitors entering the operation are directed to a designated meeting place away from the main dairy area before access is allowed |
| ☐ | Control the access of visitors to the cow pen and parlor areas |
| ☐ | Install footbaths so that visitors have to disinfect their boots before and after walking through animal areas |

**Heightened Biosecurity Plan for Movement On and Off Property**

If there is a confirmed FEAD outbreak in the United States, state and federal regulations restricting movement, increasing surveillance, testing, and reporting requirements may go into effect. Within 48 hours of the identification of the Index Case, the USDA will implement a surveillance plan which helps: 1) define the extent of the FEAD outbreak, 2) identify Infected Premises, 3) identify new cases quickly through a combination of observation and laboratory testing, and 4) identify Disease-Free Zones. Once a dairy, region, state, or country is established as a Disease-Free Zone, movement restrictions and disease monitoring requirements lessen, easing the response effort in that area.

**Quarantine and movement control measures** may be put in place to stop the spread of disease if an FEAD outbreak occurs within the United States. These quarantine and movement controls will define Infected Zone(s*)*, Buffer Zone(s), Control Area(s), and biosecurity procedures to protect non-infected animals. [Figure 8.1](#_Figure_8.1_Example) from the Foreign Animal Disease Preparedness and Response Plan (FAD PReP) Foot and Mouth Disease Response Plan, illustrates an example of the zones and premises.



#### Figure 8.1 Example Illustrations of Zones and Premises

Do not move susceptible animals from outside an Infected Zone into or through an Infected Zone unless they are going to slaughter and the nearest facility is inside the Infected Zone. To ensure any product from an infected or exposed animal is properly disposed of, and any suspect product is detained, quarantine and movement controls will be imposed on such products. Permits may be required to move livestock into, within and out of a Control Area. Reroute livestock conveyances prior to reaching the Infected Zone.

Even if movement restrictions do not directly impact operations (i.e., if the dairy is located outside of the Control Area), restrictions may make the purchase, sale, and shipment of animals, milk, and feed difficult. Practice proper biosecurity measures by developing a livestock routing plan with commodity transporters to ensure Control Areas are avoided.

**Live animals** are the greatest risk for introducing or spreading disease during an outbreak. Movement of calves off uninfected dairy premises for rearing at a calf nursery/ranch/heifer raiser may be halted during a FEAD outbreak. Plan for the temporary feeding and care of calves on the dairy and ensure adequate housing, protection from the elements, and appropriate feedstuffs are available. Prior to an event, dairy operations should establish contacts with calf ranches/heifer raisers in the immediate area so that cleaned and disinfected housing units, feed, and water bottles and buckets, and treatment equipment can be acquired/rented/shared. Identify suppliers of this equipment if heifer ranches are not located near the dairy operation.

Movement of animals to pasture or to different locations owned by the same operator may be halted during a highly contagious FEAD event. Likewise, pre-fresh heifers and dry cows may not be able to move back to the home dairy. Operations and their animals located in two different response zones may be unable to move animals for a period of time. Provisions for the care and feeding of these animals groups must be considered. Preparedness plans at the local level should include emergency sheltering options for dairy animals in case of a disease outbreak.

**Animals in transit** present a difficult issue in the event of a FEAD outbreak. When a highly contagious FEAD is first discovered in the United States, state or federal animal health officials may issue an immediate restricted or stop movement order. Establish driving routes that minimize potential disease exposure, while accounting for the welfare of the animals, to lower risk and improve safety. Federal and state mandates will be issued and must be followed for dairy owners to receive compensation for animal losses. Animals in transit will still need care and feed. Dairies may be asked to temporarily hold animals during a stop movement order.

**Feeding** during a disease response can become an issue. Ascertain the on-farm inventory of feed along with the rate at which it will be depleted in order to determine when more feed will be needed. Plan ahead for alternate feed sources and delivery routes before the situation arises. Maintain records of the feed delivery, the date, and amount.

Should feed delivery be delayed for an extended period of time, alterations in normal feeding regimens should occur gradually to prevent cows/calves going off feed. Farms with their own silage and dry hay supply can still meet the maintenance needs of cattle without purchased feed, but milk production will decrease. For pre-weaned calves on farm, whole milk may be a viable option if purchased feed supplies are unattainable for a period of time.

**Vehicles** **and equipment** (including milk tank trucks) pose a serious threat during heightened biosecurity operations. Clean all dairy vehicles and equipment regularly, preferably after each use. If possible, consider providing a wheel wash facility for any vehicle coming onto the dairy. Wheel washing will help prevent contamination from milk and feed delivery vehicles or employee trucks thereby reducing the risk of infecting the animals (see [Chapter 16: Cleaning, Disinfection](#_Chapter_16:_Cleaning_2) and Sanitization for more information). Park non-essential vehicles off-site. Document the movement of people and vehicles at the facility during a disease outbreak. Refer to [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) for an example of a sign-in form that can be used to track the movement of vehicles.

Feed, animal, and milk haulers should have no direct contact with dairy personnel or animals already resident. Their routes should be designed to be as far away from animal housing and animal traffic areas as possible. This will limit the potential spread onto and off of the dairy.

**Milk tank trucks** should only drive across lanes that have been effectively cleaned and disinfected prior to tanker transit. Ensure milk haulers wear protective outerwear and clean footwear on their routes. Keep a supply of protective wear (boots, gloves) to provide hauler’s in case their supply runs out. Protective outwear and footwear should be put on before the milk hauler leaves the truck and steps onto the dairy.

**Animal transport trucks** **and trailers** should be cleaned regularly, preferably after each use. Clean the outside and undercarriage, as well as the interior of animal trailers. If animals are still being transported onto and/or off of the dairy clean the livestock trailer between every load.

**Mortalities** may be much higher than normal during a FEAD outbreak. This can be directly from disease, from normal culling practices, or from utilizing culling of animals as a means to control the outbreak. Plans for heightened biosecurity operations should address the possibility that the dairy may have to dispose of high numbers of carcasses. Work with local, state, and federal responders to coordinate the disposal of animals located at the dairy when an outbreak is underway.

Many dairies rely on renderers to handle their routine mortalities. In heightened biosecurity operations renderers may be reluctant to process any animals due to concerns of potential contamination. Conversely, renderers may be called in to help with the processing of diseased carcasses as part of the ongoing response to an outbreak. In either case, it may be necessary to develop an alternative carcass management plan to handle routine mortalities during heighten biosecurity operations. Depending on the number of mortalities, and the amount and type of land available at the dairy it may be possible to dispose of some animals on-site via composting or burial. Dairy managers should know how much of their land is suitable for on-site disposal and roughly how many carcasses can be managed on-site (see the FAD PReP, Standard Operating Procedures: 14. Disposal, DRAFT 2012 for more information).

Transportation of large numbers of infected carcasses to an off-site location for disposal may be required. If so, specialized transport vehicles will be needed to transport items (carcasses, other materials) to the disposal site whether it is on or off the premises. If waste must travel on public roads, transport it in closed, leak-proof trucks or dumpsters. Secondary containment may be needed, depending on the type of waste being transported. Consult a qualified waste management professional to determine what disposal options and capacities are available locally. Follow local, state and federal guidance on the transportation of infected carcasses.

Consult the TAHC and see the following for more information:

FAD PReP, Standard Operating Procedures: 14. Disposal, DRAFT 2012.

US Environmental Protection Agency (USEPA) [guidance on hazardous waste](http://www.epa.gov/osw/hazard/wastetypes/wasteid/index.htm)

Texas Occupations Code, §801.361, Disposal of Animal Remains

Texas Commission on Environmental Quality. RG-419, Disposal of Domestic or Exotic Livestock Carcasses, 2005.

**Maintain heightened movement protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Movement On and Off the Property**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

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| **Quarantine and Movement Control Measures:** | |
| ☐ | Ensure Risk Communication Strategy (see [Chapter 4: Crisis and Risk Communications](#_Chapter_4:_Crisis)) contains a plan for communicating movement restrictions |
| ☐ | Ensure vehicles, equipment, and animals coming onto the dairy have not recently been to a FEAD control area |
| ☐ | Ensure movement of vehicles, equipment, and animals coming to the dairy have a route plan that avoids control areas |

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| **Live Animals:** | |
| ☐ | Develop plans for the continued feeding and care of animals during a stop movement order |
| ☐ | Contact calf ranches/heifer raisers in the immediate area to arrange for acquiring/renting/sharing of clean and disinfected housing units for calves unable to leave the dairy |
| ☐ | Identify suppliers of this equipment if heifer ranches/raisers are not located near the dairy operation. |

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| **Animals in Transit:** | |
| ☐ | Work with transport companies to establish driving routes that minimize potential disease exposure and are not affected by stop movement orders |
| ☐ | Keep records of the routes followed in order to be able to trace the movement of all animals at the dairy |
| ☐ | Consider delivering animals to an alternative location until their disease status can be determined |

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| **Feeding** | |
| ☐ | Determine dairy feed inventory and depletion rate |
| ☐ | Maintain a list of alternate feed sources and delivery routes |
| ☐ | Maintain records of the feed delivery, the date, and amount |
| ☐ | Implement alteration in feeding regimens gradually |

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| **Vehicles** **and Equipment (including milk tank trucks):** | |
| ☐ | Clean all transport trucks and trailers regularly, preferably after each use  ☐ Ensure cleaning includes the outside and undercarriage as well as the interior of the trailer |
| ☐ | Provide a wash-down facility and/or a tire washing area with disinfectant |

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| **Milk Tank Trucks:** | |
| ☐ | Do not allow trucks to drive across animals transfer alleys |
| ☐ | Do not allow trucks to drive across a visibly manure-contaminated cow path  ☐ If the cow path area cannot be effectively cleaned and disinfected prior to tanker transit of that area; an alternative route to pick up milk on farm should be pre-planned to avoid skipped pickup. |
| ☐ | Ensure milk haulers wear protective outerwear and keep clean footwear with them on their routes. |
| ☐ | Keep a supply of protective wear (boots, gloves) to provide hauler’s in case their supply runs out. |
| ☐ | Protective outwear and footwear should be put on before the milk hauler leaves the truck and steps onto the dairy. |

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| **Mortalities:** | |
| ☐ | Evaluate the mortality management plan for the possibility of higher than normal mortalities  ☐ Determine what, if any, land is available on-site for composting or burial  ☐ Consult a qualified waste management professional to determine what off-site carcass disposal options are available |
| ☐ | If rendering is used to manage routine mortalities:  ☐ Consult with rendering company to determine if there may be a disruption to this service  ☐ Determine if modifications to the pick-up location need to be made in order to limit the entry/movement of high risk rendering trucks on the dairy |
| ☐ | Determine if temporary alternative carcass management plans need to be implemented due to lack of availability or disruption of routine systems |
|  | Determine if temporary alternative carcass management plans need to be implemented due to lack of availability or disruption of routine systems |

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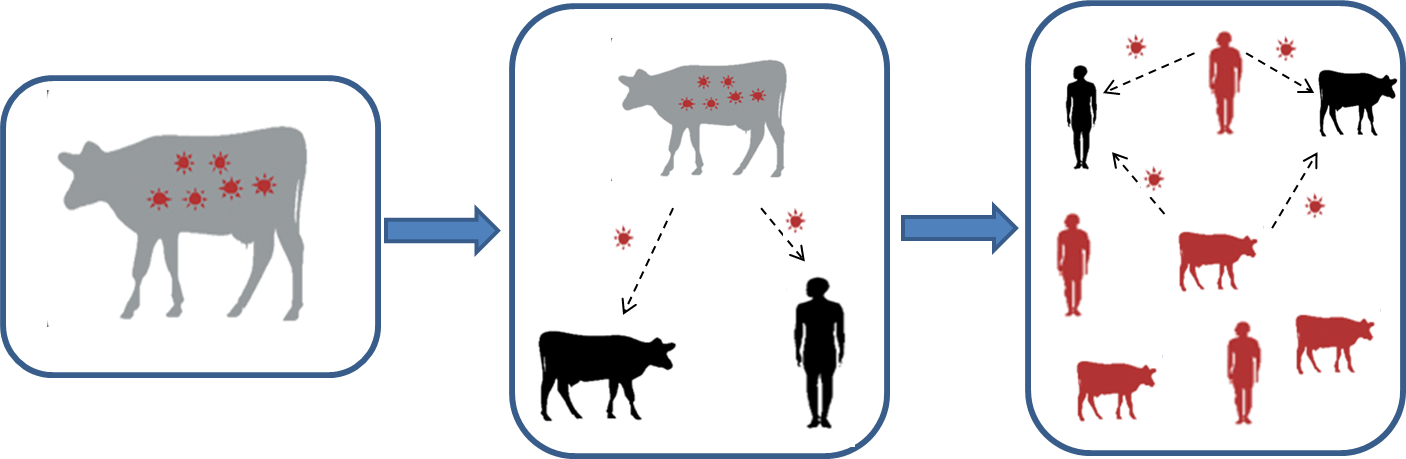
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# Chapter 9: Zoonotic Diseases

**Routine Biosecurity Considerations for Zoonotic Diseases**

Zoonotic diseases are diseases transmitted from animals to humans and vice versa. As shown in [Figure 9.1](#_Figure_9.1_–), cows can transmit disease to other cows or humans. Once infected, humans can transmit disease to other humans or other cows. Zoonotic diseases have the ability to spread quickly through a dairy if good biosecurity measures are not in place.



#### Figure 9.1 – Zoonotic Disease Model

Cows may be a source of several zoonotic diseases that can cause severe illness in humans. It is important that people working with cows have a basic understanding and awareness of the clinical signs of the disease as well as appropriate precautions and actions needed to prevent each disease. Some of these diseases also have the potential to be used in bioterrorist activities. Good biosecurity and personal hygiene practices reduce the risk of human illness. More information on specific diseases can be found in [Annex A](#AppendixA).

**Immunocompromised individuals** have an increased risk for contracting disease. These individuals include pregnant women, chemotherapy patients, organ transplant recipients, persons with HIV/AIDS, and people with chronic diseases such as diabetes, among others. Individuals with compromised immune systems may choose not to disclose medical conditions to employers. Educating workers on how to prevent transmission of zoonotic diseases will help reduce the risk of infection among those with compromised immune systems.

**Age** also increases the risk of contracting a zoonotic disease. Children under the age of five, and the elderly are at particular risk. While there is no physiological definition of when a person is “older” or “elderly,” it is known that the immune system does not function as efficiently in older adults as it does in younger people. Illness may be more difficult to fight in this population, making prevention even more important.

**Immigrant workers** often come from countries with a higher prevalence of diseases resulting in compromised immune systems causing greater susceptibility to infection. Language barriers may cause miscommunication about risk of exposure. Work with knowledgeable translators to communicate the transmission methods and risk of exposure to zoonotic diseases. Keeping workers informed about zoonotic diseases will reduce the risk of infection.

**Veterinarians** possess the most knowledge and are a dairy’s primary source of information on zoonotic diseases. Work with veterinarians to educate workers on the risk factors and methods of transmission of zoonotic diseases. Veterinarians and employers must share in the responsibility of education about zoonotic disease.

While the possibility of exposure and transmission of zoonotic diseases from animals to people cannot be totally eliminated, it can be minimized.

**Routine Biosecurity Plan for Zoonotic Disease**

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| **Awareness Education:** | |
| ☐ | Work with your veterinarian or livestock extension specialists to get accurate and up-to-date information about zoonotic diseases |
| ☐ | Educate anyone who works with animals about zoonotic disease risks |
| ☐ | Provide information in both English and other primary languages (e.g., Spanish) as appropriate |
| ☐ | Provide zoonotic disease educational materials in employee hiring packet |
| ☐ | Post information for employees and visitors:  ☐ Define immunocompromised and list diseases or medical conditions that compromise immune systems  ☐ Speak proactively with employees regarding animal handling guidelines and recommendations  ☐ Provide handouts/brochures on zoonoses with resources for further information |

| **Personal Hygiene:** | |
| --- | --- |
| ☐ | Provide hand washing facilities with warm running water, soap, and clean towels and locate them next to animal contact areas |
| ☐ | Post signs reminding staff to wash hands after handling animals |
| ☐ | Check soap and towels, and replenish as necessary |
| ☐ | Remind staff to wear disposable gloves when possible |
| ☐ | Keep employee eating and break areas separate from animal handling areas as well as other potentially contaminated environments |
| ☐ | Ask workers to designate clothing for work and change after handling animals |

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| **Personal Protective Equipment:** | |
| ☐ | Provide employees with:  ☐ Gloves,  ☐ Coveralls,  ☐ Boots  ☐ Masks  ☐ Goggles |

**Heightened Biosecurity Considerations for Zoonotic Diseases**

Enact heightened biosecurity measures when there is a threat of a specific zoonotic disease. Not all diseases are zoonotic, and if the disease is not a risk to human health (for example FMD), there is no reason to implement the measures recommended in this section. Identify actions needed to protect employees, visitors, and families in the event there is increased risk for a zoonotic disease outbreak. For more information, please see the *FAD PReP/NAHEMS Guidelines: Health and Safety (2011)* and *PPE (2011)*.

**Zoonotic risk** is not the same as biosecurity risk. Some diseases can pose a significant health risk to humans, but are not a significant risk to cow health or are not highly contagious. *E. coli* 0157:H7 is an example of a high zoonotic risk, but low biosecurity risk. Conversely, some diseases like FMD are a high biosecurity risk, but are not a zoonotic risk.

**Route of transmission** is important in determining what protective measures to implement to protect humans from contracting disease. [Table 9.2](#_Table_9.2_–) below lists some cow diseases that are zoonotic. [Annex A](#AppendixA) contains information about how these diseases are transmitted and [Annex B](#AppendixB) lists additional information on selected diseases. The recommended measures in the heightened biosecurity plan are separated by route of transmission. In a heightened zoonotic disease situation, implement plan measures warranted by the nature of the disease of concern.

For more details see the [Center for Food Security and Public Health](http://www.cfsph.iastate.edu/DiseaseInfo/index.php?lang=en) disease information website.

#### Table 9.2 – Zoonotic diseases affecting calves

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| Diseases Present in U.S. | | FEADs |
| Anthrax  Brucellosis  *E. coli*  Giardia  Leptospirosis  Listeriosis | Pseudocowpox  Rabies  Ringworm  *Salmonella*  Tuberculosis  Q fever | Crimean Congo Hemorrhagic Fever  Japanese Encephalitis  Melioidosis  Rift Valley Fever  Screwworm |

**Personnel Protective Equipment (PPE)** such as coveralls and gloves must be worn by personnel handling animals, tissues, and fluids. If an FEAD is zoonotic, enhanced PPE may include goggles and a full face shield. When aerosolization is a route for human exposure, an appropriate respirator (N-95 or N-99) should also be worn. See the *FAD PReP/NAHEMS Guidelines: Personal Protective Equipment (2011)* and associated Standard Operating Procedures (SOP) for more information.

**Maintain heightened zoonotic disease protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Zoonotic Disease**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Surveillance:** | |
| ☐ | Inform all employees of the risk of contracting disease and the signs and symptoms of disease in humans |
| ☐ | Instruct employees to report all signs and symptoms of disease in themselves and their family members and close contacts |

*Implement the following measures**as necessary based upon the transmission route of the disease of concern.*

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| **Aerosol Transmission:** | |
| ☐ | Implement a dust control plan |
| ☐ | Inform employees that contaminated soil can be a source of zoonotic disease |
| ☐ | Require employees to wear an N-95 or N-99 mask when handling infectious animals or their tissues and bodily secretions |
| ☐ | Require employees to wear a respirator when power washing |

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| **Vector Transmission:** | |
| ☐ | See [Chapter 15: Vector Control](#_Chapter_15:_Vector_1) for recommended measures for vector control |

| **Direct Contact/Fomite Transmission:** | |
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| ☐ | Implement the following policies regarding boots:  ☐ Require clean boots in animal areas  ☐ Provide a boot bath or wash bucket and brush at the entrance/exit for ease of cleaning or replace with a trashcan and utilize plastic boot covers.  ☐ Wash hands after removing boots |
| ☐ | Implement the following policies regarding gloves:  ☐ Wear gloves when working with animals with sick or unknown health status  ☐ Wash hands after removing gloves |
| ☐ | Implement the following policies regarding clothing:  ☐ Require clean coveralls be worn in animal areas  ☐ Restrict work/farm clothing from being worn outside facility  ☐ Provide laundry/uniform service or on-site laundry facilities for employees |
| ☐ | Clean equipment after each use |
| For more information, see [Chapter 16: Cleaning, Disinfection, and Sanitization](#_Chapter_16:_Cleaning_2) | |

| **Oral Transmission:** | |
| --- | --- |
| ☐ | Employ a manure management plan |
| ☐ | Wear gloves and a mask or respirator when handling manure |
|  | Do not allow employees to eat, drink or use tobacco products outside of a designated area |
| ☐ | Prevent manure from contaminating drinking water |
| ☐ | Remind staff to maintain good personal hygiene |
| ☐ | Remind staff to wash hands after animal contact, before eating, and drinking |

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Chapter 6: Visitor Control

Chapter 7: Foreign Travel

Chapter 8: Movement On and Off the Property

Chapter 9: Zoonotic Diseases

**Chapter 10: Record Keeping**

Chapter 11: Animal Handling and Contact

Chapter 12: Disease Detection and Surveillance

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Chapter 14: Physical Security

Chapter 15: Vector Control

Chapter 16: Cleaning, Disinfection, and Sanitization

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# Chapter 10: Record Keeping

**Routine Biosecurity Considerations for Record Keeping**

Record keeping is a key component in maintaining routine biosecurity on a dairy. There are several software programs designed specifically for maintaining records at dairy operations; however, pen and paper can be an effective record keeping system as well. Dairies need to keep records of the business operations that pertain to biosecurity, including: 1) products and inventory, 2) animal identification, 3) treatment records, 4) animal purchase, sale or transfer and 5) personnel contact and vehicle information and 6) visitor sign-in forms. Keep records in a uniform manner and update as needed, or anytime animals are treated.

**Product and inventory** records are essential for biosecurity purposes. Maintain a record of product lot or serial numbers in case of a manufacturer’s recall or adverse reaction. This will help identify both the tainted products and the animals that were administered the product. Keep records of product inventory and use products before expiration date. Maintain an inventory of keys for doors and locks, and utilize a storage area access log to keep track of personnel who have access to pharmaceuticals, biological specimens, additives, and hazardous materials. Limit the potential for sabotage by only allowing authorized personnel access to storage areas and use the [Animal Health Products Inventory Form,](#_Animal_Health_Products_1) [Storage Area Access Log](#_Storage_Area_Access), and the [Door or Lock Key Inventory Form](#_Door_or_Lock_2).

**Semen and/or embryos** are biological specimens that can potentially transmit a highly contagious FEAD to animals through direct reproductive contact. Keep records of all semen and embryos brought onto the facility and include the date, specimen type, origin, method of delivery, date inseminated, and inseminator’s name.

**Animal identification** is essential for disease tracking and helps reduce the number of animals that need to be investigated, the time needed to respond, and decreases the cost to producers and the government. Individual tagging of animals is the best means of facilitating disease tracing. If animals are received; record the identification number, birth date, breed, sex, source, and the trucking company used for transport on the [Animal Receiving Log](#_Cattle_Receiving_Log). Keep these records for at least five years.

**Animal treatment records** help identify the origin and extent of a disease outbreak. It is important to routinely record all illness, procedures and treatment of animals because outbreaks may not be recognized in the earliest stages. Maintain thorough animal health records to assist the veterinarian in making recommendations or adjusting treatment protocols. Use the [Animal Health Record Form](#_Animal_Health_Record_1) when dispensing veterinary pharmaceuticals, performing routine procedures (such as castration or dehorning) and/or administering treatment.

**Purchase, sale, or transfer of cattle** records are also necessary for disease traceability. Many cattle diseases, such as bovine tuberculosis (bTB), may go undetected for an indefinite period of time. Maintain purchase, sale and transfer records for at least five years, so the animal’s origin and dates of possession can be determined. Record the transfer of animals within the facility and animal movement history on the [Cattle Movement Record](#_Employee_Training_Log_1) to aid in disease outbreak investigations.

**Vehicle and contact information** of all visitors and employees that access the facility will facilitate timely determination of exposure to an outbreak. In an outbreak of a highly contagious zoonotic disease outbreak, public health officials may recommend performing diagnostic testing on personnel and visitors. Maintaining current contact information for employees and visitors are essential for surveillance measures. Record the contact and vehicle information for all visitors, haulers, technicians, delivery, sales, and service representatives on the [Visitor Sign-In Form](#_Routine_Biosecurity_Visitor_2) in [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1). See [Chapter 3: Employee Policies](#_Chapter_2:_Physical) for the [Employee Biosecurity Information Form](#_Employee_Biosecurity_Information).

**Employee training** on topics such as how to recognize signs and symptoms of disease, and required roles and responsibilities during a heightened biosecurity event is important. Distribute an [Employee Training Log](#_Employee_Training_Log) to employees to record training attendance. Maintain records to ensure personnel are educated on matters pertinent to facility biosecurity. For more information about training, see [[Chapter 3: Employee Policies](#_Chapter_2:_Physical).](#_Chapter_7:_Employee_1)

**Routine Biosecurity Plan for Record Keeping**

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| **Animal Identification:** | |
|  | If applicable, upon receipt of animals either purchased or returning back to the facility, record the:  Animal ID (ear tag information)  Age/Date of Birth  Breed  Sex  Source/Origin  Trucking company used for transport  See [Animal Receiving Log](#_Cattle_Receiving_Log) for an example |
|  | Maintain records for a minimum of 5 years |

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| **Inventory Security:** | |
|  | Inventory pharmaceuticals, hazardous materials, chemicals, and feed additives. When shipments are received, record the:  Date  Quantity  Supplier/Distributer  Product name  Lot/Serial number  Expiration date  See [Animal Health Products Inventory Form](#_Animal_Health_Products_1) for an example |
|  | Maintain an access log for product, and ingredient storage areas and require employees to sign-in when accessing the storage facility or area where hazardous materials, biological specimens, feed ingredients, pharmaceuticals and pesticides are stored  See [Storage Area Access Log](#_Pharmaceuticals_and_Hazardous_1) for an example |

| **Semen and Embryos:** | |
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|  | Semen and embryo records will contain the following information:  Date received  Specimen type  Origin  Method of delivery (mail, truck, etc.)  Name of delivery person  Destination/Cow ID  Date inseminated or implanted  Inseminator’s name |
|  | Keep records of semen and embryos for at least 5 years from the date of transfer or sale of animal(s) |
| See [Biological Specimen Record](#_Biological_Specimen_Record) for example | |

| **Animal Treatment Records:** | |
| --- | --- |
|  | Keep records of animal treatment for at least 5 years from the date of transfer or sale of animal(s) |
|  | Store paper records in a fire-proof safe or electronically off-site |
|  | Treatment records will contain the following information:  Animal identification  Treatment date  Diagnosis and associated treatment  Procedure Performed  Product administered (include manufacturer)  Product lot/serial number  Dose given  Route of administration (Intramuscular, Subcutaneous, etc.)  Location of injections  Earliest date the animal could clear withdrawal time  Name or initials of person who administered the drug, provided treatment or performed the procedure |
| See [Animal Health Record Form](#_Animal_Health_Record_1) for example | |

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| **Purchase, Transfer or Sale of Cattle:** | |
|  | Keep records and store at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. for at least 5 years from the date of transfer of animals |
| See [Animal Movement Record](#_Employee_Training_Log_1) for example | |

| **Vehicle and Contact Information:** | |
| --- | --- |
| ☐ | Keep contact information of all facility personnel and associated personal vehicles |
| ☐ | Keep personnel records up-to-date and retain for at least 5 years from date of employee separation |
| ☐ | Keep a log of all visitors to the facility by requiring visitors to sign-in at the office |
| ☐ | Keep a log of delivery vehicles and service or sales representative visits by requiring drivers and representatives to sign-in at the office |
| See [Visitor Sign-in Form](#_Routine_Biosecurity_Visitor_2) in [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) and [Employee Biosecurity Information Form](#_Employee_Biosecurity_Information) in [Chapter 3: Employee Policies](#_Chapter_2:_Physical) for examples | |

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| **Personnel Training:** | |
| ☐ | Require employees to sign-in when receiving training or education, store copies of training log at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| See [Employee Training Log](#_Employee_Training_Log) as an example | |

**Heightened Biosecurity Considerations for Record Keeping**

If there is a suspected or confirmed FEAD outbreak in the United States, state and federal regulations can result in increased reporting requirements. Keeping accurate and comprehensive records as part of routine record keeping is essential during an outbreak to facilitate tracing of animals and possible exposure to disease. Routine records can assist management in identifying visitors, personnel, feed, products, equipment and vehicles in the event of a heightened biosecurity situation. Movement records of animals, visitors and personnel may be required to verify or exclude exposure to disease.

**Animal identification and traceability** play a key role in surveillance, control, eradication, and continuity of business. Maintaining records of animal origin as part of routine record keeping will help expedite disease investigations. See Routine Biosecurity Considerations for Record Keeping for additional information.

**Animal treatment records** are especially important during disease outbreaks. Keep accurate treatment and vaccination records during an outbreak situation because proof of negative disease status or vaccination may be required.

**Semen and/or embryos** records will assist with disease traceability in the event of a disease outbreak caused by an infected specimen. Keep routine records of all semen and embryos brought onto the facility to assist with confirming exposure and surveillance measures.

**Animal purchase, sale or transfer of cattle records** are important to help eliminate or confirm exposure to a disease outbreak. Keep routine records of cattle purchase, sale, transfer and movement, including origin and the trucking company used for transport.

**Vehicle and contact information** for all facility visitors and employees can trace exposure to disease. Recording vehicles that access the facility can help exclude or confirm exposure to disease. In the event of an outbreak, require visitors to disclose recent travel by completing the [Heightened Biosecurity Visitor Sign-In Form](#_Heightened_Biosecurity_Visitor_2) found in [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1). Public health officials may recommend performing diagnostic testing on personnel and visitors in the event of a zoonotic disease. Maintaining current contact information for employees and retaining visitor logs is essential for surveillance measures. See [Chapter 3: Employee Policies](#_Chapter_2:_Physical) for employee forms.

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Record Keeping**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

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| **Animal Identification:** | |
|  | In the event of a heightened biosecurity animal health event, reevaluate the use of individual tagging to track the movement and treatment of animals |
|  | Use livestock marking chalk, hang tags with individual number, or radio-frequency identification (RFID) ear tags to visually distinguish vaccinated or treated cattle |
|  | Keep thorough cattle identification records including date of introduction, cattle origin, and the trucking company used to transport |
| See [Animal Health Record Form](#_Animal_Health_Record_1) and [Animal Receiving Log](#_Cattle_Receiving_Log) as an example | |

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| **Animal Treatment Records:** | |
|  | Ensure all non-routine treatments or vaccines administered are recorded on a treatment form or in a computer cattle health management system, ensure appropriate withdrawal times are observed |
| See [Animal Health Record Form](#_Animal_Health_Record_1) as an example | |

| **Semen and Embryos:** | |
| --- | --- |
| ☐ | Maintain thorough and accurate records of artificial insemination and semen/embryos brought onto the facility as part of routine record keeping |
| See [Biological Specimen Record](#_Cattle_Movement_Record) as an example | |

| **Purchase, Sale or Transfer of Cattle:** | |
| --- | --- |
|  | Maintain thorough and accurate records of animal transfer and movement as part of routine record keeping |
|  | Document all animal movements, including the dates of introduction, where the animal was moved from, reason for move and the trucking company transporting the animals |
|  | Treat each facility as a separate premises for record keeping purposes |
| See [Animal Movement Record](#_Employee_Training_Log_1) as an example | |

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| **Vehicle and Contact Information:** | |
|  | Maintain a sign-in sheet of all visitors, vehicles and equipment that access the premises (including state and federal emergency response officials, vehicles and equipment), record keeping will assist with disease surveillance and tracking  See [Heightened Biosecurity Visitor Sign-in Form](#_Heightened_Biosecurity_Visitor_2) in [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) |
|  | Maintain a sign-in sheet of all employees and their vehicles that access the premises, record keeping will assist with disease surveillance and tracking  See [Employee Biosecurity Information Form](#_Employee_Biosecurity_Information) in [Chapter 3: Employee Policies](#_Chapter_2:_Physical) as an example |

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### Animal Health Products Inventory Form

| **Date Received** | **Supplier/ Distributor** | **Product Name** | **Quantity**  **Received** | **Lot #/**  **Serial #** | **Expiration Date** |
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### Storage Area Access Log

| **Date** | **Employee Name** | **Product Removed** | **Quantity Removed** | **Employee Initials** |
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### Door or Lock Key Inventory Form

| **Date Key Issued** | **Name of Employee** | **Key Issued for Access to:** | **Number on Key** | **Employee Initials** | **Date Key Returned** | **Employee Initials** |
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### Animal Receiving Log

**Pen #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lot #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

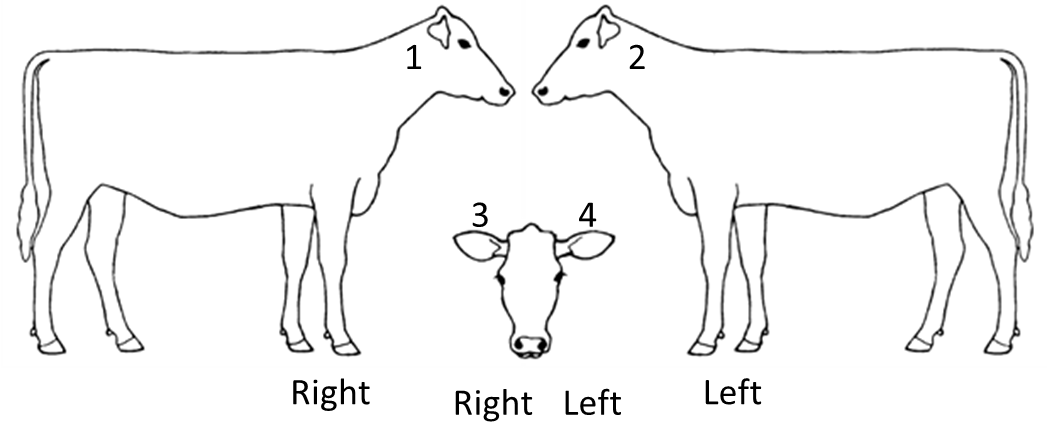
| **Date** | **Animal ID #** | **Age/Date of Birth** | **Breed** | **Sex** | **Pregnancy Status** | **Source/Origin** | **Transport Company** |
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### Animal Health Record Form

**Animal #:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Cattle Lot #:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pen #:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of Head: \_\_\_\_\_\_\_\_\_\_\_**



| **Date** | **Animal ID #** | **Diagnosis/Treatment/Procedure** | **Product & Manufacturer** | **Lot #/Serial #** | **Dose** | **Route of Administration** | **Injection Location** | **Earliest WD Date** | **Initials of Treatment Administrator** |
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### Biological Specimen Record

| **Date Received** | **Specimen Type** | **Origin** | **Method of Delivery** | **Delivery POC** | **Destination/ Cattle ID** | **Date Administered** | **Inseminator’s Name** |
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### Animal Movement Record

**Cattle ID/Lot #:\_\_\_\_\_\_\_\_\_\_\_\_\_ Pen #:\_\_\_\_\_\_\_\_\_\_\_ Number of Head: \_\_\_\_\_\_\_\_\_\_\_**

| **Date** | **Moved From** | **Moved To** | **Reason for Move** | **Transport Company** | **Employee Initials** |
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### Employee Training Log

| **Employee Name (Printed)** | **Employee Signature** | **Area(s) of Responsibility** | **Type of Training** | **Training Description** |
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| **Trainer Name (printed): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Trainer Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | |

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Chapter 1: Biosecurity Overview

Chapter 2: Biosecurity Assessment

Chapter 3: Employee Policies

Chapter 4: Crisis and Risk Communications

Chapter 5: Coordination with Animal Health Agencies and Local Government

Chapter 6: Visitor Control

Chapter 7: Foreign Travel

Chapter 8: Movement On and Off the Property

Chapter 9: Zoonotic Diseases

Chapter 10: Record Keeping

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Chapter 12: Disease Detection and Surveillance

Chapter 13: Feral Animal and Wildlife Management

Chapter 14: Physical Security

Chapter 15: Vector Control

Chapter 16: Cleaning, Disinfection, and Sanitization

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# Chapter 11: Animal Handling and Contact

**Routine Biosecurity Considerations for Animal Handling and Contact**

A fundamental practice for controlling disease exposure is limiting animal contact through segregation of various groups of animals. Newly arriving animals pose the greatest risk; however, disease transmission can result from contact between humans and cattle or through contaminated equipment. The properties of various diseases and the health status of the herd are crucial considerations in biosecurity planning. The extent and effectiveness of biosecurity measures will depend on how these significant variables are addressed.

**Low-stress animal handling** methods contribute to the well-being of the animals and also increase their productivity. This translates to lower rates of illness and mortality and improved profitability. Dairy cows can be frightened by bright spots in the pen or shadows in the milking parlor. Objects hanging above them (like a jacket hanging from a fence) can create confusion in pens. Check pens and parlors frequently for extraneous objects that can startle and stress animals. Utilize cattle herd instincts; consider the importance of the flight zone, point of balance and blind spots when moving cattle. Moving cattle slowly is best. Ideally, animals should walk from pens to the handling facilities or milking parlor and walk into and out of holding devices.

**Human to animal contact** creates a potential for spreading disease from affected to susceptible animals. Prevent all non-essential contact between animals and humans. Personnel who have routine contact with animals should wear disposable gloves and change their gloves frequently. Additionally, regular washing of hands and use of hand sanitizer will not only reduce the transmission of disease to animals, but also the potential of transmission of zoonotic diseases to employees.

**Animal to animal contact** alsocreates a potential for spreading disease. Ensure dairy internal fences are maintained to minimize accidental mixing of animals. Care for, feed, and handle the most susceptible animals first and sick animals last; while taking appropriate disinfection precautions between groups. Strive toward having separate crews for ill and health animals. When diagnosis is uncertain or a disease of severe consequence is suspected (e.g., FMD), stop animal movement and have a veterinarian examine affected animals, perform necropsies, and collect and submit proper diagnostic samples.

Many diseases can be transmitted between animal species. Some species can be carriers and thus not show any signs of disease; however, carriers are able to spread disease to other animals that can become severely ill. For example, animals exposed to the FMD virus can take as long as 14 days before signs of illness are exhibited. Take measures to limit the contact between cows and domestic and wild animals (see [Chapter 13](#_Chapter_13:_Feral_1) for more information on the risks associated with wild and feral animals).

Animals should be housed separately based upon their age, size, and reproductive needs as these same stages also represent different stages of susceptibility to disease.

**New arrivals** can be a major source of disease on a dairy. Comminglingof newly purchased cows/heifers with the existing herd can result in the transmission of many important dairy cattle diseases, including bTB, brucellosis, salmonellosis, bovine viral diarrhea (BVD), and hairy heel warts in addition to FEADs. The most certain way to prevent the introduction of disease would be to raise replacement heifers at the dairy of origin so that no outside animals ever enter the operation. Knowing that this option is not always possible, limit the initial interaction of new animals (e.g., replacement heifers) with healthy animals that have been at the dairy for longer periods.

Quarantine new animals for 30 days before allowing contact with animals already on the farm. The quarantine area should be separated from other cattle. Quarantined cattle should not share feeders, waterers or equipment with resident cattle. Use a medicated foot bath before allowing purchased cattle to enter the herd.

**Pregnant heifers and cows** should be monitored daily for signs of illness and/or abortion. Abortions in cattle may result from a broad range of causes. Two criteria can aid in deciding when abortions are cause for concern: if the abortion rate exceeds 3% or a number of abortions occur over a short period of time, one or more of the aborted feti and placenta should be submitted to your veterinarian or diagnostic laboratory for a diagnostic workup. If an animal should abort, promptly remove the fetus along with all other birthing material, wearing proper personal protective equipment, especially gloves.

**Dry cows** should be housed in an area that is clean and dry so that mastitis causing pathogens are not able to enter the teat end, as the sphincter is not tightly closed and the keratin plug does not form for several days to weeks after the final milking. An absorbent, clean bedding material (straw, kiln-dried sawdust, paper) or one that allows drainage (sand, pasture) should be provided for the cows to lie on thereby limiting the ability of pathogens to enter the teat canal. A teat sealant (internal or external) can also be.

**Pre-fresh to calving cows** should be moved to special maternity pens (group or individual) for observation. The calving pen should be monitored often and the newborn calves removed promptly after birth and placed individually in a clean, dry, draft-free area. Deep straw bedding (1-2 feet ideal) in the calving pen helps drain away the birthing materials (amniotic fluid, placenta, and blood) and animal excrement. Proper personal protective equipment, especially gloves, should be worn if assisting in the birth, particularly when handling the newborn calf and parturient materials/fluids due to the risk of zoonotic disease.

**Lactating cows** are most susceptible to disease during the first three weeks after calving during their "fresh" period. Fresh cows should be monitored daily for signs of mastitis during milkings, as well as retained placenta, metritis, ketosis, hypocalcemia, and displaced abomasums.

**Individual animal identification (ID)** is important to dairy operations for multiple reasons, including general inventory practices, production and treatment information, and, ensuring that the correct heifers are returned to the dairy. But it is also important in disease-outbreak situations when determining the source and movement of affected or exposed cattle is vital.

**Sick or debilitated animals** should be identified and treated as quickly as possible. Ask all heifer raisers about the health status of the animals prior to shipment to the dairy. Frequently observe animals for signs of illness to detect a disease early and prevent its spread. If an animal is found to be sick, prevent further stress on the animal by providing clean, well-maintained housing. Strive to maintain a separate sick animal isolation facility for each production group (i.e., lactating and pre-fresh-calving).

Milk quarantined and sick cows last and thoroughly clean and sanitize equipment afterwards to prevent spreading of disease. See [Chapter 16: Cleaning, Disinfection](#_Chapter_16:_Cleaning_2), and Sanitization for more information.

Humanely euthanize animals that are not going to recover in a timely manner, as these animals can serve as a reservoir for many disease organisms.

**Deadstock** can be a reservoir for many disease organisms. Dead animals need to be disposed of promptly and properly so predators, wild birds, etc. do not spread disease. Have a veterinarian or trained personnel necropsy animals that died of unknown causes to help identify and traceback potentially infectious diseases.

Develop protocols for handling and removing deadstock. Carcass disposal options vary and typically, there is no one-preferred way. Consider using rendering services, where available, as it is an easy, safe, and cost effective method. However, because rendering trucks can introduce disease to the yard, pre-identify carcass staging areas that are as far away as possible from healthy livestock, preferably at the perimeter of the dairy. Composting and burial are also commonly used. If managing carcasses onsite, ensure that steps are taken to prevent animals from coming into contact with deadstock. Review applicable federal, state and local regulations for disposal options.

**Bedding** is important to biosecurity as it provides comfort to the cows and lying time is critical to animal health. Bedding should provide a cushioned resting surface that also helps cows stay clean. Choice of bedding material is important to animal health. Some bedding materials are more available in particular regions of the country and others work better in certain environments. For example, sand is often recommended in Texas because it is readily available and considered one of the cleanest bedding materials available. Mastitis experts recommend it as it promotes the least amount of bacterial growth. However, sand bedding tends to become compacted and unsanitary if not changed frequently. Work with your veterinarian to select appropriate bedding based upon your herd health management plan. Replace bedding often to ensure clean dry resting area for cows and heifers.

**Manure** is an inevitable by-product of animal operations. Areas where animals are apt to congregate, including animal-housing areas, will accumulate manure droppings, which may result in the soiling of the lactating animal's udders and flanks. Regular removal will reduce health issues (decreasing the infectious burden of animal disease pathogens), odor, and fly breeding grounds.

Preferably use equipment designated for manure handling. If equipment is used for other purposes, such as feed delivery, ensure it is cleaned and disinfected to prevent cross contamination (see [Chapter 16: Cleaning, Disinfection](#_Chapter_16:_Cleaning_2), and Sanitization for more information on cleaning and disinfection).

Lactating animals should not have access to piles of manure, in order to avoid the soiling of udders and the spread of diseases among dairy animals. Grade the cow pens and surrounding area of the operation so that there are no standing pools of water or accumulations of organic wastes. Ensure manure packs drain properly drained to provide a reasonably firm footing.

**Milking** can take place in a variety of settings (stanchion, parlors etc.) using a variety of equipment. Regardless of how and where the milking occurs, each teat should be cleaned and disinfected and dried before the milking unit is attached. Milkers should wear gloves, and use a fresh disposal wipe or clean washable towel on each cow. Milk and teats should also be examined at this time for any lesions or other signs of disease. After the milking is complete, treat the teats with antiseptic containing skin conditioner. Encourage cows to eat fresh feed and drink immediately after milking to allow the teat sphincter to close, thus decreasing the potential for pathogen contamination.

**Commercially salable milk** should be stored, handled, and transported according to the guidelines provided in the [Pasteurized Milk Ordinance](http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM209789.pdf). Clean up any spilled milk and the milking parlor itself. Milk and feed attracts wildlife, fosters spoilage, and serves as breeding ground for pests. Flies can be a real problem at dairies and can transmit diseases. See [Chapter 15: Vector Control](#_Chapter_15:_Vector_1) for more information.

**Nonsaleable milk** should be properly discarded or can be fed to pre-weaned calves.

**Feed products** can be a potential source for the introduction and/or transmission of disease. Purchase feed from reputable vendors with an acceptable quality assurance program and appropriate documentation. This verifies reasonable measures are taken to protect the feed from contamination with potential disease-causing material, including ruminant derived protein.

The best feed can become a threat if not handled and stored correctly. Attempt to exclude wildlife from contacting dairy cows and prevent access of wild or feral animals to stored feed and feeding areas. Birds and vermin are effective at transmitting disease and are common in feed storage areas. Recognize that even domestic animals pose risks as dogs, cats, goats, sheep and horses can introduce disease to cows by contaminating feed with urine, feces or other body fluids See [Chapter 13: Feral Animals and Wildlife Management](#_Chapter_13:_Feral_1) for more information.

It is important animals be provided fresh feed and that old feed is removed. Piling new feed on top of old presents an ideal environment for proliferation of spoilage and disease organisms (*Listeria monocytogenes, Clostridium perfringens*, and mycotoxins) during hot weather. Accumulation of old feed also serves as a breeding ground for flies and other pests which can spread disease.

**Water sources** are another risk factor for oral transmission. Examine and clean troughs, buckets, and automatic waters regularly. Remove all organic debris (manure, feed and other materials) frequently, as this provides a source and sustenance for many pathogens.

Regularly inspect and protect the water quality. Deep wells and municipal sources afford greater protection from potential contamination. The U.S. Environmental Protection Agency (EPA) and Texas Commission on Environmental Quality (TCEQ) recommend annual testing for coliform bacteria to assess the quality of the water source.

**Routine Biosecurity Plan for Animal Handling and Contact**

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| **Low-stress Animal Handling** | |
| ☐ | Check pens and parlors frequently for extraneous objects that can startle and stress animals |
| ☐ | Utilize cattle herd instincts; consider the importance of the flight zone, point of balance and blind spots when moving cattle |
| ☐ | Move cattle slowly |
| ☐ | To direct cattle through a gate, move in an arc that, while applying pressure to the cows, forms a fan pattern |
| ☐ | Do not yell, shout or whistle at cattle |
| ☐ | Ensure adequate space for the number of animals that utilize feed, water, and shade sources |
| ☐ | Minimize stacking of stressful events |
| ☐ | Train animal handlers in low stress handling techniques |

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| **Human to Animal Contact:** | |
| ☐ | Require personnel to wear disposal latex gloves any time they are coming into direct contact with animals |
| ☐ | Advise employees to wash their hands often |
| ☐ | Provide employees with hand sanitizer |
| ☐ | Prohibit all non-essential human contact with animals |
| ☐ | Ensure essential visitors (e.g., veterinarians, nutritionists, animal health officials) follow biosecurity guidelines |

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| **Animal to Animal Contact:** | |
| ☐ | Do not allow contact between cows and other species of animals |
| ☐ | Ensure dairy internal fences are maintained to minimize accidental mixing of animals |
| ☐ | Prevent contact between animals of differing status (e.g., replacement heifers, dry, pre-fresh, lactating) |
| ☐ | Minimize switching animals between stalls or pens |
| ☐ | Clean water troughs, buckets and/or auto waterers on a regular basis to remove algae and organic matter |
| ☐ | Minimize the mixing of heifers and cows of differing stages of gestation and age |
| ☐ | Keep species separate; do not use common housing for pigs, cows, sheep, goats, and horses |

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| **New Arrivals** | |
| ☐ | Quarantine new animals for 30 days before allowing contact with animals on-farm |
| ☐ | Designate a quarantine area that is separated from other cattle on your |
| ☐ | Do not allow quarantined cattle tot share feeders, waterers or equipment with resident cattle |
| ☐ | Use a medicated foot bath before allowing purchased cattle to enter the herd |
| ☐ | Inspect animals on arrival to assess animal health status |

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| ☐ | Keep records of animal movement on and off the premises |
| ☐ | Request appropriate declarations regarding the health status and herd health program used by heifer raisers |
| ☐ | Have a specifically trained employee visually inspect all animals prior to commingling them with others. Look for obvious signs of disease |
| ☐ | Culture all new animals before entering milking herd to check for contagious mastitis pathogens |

| **Pregnant Heifers and Cows:** | |
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| ☐ | Monitor daily for signs of illness and/or abortion |
| ☐ | Promptly remove any aborted feti and birthing material and clean and disinfect area |
| ☐ | Track the number of abortions occurring |
| ☐ | If abortion rates exceed 3% or are there is a spike in abortions over a short period of time, consult the veterinarian |

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| **Dry Cows:** | |
| ☐ | Use dry cow treatments to reduce the incidence of mastitis |
| ☐ | Use teat sealants |
| ☐ | Follow vaccination protocol developed by veterinarian |
| ☐ | Create separate areas for dry cows away from sick animals |
| ☐ | Give dry cows a balanced ration to enhance immune function |

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| **Pre-fresh and Calving Cows:** | |
| ☐ | House in maternity pens separate from other dairy animals |
| ☐ | Monitor maternity pens several times a day |
| ☐ | Provide clean, dry bedding in maternity pens |
| ☐ | Wear personal protective equipment, especially gloves, when assisting in births |
| ☐ | Individually identify all calves as soon as possible, ensuring identification can be cross-referenced to origin and movement for trace back purposes |

| **Sick Animals:** | |
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| ☐ | Treat, feed, and handle the most susceptible animals first and sick animals last |
| ☐ | Isolate all animals with the following symptoms in a hospital pen to prevent contact with other susceptible animals:  ☐ Diarrhea  ☐ Reluctance to come to the bunk to eat  ☐ Standing at the bunk but not eating  ☐ Separating themselves from the group  ☐ Appearing lethargic  ☐ Increased respiratory rate  ☐ Nasal discharge  ☐ Sunken eyes  ☐ Lameness  ☐ Other abnormal symptoms such as excessive drooling, neurologic disorders, and/or abnormally high sickness/death rates |
| ☐ | Clean pens, parlors, and hospital areas frequently to prevent cows from coming into contact with urine, saliva, or fecal discharge from ill animals |
| ☐ | Maintain separate treatment areas for sick animals and processing areas for healthy cows  or  ☐ Thoroughly clean and disinfect facility and equipment after treatment of ill animals. See [Chapter 16: Cleaning, Disinfection, and Sanitization](#_Chapter_16:_Cleaning_2) for more information on cleaning and disinfection. |

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| **Deadstock:** | |
| ☐ | Dispose of deadstock in accordance with documented procedures taking into account environmental and public considerations |
| ☐ | Maintain deadstock in an enclosed area that prevents predators, wild birds, etc. from coming into contact with the carcass |
| ☐ | Have a veterinarian, or other trained person, perform a necropsy on any animals that die from suspicious causes. If the cause of death is not known immediately contact a veterinarian. |

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| **Bedding:** | |
| ☐ | Ensure clean dry bedding is provided for cows |
| ☐ | Groom stalls at every milking to remove urine and manure. |
| ☐ | Purchase bedding from a reputable seller |
| ☐ | Check bedding for signs of fly, maggot and other pest infestations |

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| **Milking:** | |
| ☐ | Milk healthy animals first, healthy new animals next, and sick (e.g., mastitis) animals last |
| ☐ | Clean, disinfect, and dry each teat before milking unit is attached |
| ☐ | Require milkers to wear gloves, and use a fresh disposal wipe or clean washable towel on each cow |
| ☐ | Examine milk and teats for any lesions or other signs of disease |
| ☐ | Treat teats with antiseptic containing skin conditioner after each milking is complete |
| ☐ | Provide fresh feed and water to cows immediately after milking to allow the teat sphincter to close |

| **Manure:** | |
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| ☐ | Be aware manure and effluent pose a potential biosecurity risk |
| ☐ | Use dedicated equipment (e.g., shovels, loaders, trucks) for manure management |
| ☐ | Clean and disinfect manure handling equipment with a solution designed to destroy or eliminate infectious microorganisms prior to using the equipment to handle milk, feed or other commodities |
| ☐ | Keep milk, feed and manure handling traffic separated from each other as much as possible |
| ☐ | Keep records of manure movement on the dairy  See [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) for more information and forms |
| ☐ | Ensure manure doesn’t contaminate feed |
| ☐ | Enforce manure management procedures to control and prevent overflow |
| ☐ | Record movements of manure and/or compost removed from the dairy |

| **Milk Products:** | |
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| ☐ | Prevent milk delivery equipment from crossing routes contaminated by manure |
| ☒ | Follow standards and guidelines required by the Pasteurized Milk Ordinance for handling and storing milk |
| ☐ | Clean areas where milk may have spilled |
| ☐ | Heat treat colostrum before feeding it to calves |
| ☐ | Ensure the colostrum is fed to all calves |
| ☐ | Develop a plan for the disposal of waste milk |

| **Feed Products:** | |
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| ☐ | Prevent feed delivery equipment from crossing routes contaminated by manure |
| ☐ | Use dedicated equipment (e.g., shovels, skid steer, dump buckets) for feed management  ☐ If equipment is used for other purposes, clean equipment before using it for feed management |
| ☐ | Purchase feed commodities from preferred suppliers who maintain a quality assurance program that includes a biosecurity component whenever possible  ☐ Ensure documentation of quality assurance procedures is provided with purchased feed  ☐ Verify reasonable measures are taken to protect the feed from contamination with potential disease-causing material, including ruminant derived protein |
| ☒ | Comply with the Food and Drug Administration (FDA) ban on feeding of prohibited proteins to cattle |
| ☐ | Enforce wildlife and feral animal control measures to prevent contamination of feed |
| ☐ | Frequently clean up and dispose of spilled feeds |
| ☐ | Keep feed delivery areas (e.g., alleys, troughs, and buckets) clean (remove visible debris) and well maintained |

| **Water Sources**: | |
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| ☐ | Examine and clean troughs regularly to remove all organic debris (manure and spoiled or waste feed) |
| ☐ | Examine water source regularly  ☐ Use deep wells and municipal sources whenever possible  ☐ Protect water sources from contamination as much as possible and monitor for problems  ☐ Perform annual culture tests for coliform bacteria to assess the quality of the water source  ☐ Perform annual tests for heavy metals to assess the quality of the water source |

**Heightened Biosecurity Considerations for Animal Handling and Contact**

Any time there is a heightened threat of disease biosecurity should be taken very seriously. Limit contact between existing animals on the operation and newly arriving animals during a heightened event. There is a serious, but lesser, transmission risk posed by people, material, conveyances, and other animals that may have been in contact with the disease and may serve as mechanical vectors. Prevent contact with susceptible animals and minimize transmission risk through heightened biosecurity and cleaning and disinfection measures.

**Sick animal isolation** periods are determined by the disease of concern, the operation, and the animals at risk. In some cases, cows with different diseases may be combined, (e.g., pneumonia cases may be comingled with foot rot cases). Limit this practice to the greatest extent possible. Sick animals, or those recovering from a disease, are more susceptible to infection with another disease and thus require extra care during a heightened disease situation. See [Chapter 12: Disease Detection and Surveillance](#_Chapter_12:_Disease) for more information.

**Lactating cows** on uninfected operations in a Control Area during an FEAD outbreak will still need to be milked and dairies will need to develop a plan for the disposition of that milk. Cows in late lactation with lower milk production could be dried off (milk production ceased) in an effort to increase storage capacity on farm, but this will only be a minimal short term solution.

Milk must be disposed of in a manner that does not expose susceptible animals nor contaminate the environment. Develop a plan for the disposal of a bulk tank capacity of milk based on local and state environmental regulations. If on-farm disposal cannot be safely accomplished, state and/or federal officials will need to permit movement off-site to an authorized disposal area using designated routes and following entry/exit biosecurity procedures.

In some situations all milk will be unsalable, and in others there may be a permitting procedure that allows for the movement of raw milk during a FEAD outbreak. Demonstration of an active biosecurity plan and accurate and up-to-date record keeping will facilitate the permitting process. For more information on the movement and sale of milk consult the [Secure Milk Program](http://securemilksupply.org/) website.

**Deadstock management** is a key component of a successful heightened biosecurity plan. Mortalities may be much higher than normal during a FEAD outbreak. This can be directly from disease or the culling of animals. Selection of a disposal method depends on the disease, local conditions and regulations, and the number of animals. Disposal challenges included: concerns over time needed to depopulate and finding enough disposal capacity (See [Palo Duro Exercise After Action Report](http://www.tahc.state.tx.us/emergency/May2007_OperationPaloDuro.pdf) for more information).

Develop contingency carcass management plans for both routine deadstock and mass depopulation. For example, in situations involving mass depopulation, rendering services can be quickly overwhelmed or transportation of carcasses may be prohibited due to movement restrictions. Have backup plans, preferably on-site disposal plans, in place to manage routine deadstock in case normal disposal options are not available.

**Manure** management is important in controlling pathogens as a large number of diseases are spread via feces. Most pathogens in fecal matter are susceptible to heat, desiccation and sunlight if exposed. Organisms, however, may be protected by fecal matter and may live for an extended period of time, especially in cold weather. Rake freestalls daily to remove manure and soiled bedding. Scrap outdoor dry lot pens daily.

During and after a disease outbreak, make decisions on how to disinfect and dispose of pathogen contaminated manure. Untreated manure can spread disease to other livestock (e.g., grazing cattle) and possibly wildlife. In many operations the manure management plan involves the application of manure to crop land and possible contamination with pathogens of concern will need to be considered before application. Clean and disinfect manure handling equipment between operations. For additional details, see *FAD PReP/NAHEMS Guidelines: Disposal (2011), Cleaning and Disinfection (2011)*.

**Maintain heightened animal handling protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Animal Handling and Contact**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

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| **New and Healthy Animals:** | |
| ☐ | Quarantine recently arrived animals for a minimum of two incubation periods for disease of concern |
| ☐ | Restrict all new animal arrivals to one area of the dairy; do not place new animals in pens throughout the dairy |
| ☐ | Do not allow new additions to share water, feed, facilities with your other animals |
| ☐ | Temporarily stop receiving animals. Consult with veterinarian to determine appropriate duration. |
| ☐ | Develop a contingency plan for the temporary care and feeding of all animals, including claves that may not normally be raised at the dairy in case of a stop movement order |

| **Sick Animals:** | |
| --- | --- |
| ☐ | Implement disease surveillance measures and risk communication strategies to educate employees to identify signs and symptoms of disease |
| ☐ | Monitor animals closely and frequently for any developing or continuing illness or signs of disease |
| ☐ | Isolate sick animals to minimize disease spread |
| ☐ | Isolate sick animals for a minimum two incubation periods of the disease |
| ☐ | Contact the herd veterinarian immediately to examine sick animals |
| ☐ | Where possible, separate housing to prevent direct contact between high risk animals |
| ☐ | Use separate facilities, equipment and staff to handle isolated livestock |
| ☐ | Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals |

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| **Lactating Cows** | |
| ☐ | Develop a milk disposal plan that does not expose susceptible animals nor contaminate the environment |
| ☐ | Develop a plan for the disposal of a bulk tank capacity of milk based on local and state environmental regulations |
| ☐ | Obtain permits for movement milk off-site to an authorized disposal area using designated routes |
| ☐ | Dry off cows early as necessary |

| **Deadstock:** | |
| --- | --- |
| ☐ | Develop a management plan for mass disposal of deadstock |
| ☐ | Develop contingency disposal plans in case normal disposal measures are unavailable |
| ☒ | Ensure that all federal, state and local disposal regulations are met  ☒ TAHC rules require that animals that die from a disease recognized as communicable by the veterinary profession must be disposed of within 24 hours by burial or burning.  ☒ TAHC rules require that animals dying from anthrax must be burned on-site within 24 hours of death.  ☒ Contact the TAHC at 1-800-550-8242 prior to disposal of animals for died from a reportable disease. See [Annex A](#AppendixA) for list of TAHC reportable animal diseases. |

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| **Manure:** | |
| ☐ | Review the manure management plan with your veterinarian and environmental manager to determine if manure will be a source of pathogens |
| ☐ | Determine if any processing of manure is required such as disinfection or altering pH prior to it leaving the premise |
| ☐ | Remove manure promptly to curb disease spread |

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Chapter 1: Biosecurity Overview

Chapter 2: Biosecurity Assessment

Chapter 3: Employee Policies

Chapter 4: Crisis and Risk Communications

Chapter 5: Coordination with Animal Health Agencies and Local Government

Chapter 6: Visitor Control

Chapter 7: Foreign Travel

Chapter 8: Movement On and Off the Property

Chapter 9: Zoonotic Diseases

Chapter 10: Record Keeping

Chapter 11: Animal Handling and Contact

**Chapter 12: Disease Detection and Surveillance**

Chapter 13: Feral Animal and Wildlife Management

Chapter 14: Physical Security

Chapter 15: Vector Control

Chapter 16: Cleaning, Disinfection, and Sanitization

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# Chapter 12: Disease Detection and Surveillance

**Routine Biosecurity Considerations for Disease Detection and Surveillance**

The effects of disease can be measured in animal mortality, loss of future productivity (e.g., milk, meat etc.), loss of consumer confidence, the cost of diagnosis, treatment and intervention, and/or potential carcass management costs. Routine medical treatments protect operations from all of these losses. A comprehensive Herd Health Management Planshould include biosecurity plans that address physical, sanitary and other aspects of herd health.

**Diagnostic sample collection and testing,** including milk culturing,should be conducted for targeted diseases (e.g., BVD) according to the Herd Health Management schedule. If cows test positive, then mitigation steps can be taken to reduce the risk of transmitting disease to the rest of the herd. Depending on which states the animals travel from/through state regulations may require testing for brucellosis and/or bTB. Heifers shipped out of the United States may require further disease testing performed prior to shipment.

Additional testing will need to be performed when a FEAD is suspected. Veterinarians, animal health technicians, and other trained personnel should follow SOPs for sample collection, preservation, packaging, and shipment.

**Sickness** may be hard to detect in cattle, particularly in new arrivals to the dairy. All animals should be checked daily for sign of illness including the following:

1. Diarrhea
2. Reluctance to come to the bunk to eat
3. Standing at the bunk but not eating
4. Separating themselves from the group
5. Appearing lethargic
6. Increased respiratory rate
7. Nasal discharge
8. Sunken eyes
9. Lameness
10. Other abnormal symptoms such as excessive drooling, neurologic disorders, and/or abnormally high sickness/death rates

Educate employees on the signs and symptoms of any diseases that are a concern to the operation. Check new animals closely for signs of illness. Isolate cows who are sick from other animals and observe them for signs of disease. Report cases of unusual sickness or death in the dairy to the consulting veterinarian or the local government veterinary officer. Some diseases are required to be reported within certain time limits by federal and state animal health agencies (see [Annex A](#AppendixA) for a partial list of these disease). Work with your veterinarian to ensure compliance with these regulations.

Handle or visit sick animals last. This practice limits the possibility of employees tracking or transferring disease from sick animals to healthy ones. Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals.

Work with a veterinarian to develop treatment protocols and monitor response rates on routine visits to the dairy. Train work crews to monitor treatment response rates and stay aware of treatment success even when a veterinarian is not on the dairy. The disease and treatment history of all animals should be recorded.

**Disease traceability** is fundamental to health management plans (medical treatments and vaccinations), and marketability in the industry. Implement disease traceability measures such as individual tagging of all animals during routine biosecurity operations to prepare for a potential disease incident. Check the [TAHC website](http://www.tahc.state.tx.us/) for current regulations regarding identification and tagging.

During an animal disease emergency event, it may be necessary to:

* locate the source of the animal(s) in question,
* identify premises on which the animal(s) originated from, and
* source other exposed or potentially exposed animals.

Retain records of animal origin and movement to expedite disease investigations.

**Routine vaccinations** vary depending on prevalence of disease both in the region and in the origin of the calves. Develop a vaccination protocol with a veterinarian (and calf ranch if heifers are raised off farm). Basic vaccines provide protection against respiratory and reproductive diseases. Pre-fresh and dry cow vaccines should be included in the protocol.

Considerations for vaccine selection are safety, efficacy, necessity, and economics. Tailor protocols to needs based upon geographic location, dairy industry, facility, and husbandry practices. Individual heifers should be tested for transmissible diseases (for example, BVD and brucellosis) before or when they arrive at the dairy. If heifers test positive, then mitigation steps can be taken to reduce the risk of disease transmission to the rest of the herd.

If possible, use a fresh need to vaccinate each cow. However, when there is low risk of bloodborne disease transmission, it is acceptable to use one needle for up to ten animals. Beyond that, needles can become dull, resulting in tissue trauma, pain, and the possibility of broken needles. Disinfect equipment, including tattoo equipment, between animals to prevent the spread of diseases such as bovine leukemia virus (BLV), ringworm, and warts.

**Antibiotics** should be administered to animals according to veterinary protocols. Record the disease and treatment history of individual animals to ensure that the proper meat and milk withhold time is observed.

**Colostrum** is an important source of nutrition and growth factors for newborn cows. It is also necessary for the absorption of immunoglobulins and therefore calf resistance to disease. Calves should receive about a gallon of colostrum (150-200 grams of IgG) within 2 to 3 hours of birth to increase the potential for passive transfer of immunity. Ensure that all calves are fed colostrum at the dairy, especially if they are being shipped to a heifer raiser. Ideally, colostrum should be fed from an individual cow to an individual calf and should not be pooled. Pooling unpasteurized colostrum increases the risk of transmitting diseases such as *Mycoplasma*, *Salmonella,* and *Mycobacterium avium* subspecies *paratuberculosis.* Heat treating colostrum and pasteurizing milk reduces or eliminates most pathogens of concern on dairy operations.

Prior to colostrum collection, the udder and teats should be clean and dry to ensure the colostrum can be removed without fecal or environmental contamination. It is also a best practice to measure serum protein in cows less than a week old to confirm passive transfer of antibodies to cows. This information should be provided back to the dairy of origin to improve colostrum management programs.

**Breeding practices** can result in disease transmission. It is recommended that veterinarians change palpation sleeves between each pregnancy exam, particularly if there is a concern over possible BLV infection. All semen should be tested for pathogens before being used in Artificial Insemination (AI). Only utilize semen form reputable sources. Natural breeding can also result in transmission of trichomoniasis or other diseases. Bull management practices related to health, such as breeding soundness exams and disease testing, should be performed.

**Routine Biosecurity Plan for Disease Detection and Surveillance**

|  |  |
| --- | --- |
| **Health Management Plan:** | |
| ☐ | Ensure that the goals of this *Biosecurity Plan* are aligned with the Herd Health Management Plan |
| ☐ | Include dairy management in the development of a Herd Health Management Plan |

| **Surveillance:** | |
| --- | --- |
| ☐ | Conduct diagnostic tests according to herd health management plan  ☐ BVD virus  ☐ Johne's disease  ☐ Mastitis caused by *Staphylococcus aureus*, *Streptococcus agalactiae* and *Mycoplasma bovis*  ☐ Bovine leukosis |
| ☐ | Train dairy personnel to report sick animals  ☐ Ensure that all staff involved in the daily monitoring and handling of animals are aware of the importance of early detection of emerging diseases and know what to do if they suspect an animal may be exhibiting symptoms of such a disease  ☐ Inspect animals daily  ☐ Monitor daily feed intake for early identification of illness in cows  ☐ Contact the dairy veterinarian immediately if unusual illness or signs are noticed |
| ☐ | Monitor fresh cows on a daily basis after delivery until they are ready to aggressively begin their lactation  Monitor feed intake  ☐ Measure body temperature  ☐ Conduct urine ketone tests  ☐ Check rumen movements  ☐ Monitor uterine health |
| ☐ | Perform necropsy on animals that died from unknown causes |
| ☐ | Collect any information available on the health status and the source of any animal(s) brought to the dairy |
|  | Undertake routine monitoring of animals at the dairy for signs of sickness |

| **Sick Animals:** | |
| --- | --- |
| ☐ | Isolate cows who are sick from other animals and observe them for signs of disease |
| ☐ | Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals |
| ☐ | Report cases of unusual sickness or death in the dairy to the consulting veterinarian or the state veterinary officer |
| ☐ | Comply with the requirements for initial investigation of unusual sickness and/or deaths as directed by the federal and state animal health agencies |
| ☐ | Work with a veterinarian to develop treatment protocols and monitor response rates on routine visits to the dairy |
| ☐ | Train work crews to monitor treatment response rates and stay aware of treatment success even when a veterinarian is not on the dairy |
| ☐ | Record the disease and treatment history of individual animals |

|  |  |
| --- | --- |
| **Disease Traceability:** | |
| ☐ | Individually tag all animals |
| ☐ | Keep records of all medical treatments and vaccination (See [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) for forms) |

| **Routine Vaccination:** | |
| --- | --- |
| ☐ | Implement protocols for routine vaccinations |
| ☐ | Do not use the same needle on more than ten animals |
| ☐ | Disinfect vaccination equipment, including tattoo equipment, between heifers |

| **Colostrum:** | |
| --- | --- |
| ☐ | Ensure colostrum is administered to calves within 2 – 3 hours of birth |
| ☐ | Do not pool colostrum (if possible) |
| ☐ | Heat treat colostrum before feeding |

| **Breeding:** | |
| --- | --- |
| ☐ | Change palpation sleeves between each pregnancy exam |
| ☐ | Change palpation sleeves between each cow during AI |
| ☐ | Use a fresh protective sheath on AI guns for each cow |
| ☐ | Clean and disinfect AI equipment after each day of use |
| ☐ | Ensure all semen was tested for pathogens before being using in AI |
| ☐ | Only utilize semen form reputable sources for AI |
| ☐ | Implement:  ☐ Bull health management practices  ☐ Breeding soundness exams  ☐ Disease testing |

**Heightened Biosecurity Considerations for Disease Detection and Surveillance**

If there is a confirmed FEAD outbreak in the United States, state and federal regulations may restrict movement and direct increased surveillance, testing, and reporting requirements. Within 48 hours of identification of the first animal and premises with disease (also known as the Index Case) a National Surveillance Plan will be implemented to define the extent of the FEAD outbreak. The plan determines how to identify infected premises, how to confirm new cases quickly through a combination of observation and laboratory testing, and how to identify disease-free zones. If an area is determined to be a disease-free zone, movement restrictions and disease monitoring requirements lessen, easing the response effort in that area.

**Disease surveillance** is the process of monitoring susceptible animals for clinical signs of the identified FEAD. Educate and require workers to report clinical signs of disease. Work with veterinarians and government officials to develop a dairy specific disease surveillance plan (see the [Disease Surveillance Plan Form](#_Disease_Surveillance_Plan_1)). Also refer to the *FAD PReP/NAHEMS Guidelines and SOP: Surveillance, Epidemiology, and Tracing (2011)* for in depth information.

**Disease assessment reports** can be used to collect information about the outbreak, the signs and symptoms of disease, and disease countermeasures. Use the report to communicate to staff and other interested parties about the disease and to create targeted heightened biosecurity plans based upon the disease transmission route. See [Annex A: Disease Table](#AppendixA) for more information on routes of transmission. To develop a disease assessment report, see [Annex A: Disease Table](#AppendixA), and the [Disease Assessment Report Form](#_Disease_Assessment_Report). [Annex B](#AppendixB) contains examples of completed disease assessment reports. Use the “Foot and Mouth Disease (FMD) Fact Sheet” as a handout to educate employees as necessary, see [Annex D](#AppendixD).

**Sick animals** are often first identified through changes in daily milk production or feed intakes. For example, due to lesions on the feet and the mouth from the FMD virus, feed intake could decrease and reduce milk production. Monitor cow milk output, feed intake, and behavior closely during a heightened biosecurity period to identify and isolate sick animals as quickly as possible.

**Disease traceability** is critical to associate individual animals with accurate information contact history. Uniquely identifying individual animals helps track movement, testing results, or other information for the emergency response. The FDA will require proper vaccine and medication withdrawal information for sale of milk, and confirmation that the dairy is not located in a control area.

Be sure to account for potential routes of transmission information and consider possible contact with wildlife. Work with animal health officials to collect trace-back information. Typically, it will be necessary to collect trace-back information for a minimum of twice the length of the maximum incubation periods before onset of clinical signs of infected animals.

Collect trace-forward information for calves leaving the dairy up to the time the quarantine ends. It is highly likely the index case will not be the first animal or premises that had infection or disease within the country or the area. This will aid in the termination of the true index premises.

**Emergency vaccination strategies** may be considered in an FEAD outbreak. If emergency vaccination crews are brought onto the dairy, they are a potential source for spreading disease. Ensure crews follow biosecurity precautions and maintain strict records including: company name (if contract crews), crew member names, contact information, exposure to other livestock in the previous five days (the maximum time humans can carry foot-and-mouth disease virus in their nasal passages in a high exposure, research setting [FAD PReP Beef Feedyard Industry Manual]). Also record the name(s) of products, date(s) administered, and tag numbers of cows vaccinated. This information may be needed to trace where a highly contagious FEAD infection came from (trace back) or where it may have been spread to (trace forward). If the disease of concern is transmissible through blood such as rift valley fever, use a single needle to vaccinate each heifer.

**Diagnostic sample collection and testing** allows for the correct diagnosis and treatment to be implemented. These measures will be performed under the direction of the animal health authority. Inform employees about sampling procedures and teams that may be coming onto the dairy. This information can be added as a part of the [Disease Surveillance Plan](#_Disease_Surveillance_Plan_1). Like vaccination crews, sample collection crews are also a potential source for spreading disease.

In any FEAD outbreak, require strict adherence to biosecurity and infection control procedures. Personnel handling animals, tissues, and fluids need to wear PPE such as coveralls and gloves. Utilize appropriate PPE for zoonotic diseases (see [Chapter 9: Zoonotic Diseases](#_Chapter_9:_Zoonotic_1) for more information). Clean and disinfect equipment in the designated area prior to leaving the dairy (see [Chapter 16: Cleaning, Disinfection, and Sterilization](#_Chapter_16:_Cleaning_2) for more information).

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Disease Detection and Surveillance**

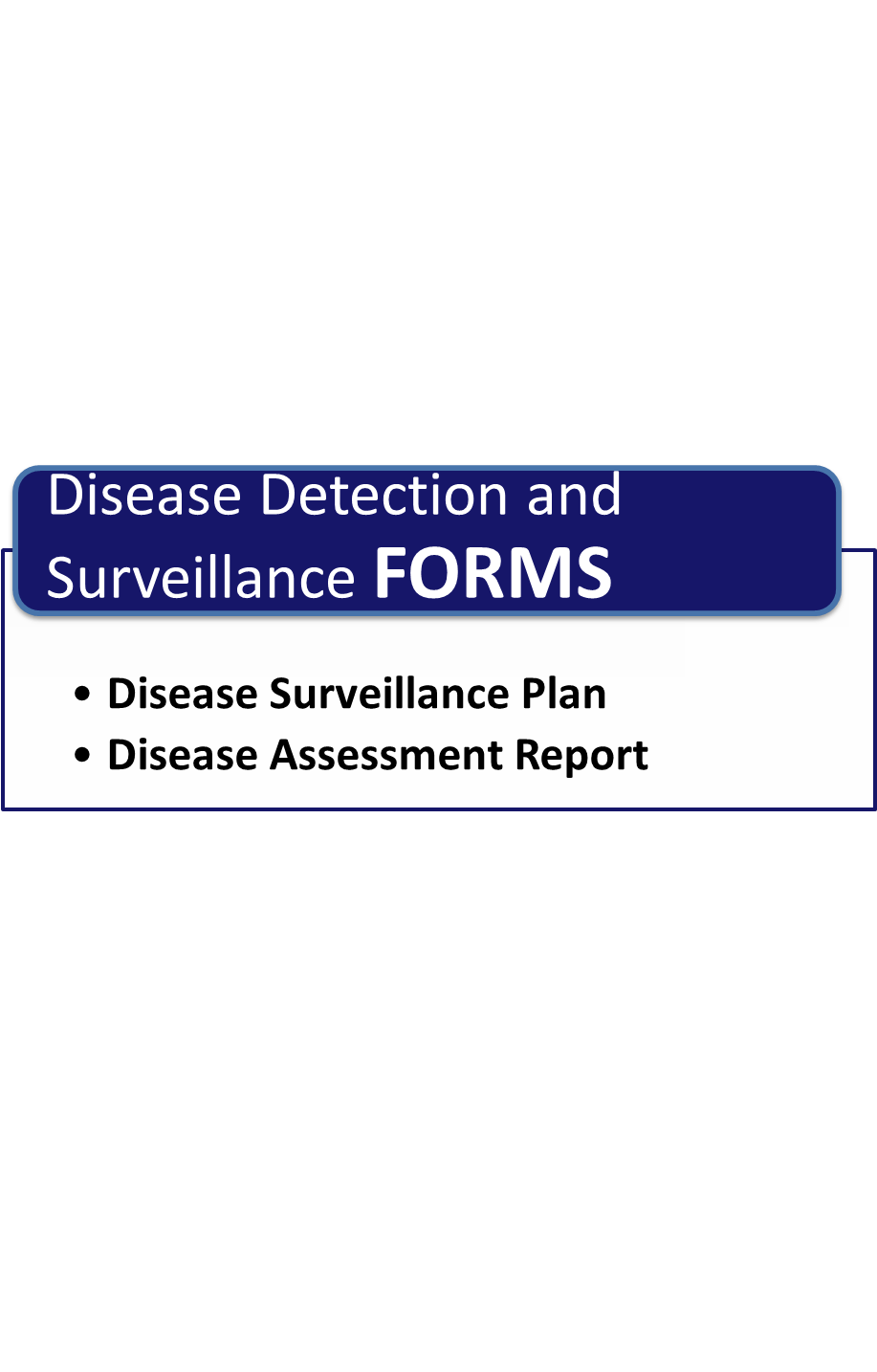
*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Disease Surveillance:** | |
| ☐ | Write a disease surveillance plan  See the Forms section for instructions on how to write a [Disease Surveillance Plan](#_Disease_Surveillance_Plan_1) |
| ☐ | Do not bring animals onto the facility unless there is proof they are from disease-free areas |

|  |  |
| --- | --- |
| **Disease Assessment:** | |
| ☐ | Write a disease assessment report  See the Forms section for instructions on how to write a [Disease Assessment Report](#_Disease_Assessment_Report). [Annex B](#AppendixB) contains examples of completed reports. |

| **Disease Traceability:** | |
| --- | --- |
| ☐ | Identify animals that receive emergency vaccine or treatment |
| ☐ | Keep a record of all animals’ entry and exit from the dairy so potential contact with an infected animal can be traced back |
| ☐ | Keep records of truck delivery routes (from heifer raiser to the dairy) used by all animal haulers to identify any cows which may have come from or driven through areas where disease is present (control areas) |
| See [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) for examples of forms which can be used to record these actions. | |

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##### Disease Surveillance Plan

*Give the form below to your veterinarian to help with the creation of a Disease Surveillance Plan. This plan explains how to identify and treat animals that are suspected of having an FEAD and should be explained and given to employees working directly with animals.*

| **Disease Surveillance Plan for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| --- |
| **Case Definition** |
| *(Insert a case definition for “suspect” animals providing clinical signs that private practitioners and people in daily contact with livestock might use. The case definition will be provided by a veterinarian, the Texas Animal Health Commission (TAHC) or U.S. Department of Agriculture (USDA. A “suspect” animal is one that shows signs of disease, but has no confirmed lab result.)* |
| **Reporting** |
| *(Provide information where employees should report concerns.)* |
| **Treatment of “Presumptive Positive” Animals** |
| *(Provide an explanation of how to treat and care for “presumptive positive” animals while awaiting diagnosis. A “presumptive positive” animal has clinical signs and a positive lab result)* |
| **Disease Tracing** |
| *(Provide details of the dairy the ill animal came from, the date it arrived on the dairy, and any movement within the dairy to facilitate tracing of potential disease transmission to other cows.)* |
| **Actions to be Performed When there is a “Confirmed Positive” Case** |
| *(Insert a list of actions, including notifications, which must be taken once an animal is “confirmed positive”. A “confirmed positive” case indicates what tests are required to unequivocally determine the presence of the FEAD agent. This information will be provided by the TAHC or USDA.* |

##### Disease Assessment Report

*Work with veterinarian to fill in the boxes below to create a Disease Assessment Report. Examples of complete reports are available in* [*Annex B*](#AppendixB)*. The complete report should provide general background on a disease, and should be provided to employees and their families.*

|  |
| --- |
| **Disease Assessment Report for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Outbreak History** |
| *(Provide details of the outbreak history, specifically, information about when the outbreak began and where the outbreak is occurring.)* |
| **Signs of Disease in Calves** |
| *(Provide details of the signs of the disease in cows.)* |
| **Signs and Symptoms of Disease in Humans** |
| *(Provide details of the signs and symptoms of the disease in humans if applicable. If the disease is not zoonotic, that information should be included as well.)* |

|  |
| --- |
| **Disease Assessment Report for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Mechanism for Spread of Disease** |
| *(Provide details of the route of transmission of the disease by choosing from the list below. More than one route may apply. Details on the route on transmission of many cattle diseases can be found in* [*Annex A*](#AppendixA)*.)*  Aerosol  This disease can be spread through aerosol transmission. Aerosol transmission occurs when disease agents contained in droplets are passed through the air from one animal to another or from an animal to a human, or vice versa. Most pathogenic agents do not survive for extended periods of time within the aerosol droplets, and as a result, close proximity of infected and susceptible animals is required for disease transmission.  Direct Contact  This disease can be spread through direct contact. Transmission by direct contact requires the presence of an agent or organism in the environment or within an infected animal. A susceptible animal becomes exposed when the agent directly touches open wounds, mucous membranes, or the skin through blood, saliva, nose to nose contact, rubbing or biting.  Fomite  This disease can be spread through fomites. A fomite is an object that can carry disease agents from one susceptible animal to another. Examples of fomites include brushes, tagging pliers, needles, balling guns, clothing, feed or water buckets, and shovels. Traffic transmission is another special type of fomite transmission in which a vehicle, trailer, or human spreads organic material to another location.  Oral  This disease can be spread through oral means. Pathogenic agents can be transmitted to animals orally through consumption of contaminated feed, water, or licking/chewing on contaminated environmental objects. Feed and water contaminated with feces, urine or saliva are frequently the cause of oral transmission of disease agents. However, feed and water can be contaminated with other infectious agents.  Vector-Borne Transmission  This disease can be spread through a vector. Vector-borne transmission occurs when an insect acquires a pathogen from one animal and transmits it to another. Fleas, ticks, mosquitoes, and flies, and cockroaches are common vectors. |

**Disease Assessment Report for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |
| --- |
| **Mechanism for Spread of Disease (cont.)** |
| ☐ Environmental Transmission  This disease can be spread through the environment. This disease agent can survive for extended periods of time in soil or other organic material like bedding, old feed, etc. Animals can then acquire the disease agent from the environment through inhalation of aerosolized microbes, via oral consumption, or from direct contact with an animal or with fomites. The routes the disease agent uses to get into the animal can be controlled if the animal's environment is controlled.  ☐ Zoonotic  Zoonotic diseases are transmissible between animals and humans. Human exposure to zoonotic diseases may occur through any of the six routes of transmission discussed previously. Because of public health concerns, the zoonotic risk of a particular pathogenic agent should be considered in a biosecurity risk assessment. |
| **Medical Countermeasures** |
| *(Provide details of available medical countermeasures.)* |
| **Sanitary Countermeasures** |
| *(Provide details of available sanitary countermeasures.)* |

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# Chapter 13: Feral Animals and Wildlife Management

**Routine Biosecurity Considerations for Feral Animals and Wildlife Management**

Rodents, feral animals, and wildlife can be a significant source of disease on a dairy. Mobility allows rodents and feral animals to spread disease both on and off premises. The threat posed by animals may be overlooked due to their small size and nocturnal activity. Controlling rodents and wildlife is difficult because of the open design of dairy operations where food, bedding, water, and waste are easily accessible. Preventing feral animals and wildlife from entering the premises is the best strategy to mitigate the threat to livestock.

Feral animals and wildlife can act as fomites by carrying disease causing organisms on their fur, feathers or feet Birds and rodents can spread diseases for a short time and distance and can also contaminate feed and water sources with their urine and/or feces. Additionally, some diseases can be spread from feral animals and wildlife through insect vectors. For more information on how biosecurity measures can prevent the transmission of disease by targeting vectors see [Chapter 15 Vector Control](#_Chapter_15:_Vector_1).

**Rodents and vermin** (e.g., rats, mice, and rabbits) spread diseases from contaminated areas to uncontaminated areas by walking through infected manure and bodily excretions. This can subsequently contaminate the food or water supply on the dairy or neighboring facilities. Prevent rodents from interacting with animals and feed. One way this can be accomplished is by removing potential hiding and nesting sites, keeping grounds free of trash and debris, and using baits and traps. Due to the open nature of many feed storage areas, it may be difficult to prevent rodents and vermin from gaining access to feed. Use pest control practices to control rodent infestation as necessary while ensuring that any bait and poisons used do not mix with cattle feed.

**Feral cats and dogs** may carry parasites and diseases and travel easily between farms and dairies. Feral animals infected with leptospirosis or rabies can cause outbreaks in both people and cattle. Feral cats and dogs can also transmit parasites and diseases to domesticated dogs and cats on the premises. Ensure pets residing at or visiting the facility are up to date with vaccinations.

**Feral swine or hogs** can break fencing, and consume feed and water intended for livestock. Feral swine can also transmit many diseases to cattle including: vesicular stomatitis, brucellosis, bovine tuberculosis, and FMD. Swine (domestic and feral) are considered “amplifiers” of the FMD virus and can shed large amounts of virus over great distances. Swine are also known to typically prey upon weak and small animals, including calves. Prevent feral swine from entering property by installing and partially burying chain-link fencing. Texas law permits landowners and their designated agents to control feral hogs causing property damage by any legal means without benefit of a hunting license.

**Wildlife,** such as birds (both endemic species and migrating flocks), are attracted to dairy facilities because grain and water are stored in the open. Birds can contaminate food and water sources and pass diseases like coccidiosis and salmonella to cattle and personnel who clean water troughs. Due to the open nature of feeders and feed bunks, work with animal damage control officials to manage bird populations.

White-tailed deer carry ticks and diseases such as Lyme disease, bTB, and FMD that can impact livestock, pets and humans. White-tailed deer are also known to carry Johne’s disease, which can spread to dairy cattle when contaminated feed or water is ingested. Deer can jump great heights; consider constructing perimeter fences that are at least 8 feet high to prevent deer from entering the facility.

Coyotes are opportunistic hunters and scavengers, preying on young and weak animals. Coyotes harbor numerous parasites and often carry rabies which is easily transmittable to other animals and humans. Consider measures to prevent coyotes from entering premises.

For more information on diseases and how they can be transmitted to cattle see [Chapter 12: Disease Detection and Surveillance](#_Chapter_12:_Disease) and [Annex A: Disease Table](#AppendixA).

**Routine Biosecurity Plan for Feral Animals and Wildlife Management**

|  |  |
| --- | --- |
| **Rodents and Vermin:** | |
|  | Keep parking lots, premises, storage areas including garbage containers clean to discourage rodents |
|  | Raise stationary equipment and ensure it is easily movable to facilitate cleaning behind and underneath it |
|  | Stack bagged feed on pallets to allow room for traps or bait placement |
|  | Tightly seal building and container openings greater than ¼ to ½ inch |
|  | Ensure distance between the bottom of doors and thresholds does not exceed ¼ inch |
|  | Install floor drains with metal grates to prevent rodents from entering buildings using drainage pipes or sewage systems |
|  | Keep grass and weeds short around buildings and structures |
|  | Install a 3 foot wide gravel rodent barrier around buildings and structures to discourage burrowing |
|  | Set traps along walls and in areas where rodent activity is suspected |
|  | Use bait and/or traps according to instructions; check baits and/or traps regularly |

| **Feral Cats and Dogs:** | |
| --- | --- |
|  | Ensure pets are vaccinated and included in any vector control program  See [Chapter 15: Vector Control](#_Chapter_15:_Vector_1) |
|  | Keep pet food and water indoors so as not to attract feral animals |
|  | Keep fences and gates in good repair to prevent feral animals from accessing the property |

| **Feral Swine:** | | |
| --- | --- | --- |
|  | Bury at least 10 inches of fencing underground to prevent feral swine from digging under fences |
|  | Inspect and check fencing for damage \_\_\_\_\_\_\_\_\_\_\_, and repair in a timely manner |
|  | Shoot feral swine that have gained access to and/or caused damage to private property |

| **Birds:** | | |
| --- | --- | --- |
|  | Keep parking lots, premises and storage areas clean to discourage bird activity |
|  | Work with animal damage control officials to manage bird populations |
|  | Clean up spilled feed around feed storage and mixing areas and periodically clean up spilled feed in front of feed bunks |
|  | Maintain water level in water troughs so it is deep enough that birds cannot stand in it |
|  | Install plastic “strip doors” in doorways of buildings to prevent bird entry |
|  | Place netting on the undersides of rafters to discourage bird nesting |
|  | Keep grass, weeds, and brush short around the perimeter of the facility to discourage bird nesting |

| **Deer:** | |
| --- | --- |
|  | Ensure perimeter fencing is at least 8 feet high to prevent deer from jumping the fence |
|  | Keep high fenced gates closed when not in use to prevent deer from entering the premises |

**Heightened Biosecurity Considerations for Feral Animals and Wildlife Management**

In the event of an animal disease outbreak, wildlife poses a significant disease threat to cattle and personnel. Wildlife and feral animals can be carriers of highly contagious and zoonotic diseases and can complicate disease eradication and control efforts. Take aggressive precautions during periods of heightened biosecurity to limit contact between cattle and wildlife. Ensure the recommended measures for routine feral animal and wildlife management are enforced to keep problematic animals from entering the premises and potentially infecting cattle.

Fencing is the most effective barrier against wildlife spreading disease through direct contact, fomite, oral and vector-borne routes of transmission (See [Chapter 14: Physical Security](#_Chapter_14:_Physical)). However, FMD can aerosolize, spread through the air and infect cattle through respiratory tracts. Feral swine are a serious threat for the spread of FMD. Swine shed large quantities of the FMD virus into the air via respiration. Work closely with animal health and emergency management officials to prevent potentially infected feral swine from the entering premises.

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Feral Animals and Wildlife Management**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Fencing:** | |
|  | Conduct a fencing inspection upon implementation of heightened biosecurity measures |
|  | Review routine measures and aggressively implement for heightened biosecurity as necessary |

|  |  |
| --- | --- |
| **Rodents:** | |
|  | If a rodent infestation is suspected, contact a local pest control service and/or animal damage control officials to eradicate the population |

|  |  |
| --- | --- |
| **Feral Cats and Dogs:** | |
|  | Set traps for feral dogs and cats to prevent them from entering the premises |

| **Pets:** | |
| --- | --- |
|  | Keep pets indoors, in a kennel, or tied securely to avoid contact with livestock and feed areas |
|  | Do not allow pets to enter the premises |

| **Feral Swine:** | |
| --- | --- |
|  | Set traps several hundred feet outside of the perimeter fencing to prevent feral swine from reaching the fence line |
|  | Work with local emergency management and animal health officials on the control and eradication of feral swine near the facility |

|  |  |
| --- | --- |
| **Birds:** | |
|  | Contact a local pest control service and/or animal damage control officials to control the bird population using repellants, traps and toxicants |

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# Chapter 14: Physical Security

**Routine Biosecurity Considerations for Physical Security**

The goal of biosecurity is to prevent the introduction of diseases to a dairy operation. Physical security is the first line of defense against the accidental or intentional introduction of disease by wildlife, vector, or people. Routine physical security also prevents and deters theft and damage.

**External security** is an important part of a biosecurity plan due to the open nature of dairy operations. Fencing around pens and the perimeter of the facility is the most effective security measure against the most significant threats to the operation. Wild animals, such as deer and feral pigs, can transmit diseases to both animals and humans See [Chapter 13: Feral Animals and Wildlife Management.](#_Chapter_13:_Feral_1) If a disease of concern is present in wildlife in the area, then consider adding fencing to prevent wildlife from interacting with animals. For example, to prevent deer from getting into the facility, fences should be at least 8 feet high. Bury fencing 10 inches deep to prevent feral pigs and other animals from digging under them. While fences are expensive to install, they are inexpensive to maintain and could prevent larger future loss.

Activists, terrorists and disgruntled employees could intentionally introduce diseases to a dairy. Surveillance systems, fencing, security guards, lighting and signage will discourage unauthorized persons from accessing the facility. A surveillance system, night watchman, and/or patrols ensure the facility remains secure after business hours. Well-placed signs clearly communicate property boundaries, the presence of alarm systems and security patrols. Post signage along the perimeter of the facility and prominently display at entrances, parking lots, and on buildings and gates. A well-lit facility and perimeter discourages trespassing. Install motion detection lights in areas where people could attempt to access the facility after hours, such as site entrances, external gates and parking lots.

**Internal security** will ensure the safety of feed, records (computer and paper), and equipment and supplies. Safeguard the inside of buildings, computers and other systems to prevent tampering or sabotage. Evaluate the security of water, feed, and milk storage systems with respect to ease of intentional introduction of pathogens or other forms of contamination. Protect sensitive or restricted areas (such as water and feed systems) with locks or other access control measures, and maintain a door or lock key inventory to keep track of personnel who have access to those areas. Consider using combination locks or key cards for restricted areas, change combinations and re-program cards as part of routine security or in the event of employee termination.

Hazardous materials, pharmaceuticals and feed additives must be securely stored to prevent unauthorized access. For additional information on inventory, see [Chapter 10: Record Keeping](#_Chapter_10:_Record_2).

**Employees** are a critical component in enforcing physical security; train personnel to be aware of and immediately report suspicious behavior. See [Chapter 3: Employee Policies](#_Chapter_2:_Physical) for more information.

**Routine Biosecurity Plan for Physical Security**

| **External Security:** | |
| --- | --- |
|  | Install fencing around housing or the perimeter of the facility, routinely check for damage and make repairs in a timely manner |
|  | Employ a guard or security patrol to monitor the facility after business hours |
|  | Use an off-site monitored security system with electronic alarms on doors and windows |
|  | Install video cameras at the following locations:  Site entrances  Parking lots  Restricted areas  Storage areas (hazardous materials, biological specimens, pharmaceuticals and feed additives)  Feed storage and preparation areas  ☐ Milk storage areas  ☐ Milking parlor  ☐ Maternity pen/barn  Front office  Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | Install locks on the entry and discharge points of the facility storage devices:  Water storage tanks  Milk tanks  Fuel tanks |
|  | Lock and secure all vehicles, machinery and equipment stored outside after business hours |
|  | Ensure door hardware and locks are intended for industrial use |
|  | Install locks on all doors, windows, and vents on buildings that contain equipment, hazardous materials, pharmaceuticals and feed additives |
|  | Install and maintain self-locking doors and/or alarms on emergency exits and auxiliary doors |
|  | Conduct security inspections of storage facilities, including temporary storage vehicles on a \_\_\_\_\_\_\_\_\_\_\_ basis |
|  | Ensure roof and vent openings are locked to prevent unauthorized entry |

| **Signage:** | |
| --- | --- |
|  | Prominently display alarm and security service signs |
|  | Post “Warning: This Property Monitored by a 24 Hour Security Patrol” signs along perimeter and in parking areas  See [Signs for Routine Physical Security](#_Signs_for_Routine) for an example |
|  | Post “Private Property No Trespassing” signs along the perimeter of the facility  See [Signs for Routine Physical Security](#_Signs_for_Routine_1) for an example |
|  | Post “Do Not Enter Authorized Personnel Only” signs on the outside of all emergency exits  See [Signs for Routine Physical Security](#_Signs_for_Routine_1) for an example |
|  | Post signs directing visitors to the main office and sign-in desk  See [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) for sign examples |
|  | Post signs designating a visitor parking area. Ensure the parking area is located away from livestock, feed, and other restricted areas.  See [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) for sign examples |

| **Lighting:** | |
| --- | --- |
|  | Ensure areas surrounding structures and buildings are well-lit after dark |
|  | Install back-up lighting for emergencies |
|  | Install motion detection lights and electronic sensors at site entrances, perimeter gates and parking lots |

| **Internal Security:** | |
| --- | --- |
|  | Have keys labeled “Do Not Duplicate” to prevent unauthorized duplication |
|  | Frequently change combination locks or re-program key cards, ensure codes and combinations are changed after employee resignation or termination |
|  | Maintain a key inventory for all personnel with keys for doors or locks; ensure keys are collected after employee resignation or termination  See [Chapter 10: Record Keeping](#_Chapter_10:_Record_2) for an example of a Key Inventory Form |
|  | Restrict access to keys and controls to the following:  Front office  Computer systems  Heating, Ventilation, Air Conditioning (HVAC systems)  Propane, natural gas  Fuel supplies  Feed supplements/micro-ingredients  Pharmaceuticals  Hazardous Materials (chemicals, pesticides, etc.)  Water  Electricity/generators  Clean in Place (CIP) Systems  Automated Milking Systems |
|  | Follow the Information Technology (IT) plan in the *Dairy Business Continuity Guide* for securing computer systems |

| **Shipping and Receiving:** | |
| --- | --- |
|  | Require delivery drivers to check-in at the front desk and maintain a log recording all deliveries to the facility  For more information see [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1) |
|  | Ensure that the packing manifest for incoming deliveries matches the purchase order |
|  | Inspect packages for tampering, if packages show signs of tampering, contact local law enforcement and supplier |
|  | Keep receiving areas locked after-hours |

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| **Awareness and Training:** | |
|  | Train employees to challenge visitors who do not have visitor identification or who are not accompanied by personnel |
|  | Train employees to recognize and report all suspicious behavior |
| See [Chapter 3: Employee Policies](#_Chapter_2:_Physical) for more information about training | |

**Heightened Biosecurity Considerations for Physical Security**

In the event of a heightened biosecurity incident, a facility will need increased physical security measures to prevent a known threat (such as disease agents or an activist group that intends harm) from entering the premises. Physical security will be the primary line of defense in preventing or minimizing the risk of disease introduction to a facility.

If FEAD is suspected in the area, take necessary steps to prevent non-essential access to the facility:

* Establish one access point to minimize the introduction, and mitigate the spread of disease
* Designate an entrance/exit that is on or near a level surface with access to a water source for cleaning and disinfection (See [Chapter 16: Cleaning, Disinfection](#_Chapter_16:_Cleaning_2), and Sanitization)
* Lock all gates and secure/block access points to prevent people, vehicles, and equipment from unauthorized ingress or egress from the dairy

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Physical Security**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **External Security:** | |
|  | Install or make alterations to housing and perimeter fencing as necessary to prevent access to the facility |
|  | Establish one entrance and one exit point from the facility, block and/or lock all other entrances and exits |
|  | Use temporary fencing and concrete barriers to block all but one point of entry and exit |
|  | Place barriers as necessary to prevent people, vehicles or equipment from entering or exiting the facility |
|  | Lock all gates and fencing not designated as the primary facility entrance/exit |
|  | Assign security personnel to regularly monitor blocked points of ingress/egress for unauthorized access |

|  |  |
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| **Signage:** | |
|  | Post “Access Restricted to all Visitors and Non-Essential Personnel” signs along the perimeter fencing, blocked points of ingress/egress, visitor office, and parking areas  See [Signs for Heightened Physical Security](#_Signs_for_Heightened_1) for an example |
|  | Post “Restricted Area, Keep Out, Authorized Personnel Only” signs on all buildings and structures  See [Signs for Heightened Physical Security](#_Signs_for_Heightened_1) for an example |

| **Shipping and Receiving:** | |
| --- | --- |
|  | Contact vendors and cancel/postpone deliveries for non-essential items |
|  | Require deliveries for essential items to be by appointment only |
|  | Arrange for small items to be delivered off-site and picked-up by facility personnel |



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##### Signs for Routine Physical Security



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##### Signs for Heightened Physical Security

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# Chapter 15: Vector Control

**Routine Biosecurity Considerations for Vector Control**

Vectors such as mosquitoes, ticks, and flies can pose a significant disease risk to cattle. These parasites can amplify the spread of zoonotic and bovine diseases and increase stress on cattle. Prevention practices are the most effective strategy of routine vector control.

Vectors can transmit diseases to cattle either mechanically or biologically. Mechanical transmission occurs when the vector obtains the disease from one animal directly from an animal’s eyes, nose, or from the environment in contaminated manure or feed and transmits it to another animal. Biological transmission takes place when the vector ingests the pathogen from the blood of an infected animal and then transfers the pathogen into or onto another animal.

The most effective way to prevent mechanical or biological transmission is to reduce vector breeding areas, minimize vector exposure to the cattle, and eliminate the vector(s) using a combination of environmental, biological and chemical control methods. Follow an Integrated Pest Management (IPM) plan under the direction of a qualified pest control specialist. Examine and augment Integrated Pest Management Plans as necessary to align with the goals of this *Biosecurity Plan*.

**Environmental control** is the most important prevention strategy for vector control. Focus effort on controlling insect breeding areas. Elimination of locations for breeding and laying eggs reduces the number of disease spreading insects on the dairy. Remove sources of standing water or treat them with larvicide, regularly remove organic debris, change bedding, and keep vegetation short to discourage mosquito, fly and tick breeding.

**Biological controls** include parasitic wasps, predatory mites, biocides and beetles that feed on pupae/larvae living in manure and vegetation and are effective methods to control insect populations. However, only use insects in approved areas because they may feed on other beneficial insects, check with an IPM specialist for recommendations.

The use of certain chemical and biological pesticides is restricted by state laws in most states and may only be used by licensed pest control specialists. State law requires keeping records of pesticide application for two years. Follow the [Texas Department of Agriculture](http://www.texasagriculture.gov/Portals/0/forms/PEST/Applicator/pesticide_applicator_record_requirements.pdf) pesticide applicator requirements. Use the [Pesticide Use Record](#_Pesticide_Use_Record) form to record application of restricted-use and state-limited-use pesticides. When using chemical control methods applied directly to the animal, use the [Animal Health Record Form](#_Animal_Health_Record_1) in [Chapter 10: Record Keeping](#_Chapter_10:_Record_2).

**Routine Biosecurity Plan for Vector Control**

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| --- | --- |
| **Environmental Control:** | |
|  | Remove sources of standing water or treat with larvacide |
|  | Frequently clean water troughs and remove organic matter |
|  | Employ a manure management program |
|  | Clean up spilled, soiled feed and materials |
|  | Eliminate sources of decaying organic matter |
|  | Remove grass and weeds around pens, hutches and fences |
|  | Remove dead stock |

|  |  |
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| **Biological Control:** | |
|  | Utilize parasites such as predatory mites, beetles or parasitic wasps that eat fly larvae |
|  | Utilize biocides such as *Bacillus thuringiensis* to kill insect larva |
|  | Follow an Integrated Pest Management Plan under the direction of a licensed pest control specialist |
|  | Keep records of pesticide application for two years in accordance with state law |
| Keep a record of restricted-use and state-limited use pesticides with the [Pesticide Use Record](#_Pesticide_Use_Record_1) form | |

| **Chemical Control:** | |
| --- | --- |
|  | Use pesticides, insecticides, antiparasitics and feed additives according to manufacturer’s recommendations |
|  | Utilize a licensed applicator to apply all restricted-use and state-limited-use pesticides to the environment |
|  | Use feed impregnated with larvicide |
|  | Utilize area sprays (knockdown) to kill adult flies |
|  | Use approved pour-on, spray, or eartag insecticides on animals as needed |
|  | Record and observe withdrawal times associated with each product |
|  | Follow an Integrated Pest Management Plan under the direction of a qualified pest control specialist |
|  | Keep records of pesticide application for two years in accordance with state law |
| Keep a record of restricted-use and state-limited use pesticides with the [Pesticide Use Record](#_Pesticide_Use_Record_1) form | |

|  |  |
| --- | --- |
| **Fly Control:** | |
|  | Utilize baits and fly traps (e.g., fly paper) |
|  | Use animal-approved insecticides to control flies in the following areas:  ☐ Hutches if applicable  ☐ Barns  ☐ Milking Parlors  ☐ Feed areas |

|  |  |
| --- | --- |
| **Tick Control:** | |
|  | Ensure pets residing on or entering the facility are not a vector for ticks by treating them with anti-tick medication, contact your veterinarian for more information |

| **Mosquito Control:** | |
| --- | --- |
|  | Frequently clean and change the water in tanks, troughs and bowls |
|  | Add drainage holes to containers that trap water |
|  | Drain tarps and covers that collect water after a rain, consider using split tires to weigh down silage tarps |
|  | Keep roof gutters clean to prevent them from holding water |
|  | Pick up and properly dispose of all trash, especially anything that could hold water |
|  | Grade areas where road ruts and potholes exist |

|  |  |
| --- | --- |
| **Personal Protection:** | |
|  | Check for and remove any ticks after working near infested cattle or vegetation |
|  | Wear long pants and sleeves to cover skin |
|  | Use insect repellant containing N,N-Diethyl-meta-toluamide (DEET) on exposed skin |
|  | Wear appropriate PPE to avoid contact with vectors and/or chemicals during treatment |

**Heightened Biosecurity Considerations for Vector Control**

Vector control can play an important role in the prevention of the spread of disease on or off the facility in the event of an outbreak of a vector transmitted FEAD. The most effective way to prevent vectors from transmitting disease to or from cattle, personnel, or pets is to follow a comprehensive routine vector control program.

If there is a confirmed FEAD outbreak in the region, consult with local, state or federal emergency management officials and a local vector control specialist.

**Maintain heightened disease detection protocols** throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

**Heightened Biosecurity Plan for Vector Control**

*Please review any recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **Fly Control:** | |
|  | Contact a licensed pest control specialist for fly control services during an outbreak |

|  |  |
| --- | --- |
| **Tick Control:** | |
|  | Contact a licensed pest control specialist for tick control services during an outbreak |

|  |  |
| --- | --- |
| **Mosquito Control:** | |
|  | Contact a licensed vector control specialist for mosquito control services during an outbreak |

|  |  |
| --- | --- |
| **Personal Protection:** | |
|  | Wear appropriate PPE to avoid contact with vectors during an outbreak |



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##### Pesticide Use Record

**Business Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Application Date | Time Started | Name of the person who applied treatment | Location of Land Treated | | Site Treated | | At time of treatment | | | |
| Wind Direction | | Wind Velocity | Air Temp |
|  |  |  |  | |  | |  | |  |  |
| Product Trade Name | | EPA Registration # | Target Pest | Rate of Product Per Unit | Equipment ID # | | | Spray Permit # | | |
|  | |  |  |  |  | | |  | | |
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|  | |  |  |  |  | | |  | | |
| Licensed Applicator’s Name & License # | | | Unlicensed Applicator’s Name (If applicable) | | Total Acres or Volume of Acres Treated | Total Volume of Spray Mix, Dust, Granules or other Materials Applied Per Unit | | | | |
|  | | |  | |  |  | | | | |
| Additional Information | | | | | | | | | | |
|  | | | | | | | | | | |

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**Chapter 16: Cleaning, Disinfection, and Sanitization**

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# Chapter 16: Cleaning, Disinfection, and Sanitization

**Routine Biosecurity Considerations for Cleaning, Disinfection, and Sanitization**

Disease can be spread both directly (when one animal transfers disease to another animal) and indirectly (when a type of equipment or object, contaminated with disease-causing organism, carries the disease to an animal). There are three levels of cleaning surfaces; these levels are cleaning, sanitizing and disinfecting. Cleaning a surface removes visible dust and debris. Cleaning does not remove microscopic organisms; it only clears away visible elements such as dust or dirt. Sanitizing a surface makes that surface sanitary or free of visible dirt contaminants that could affect your health. Sanitizing is meant to reduce the occurrence and growth of bacteria, viruses and fungi. Disinfection involves the use of chemical products and will kill microorganisms. Typically items that are involved in the food chain (e.g., milking equipment) are sanitized while farm tools (e.g., shovels) are disinfected.

Cleaning, disinfection, and sanitization can limit the risk of disease which can spread from trucks, loaders, trailers, milk trucks, equipment, delivery people, and other infected animals. Consideration must be given to the maintenance of required standards in all areas of the dairy farm including cubicles, calving pens, collection areas, milking parlors, and dairy. Reexamine any measures not undertaken routinely for implementation under heightened biosecurity status.

**Basic cleaning and disinfection (C&D)** of premises, equipment, vehicles, and personnel is recommended to be a part of routine operations for most areas of the dairy. Increase C&D efforts during an animal health emergency. Carry out C&D processes in a systematic manner to ensure efficacy and efficiency.

Keep all equipment clean to prevent the spread of disease. This means not only the trucks, tractors, veterinary tools, etc. on the farm, but also employee boots and clothes.

Many of vehicles travel on and off the dairy daily. They can carry disease from farm-to-farm if not cleaned in between deliveries. Help enforce farm rules that restrict access to certain areas to reduce risk.

Dairy farm employees should C&D small equipment such as bolus guns, hoof trimming tools, and calving chains between animals; scrub all the tools with a brush; and once the tools are clean of dirt and debris, they should disinfect them. Residual dirt left on tools makes disinfectants ineffective.

Dairy farm employees should wear clean clothes to work each day. If they work at more than one farm, they should have clean clothes for each farm. When washing their clothes, they should use the hottest temperature possible and tumble dry. Make sure there is no dirt on boots. All employees should was their boots between pens, particularly if they visit a “sick” pen. It is important to work with youngest animals first as they are the most susceptible to disease.

Regardless of the situation, item, or area, effective C&D involves understanding the steps of the basic C&D protocol. The basic steps of C&D are listed in [Figure 16.1](#_Figure_16.1_–).



#### Figure 16.1 – Basic Cleaning, Disinfection, and Sanitization Protocol

**Cleaning** is an important step in the C&D process. When done correctly, cleaning alone can remove over 90% of microorganisms. The goal is to remove as much organic matter as possible. Organic material can harbor microorganisms for long periods of time. This step improves disinfection efficacy since most disinfectants are not as effective when organic material is present. The cleaning process involves 1) dry cleaning (removal of debris with a brush or broom), 2) washing, 3) rinsing, and 4) when possible, complete drying.

**Cleaning Calving Pens** is a critical part of a dairy farm’s biosecurity plan. Calves need the best start in life and cows need the best possible care at calving to ensure profitable lactation. A crucial factor in achieving these goals is to make sure that the calving environment is clean. Anything contaminated with feces, manure and after birth will attract flies. Work with the veterinarian to determine the best bedding material for your facility. Certain materials work better in particular regions of the country. Straw and corn stalks are commonly used in Texas; whereas sawdust, ubiquitously used around the country, is not produced in Texas and is more expensive. The most important thing is clean and dry bedding that can be easily removed.

**Washing** further reduces the number of microorganisms in the area to a safer level. This is the most crucial step in the C&D process and will most likely eliminate the majority of remaining microorganisms if performed correctly. Soak the area with hot waterand detergent or other cleaning agent, and then wash by wiping, spraying, or scrubbing.

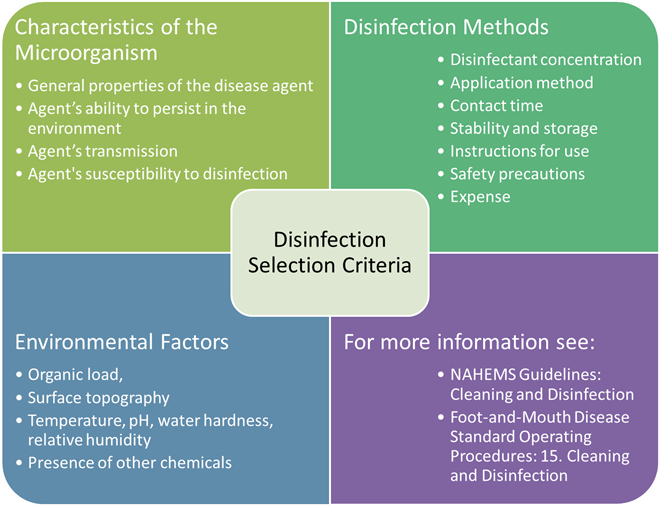
The washing process is one of the most commonly overlooked steps in the C&D process. However, the process helps to get rid of the oils that could inhibit disinfection. Allow areas to dry before application of the selected disinfectant to reduce potential dilution of the disinfectant upon application.

Employees should be encouraged to wash their hands frequently and consistently. This means before they eat, before treating an animal, and after they finish work. It takes at least 20 seconds to properly wash hands.

**Disinfectants** are physical or chemical agents that destroy vegetative bacteria (but not necessarily spores), viruses, and fungi. Use disinfectants that target a wide variety of organisms, work in any environment, and are non-toxic, non-irritating, non-corrosive and relatively inexpensive in routine biosecurity situations where no specific disease of concern is identified. Unfortunately, no disinfectant is ideal for all criteria. Therefore, careful consideration of the characteristics of a disinfectant is essential to select the most useful, effective and cost-efficient product. See [Figure 16.2.](#_Figure_16.2_–)

**Disinfectant selection** will depend on the microorganism targeted, as well as environmental factors (e.g., temperature, pH), and disinfection methods. [Table 16.5](#_Table_16.1_–) shows the effectiveness of different types of chemical disinfectants on types of microorganisms. Use the table in [Annex A](#AppendixA) to determine the targeted microorganism’s type and then [Table 16.5](#_Table_16.1_–) to determine which disinfectants kill the microorganism.

**Disinfectant labels** contain important information on the proper use and hazards of a chemical. Always read the entire product labeland explicitly follow dilution instructions to ensure the safest, most effective concentration is applied. **It is a violation of federal law to use a product in a manner inconsistent with its labeling.** Pay particular attention to the proper use of a product application, effectiveness, and associated hazards (human, animal, and environment). This information will assist in decisions for infection control efforts.



#### Figure 16.2 – Disinfectant Selection Criteria

**Clean and sanitize** all milking equipment, lines, and utensil surfaces that come into contact with milk in between each milking. Cleaning will remove milk soils, organic and mineral solids that form on equipment surfaces after the milk is removed. Sanitizing will further reduce the occurrence and growth of bacteria, viruses and fungi. Inadequate or improper cleaning or sanitizing allows bacteria to remain on equipment surfaces and to grow and multiply. This results in elevated bacteria counts in milk and increased risk of mastitis in cows.

**Sanitizing Milk Equipment** is a difficult task. It is suggested that dairy personnel sanitize milk contact surfaces with either hot water alone or with a chemical sanitizer. A dairy should provide a suitable place for cleaning and disinfecting, draining and storing milking and ancillary equipment which is not cleaned and disinfected in-place.

Hot water should not be above >185oF initial temperature, anything above this temperature could cook or burning milk residues onto the surfaces. The most important guideline is that it must not fall below 120oF at any point during the wash or the milk fat will precipitate out onto stainless steel surfaces.

Dairy farm employees provide the first line of defense in keeping dairy cows healthy and content. To promote a biosecure environment, employees should be encouraged to practice consistent pre-and post-milking procedures, follow Pasteurized Milk Ordinance (when applicable), and clean all ancillary equipment (towels, dip cups, teat plugs, gloves, aprons, sleeves, etc.) during milking.

**Waste management** is an important aspect of any C&D operation. Waste can be subject to different federal, state, local, and tribal regulations and requirements. Consult with the animal health authority and environmental regulating agency on how to handle waste generated by C&D procedures.

For more information on waste management, see the EPA’s [*Planning for Natural Disaster Debris Guidance*](http://www.epa.gov/wastes/conserve/imr/cdm/pubs/pndd.pdf)*.*

**Routine Biosecurity Plan for Cleaning, Disinfection, and Sanitization**

| **Cleaning Equipment, Vehicles, and Premises:** | |
| --- | --- |
| ☐ | Clean pens as frequently as possible, before introducing new animals  ☐ Clean calving pens  ☐ Clean hospital pens or barns  ☐ Clean and repair (as necessary) water troughs and feed bunks |
| ☐ | Ensure equipment brought in by outside contractors is cleaned before being brought onto dairy farm property |
| ☐ | Clean hands and equipment in between feedings |
| ☐ | Clean equipment that comes into contact with manure before using it for any other purpose |
| ☐ | Establish daily and routine cleaning and decontamination schedules to keep manure and bodily fluids from contaminating feed and water. |
| ☐ | Clean up and dispose of spilled feeds promptly, particularly when adjacent to storage or feeding areas to prevent the attraction of vermin |
| ☐ | Clean and disinfect all equipment, clothing, boots, etc. that come into contact with ill animals |
| ☐ | Thoroughly clean and disinfect facility and equipment after treatment of ill animals |

| **C&D Equipment:** | |
| --- | --- |
| ☐ | Create a designated cleaning station for movable equipment that contains C&D tools (e.g., tubs, scrub brushes)  ☐ Ensure designated cleaning station contains a water supply and runoff collection  ☐ Prevent runoff water from draining into “clean” areas  ☐ Locate area (and drainage from the location) away from sensitive areas, such as wellhead areas, livestock areas (e.g., down slope from animal areas) or driveway |
| ☐ | Create a mobile cleaning set-up for C&D of areas such as maternity area, and hospital pen or barn  ☐ Develop a plan for ensuring the mobile equipment has a water supply  ☐ Develop a plan for runoff collection and disposal |
| ☐ | Maintain C&D equipment |
| ☐ | Train employees on how to operate C&D equipment |

| **Sanitizing Milk Equipment:** | |
| --- | --- |
| ☐ | Clean and sanitize all milking equipment, lines, and utensil surfaces that come into contact with milk in between each milking |
| ☐ | Develop and train employees on a milk equipment sanitization SOP |
| ☐ | Ensure the milk equipment sanitization SOP is in compliance with the follow Pasteurized Milk Ordinance |

| **Waste Management:** | |
| --- | --- |
| ☐ | Comply with federal, state, local, and tribal regulations and requirements  For more information on waste management, see the EPA’s *Planning for Natural Disaster Debris Guidance* at:  http://www.epa.gov/wastes/conserve/imr/cdm/pubs/pndd.pdf |

**Heightened Biosecurity Considerations for Cleaning, Disinfection, and Sanitization**

Cleaning, disinfection, and sanitization procedures are a crucial part of any animal health emergency response situation. The potential for the spread or transfer of microorganisms, especially highly contagious pathogens, can occur from the direct or indirect contamination of premises, equipment, vehicles or personnel and the movement of animals or animal products. Disinfections and sanitization procedures are used to inactivate or destroy microorganisms, thereby inhibiting or eliminating further spread. These efforts are vital for disease control and eradication measures.

During a heightened biosecurity situation, target efforts against the properties of the disease and organisms that cause it. As discussed in previous chapters, this includes knowing the route of transmission of disease so procedures can be targeted toward contaminated areas. Additionally, disinfectants should be selected based upon their efficacy against the targeted disease causing organism (see [Table 16.5](#_Table_16.5_–) and [Annex A](#AppendixA)).

**Microorganisms** vary in survivability or persistence in the environment, and in susceptibility to disinfection. Be aware of the suspected or confirmed pathogen involved to select the most efficacious disinfection method. This includes understanding the disease agent’s 1) general properties, 2) persistence in the environment, 3) route of transmission, and 4) susceptibility to disinfection.

**Vehicles** (trucks, trailers, etc.) used for transporting animals, products or by-products or contaminated equipment have the potential to spread disease. Contamination can occur directly by the vehicle or by transfer of material by wheels. During heightened biosecurity operations, further limit the number of vehicles allowed to enter the animal handling portions of the dairy farm. See [Chapter 8: Movement On and Off the Property](#_Chapter_8:_Movement_2) for more information about cross contamination.

#### Figure 16.3 – Vehicle Disinfection

Clean the vehicle first to remove as much organic debris as possible. Brush or scrape debris from the vehicle. Washing of the vehicle should follow. High pressure spraying equipment (i.e., 200 - 1000 psi) may help to clean cracks and crevices. Clean the vehicle from top to bottom and wash the underside of fender wells and the vehicle frame. Apply an appropriate disinfectant with a low pressure sprayer and allow its proper contact time to elapse. Also, clean and disinfect the interior of the vehicle prior to entering and leaving the dairy farm.

**Designated C&D areas** are locations set aside for staging and controlling C&D operations. Create a designated cleaning station containing equipment (e.g., tubs, scrub brushes) to aid in the removal of gross debris and application of disinfection products. Ensure designated cleaning station contains a water supply and runoff collection area. Ensure the wastewater and runoff collection plan is compliant with any EPA National Pollutant Discharge Elimination System (NPDES) permits the dairy farm maintains. Runoff of infectious material or chemical solutions may be toxic to aquatic organisms or further spread disease.

**People** coming onto the dairy farm can be a source of disease. Limit access to animals during a heightened biosecurity operation (see [Chapter 6: Visitor Control](#_Chapter_6:_Visitor_1)).

Individuals visiting the dairy farm must thoroughly wash hands with antibacterial soap before entering and leaving the premises. Be sure to provide warm water with antimicrobial soaps, scrubs, and hand cleaners for personnel decontamination following removal of disinfected PPE items.

Boot baths are an excellent means of preventing mechanical transfer of microorganisms by personnel. Figure [16.4](#_Figure_16.4_–) shows a photo of a boot bath being used. Boot baths must be maintained properly to be effective. Common problems with boot baths include 1) inadequate removal of organic debris prior to stepping into the disinfectant solution, 2) inadequate contact time allowed for the disinfectant, and 3) infrequent change of disinfection solution. Scrub and clean boots of all grossly visible debris prior to soaking in the disinfectant boot wash. Allowing the proper contact time for a disinfectant is as important for boot baths as it is when cleaning premises and equipment. Replace boot bath disinfectant solution daily, at a minimum; however, more frequent replacement will be needed in large or busy areas or when organic debris accumulates in the boot bath. Keep boot bath solutions from freezing and protect from rain to avoid dilution. Disinfectants are most effective on rubber boots. Porous materials like leather are more difficult to disinfect and may be ruined in the process.

#### Figure 16.4 – Use of a Boot Bath



**Personal protective equipment** protects employees during C&D operations. This includes wearing coveralls, boots, and gloves. Wear face protection (e.g., goggles, mask, face shield) based on the product or application method (e.g., misting) used and when mixing disinfectant solutions. Wear masks in situations involving significant amounts of dust generation or zoonotic disease potential (see [Chapter 9: Zoonotic Diseases](#_Chapter_9:_Zoonotic_1)). Additional personal protective hoods or respirators may be necessary for some situations (e.g., formaldehyde or acidic disinfectants).

For more information on PPE, see the *FAD PReP/NAHEMS Guidelines: Personal Protection Equipment (2011)*.

For more information on cleaning and disinfection see *FAD PReP/NAHEMS Guidelines: Cleaning and Disinfection* (2011)and the *FAD PReP FMD SOP 15: Cleaning and Disinfection* (2010).

Maintain heightened cleaning and disinfection protocols throughout the duration of the animal health emergency until animal health officials have eradicated or otherwise controlled the disease.

#### Table 16.5 – Effectiveness of Chemical Disinfectants of Different Types of Microorganisms

**Instructions:** Consult a veterinarian, or go to the [Annex A: Disease Table](#AppendixA) to look up the disease of interest. Use the table to identify what type of microorganism causes the disease (e.g., vegetative bacteria, enveloped virus, non-enveloped virus, bacterial spore, acid-fast bacteria or prion). Use the table below to determine what type of chemical disinfectant will kill that type of microorganism.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Chemical Disinfectants** | | **Microorganisms** | | | | | |
| **Vegetative bacteria** | **Enveloped viruses** | **Non-enveloped viruses** | **Bacterial spores** | **Acid-fast bacteria** | **Prions** |
| Acids | hydrochloric, sulfuric, acetic | **+** | **+** | **-** | **±** | **-** | **-** |
| Alcohols | ethyl alcohol, isopropanol | **++** | **+** | **-** | **-** | **+** | **-** |
| Aldehydes | formaldehyde, glutaraldehyde | **++** | **++** | **+** | **±a** | **+** | **-** |
| Alkalis | sodium hydroxide, calcium hydroxide, calcium carbonate | **+** | **+** | **±** | **±** | **+** | **-** |
| Biguanides | chlorhexidine | **++** | **±** | **-** | **-** | **-** | **-** |
| Chlorine Compounds | sodium hypochlorite | **+** | **+** | **+** | **+** | **+** | **-** |
| Oxidizing Agents |  | **+** | **+** | **±** | **+b** | **±** | **-** |
| Phenolic Compounds | o-phenylophenol | **++** | **±c** | **-** | **-** | **±** | **-** |
| Quaternary Ammonium Compounds |  | **++** | **±** | **-** | **-** | **-** | **-** |

|  |  |
| --- | --- |
| **++** highly effective  **+** effective | **±** limited or variable  **–** no activity |
| (a) formaldehyde is sporicidal, glutaraldehyde is not.  (b) hydrogen peroxide combined with peracetic acid, strong oxidizing agents, is sporicidal  (c) varies with composition of disinfectant  Adapted from NAHEMS Operational Guidelines: Cleaning and Disinfection, November 2011. | |

**Heightened Biosecurity Plan for Cleaning, Disinfection, and Sanitization**

*Please review all recommended measures not implemented routinely and consider implementing them during heightened biosecurity operations*

|  |  |
| --- | --- |
| **General:** | |
| ☐ | Select an appropriate disinfectant based on the microorganism targeted, environmental factors (e.g., temperature, pH) and disinfection methods |
| ☐ | Require that all vehicles be cleaned before coming into the animal handling area of the dairy farm |

|  |  |
| --- | --- |
| **People:** | |
| ☐ | Provide clean protective clothing and footwear for visitors (e.g., booties for indoor areas or washable overboots made of non-porous material for outdoor and animal areas) |
| ☐ | Require visitors to wear protective clothing and footwear when entering livestock areas |
| ☐ | Require hands be thoroughly washed with antibacterial soap before entering AND leaving the premises. Wash hands even if gloves are worn |
| ☐ | Provide boot baths at the entrance/exit of animal areas |
| ☐ | Require visitors to clean and disinfect protective outer clothing and footwear or remove and leave behind if disposable |

| **Personal Protective Equipment:** | |
| --- | --- |
| ☐ | Provide personnel conducting C&D operations with proper PPE  ☐ Coveralls  ☐ Boots (that are waterproof and easy to clean and disinfect)  ☐ Gloves |
| ☐ | Instruct personnel conducting C&D operations to wear face protection (e.g., goggles, mask, face shield) based on the product or application method (e.g., misting) used and when mixing disinfectant solutions |
| ☐ | Instruct personnel conducting C&D operations to wear masks in situations involving significant amounts of dust generation or zoonotic disease potential |
| ☐ | Follow any additional PPE instructions recommended by:  ☐ Disinfectant product label  ☐ Veterinarian or physician  ☐ Environmental regulatory authority |

Glossary

**Aerosol transmission** refers to method of spreading disease through aerosols. Aerosol transmission occurs when disease agents contained in droplets pass through the air from between animals, or from animals to humans, or vice versa. Most pathogenic agents do not survive for extended periods of time within the aerosol droplets, and as a result, close proximity of infected and susceptible animals is required for disease transmission.

**Antibiotic** is a chemical substance produced by a microorganism that has the capacity, in dilute solutions, to inhibit the growth of or to kill other microorganisms.

**Antimicrobial residue** refers to the presence of an antimicrobial at a level in meat or milk that is higher than levels established by the FDA.

**Artificial insemination** is the introduction of semen into the uterus or cervix of a cow/heifer by a means other than copulation.

**Biological vectors** are vectors that support replication of the pathogen. Biological vectors are usually persistently infected with the disease agent and may even be a required part of the pathogen’s life cycle.

**Biosecurity** is a collection of management practices designed to minimize the risk of disease introduction and spread on an operation.

**Biosecurity Plan** is a plan or protocol that reflects biosecurity principles and procedures concerning the movement of personnel, vehicles, and equipment; examination of animals; visitor and employee policies; communication plans; disease detection and surveillance; feral animal and wildlife management; and physical security.

**Buffer Zone (BZ)** is a defined area that immediately surrounds an Infected Zone (IZ) or a Contact Premises (CP) with susceptible animals that may have been exposed to a FEAD, either directly or indirectly, including but not limited to exposure to animals, animal products, fomites, or people from Infected Premises.

**Bulls** are intact male bovine

**Calf ranches** are operation that raise heifer calves, and possibly bull calves, from birth or from weaning depending on the facility. Heifers are raised through breeding age or just before calving based on the needs of the home dairy. Bulls are often sold at weaning.

**Cleaning and disinfection** involves the use of physical or chemical processes to reduce, remove, inactivate, or destroy pathogenic microorganisms. For a more detailed explanation see U.S. Department of Agriculture (USDA), Foreign Animal Disease Preparedness & Response Plan, 2011, NAHEMS Guidelines: Cleaning and Disinfection.

**Colostrum** is the first milk produced by a cow that has just calved. It is rich in nutrients, growth factors, and proteins that the newborn calf needs to establish immunity against disease pathogens. This milk is non-saleable for human consumption.

**Confirmed positive cases** indicate what tests are required to unequivocally determine the presence of the FEAD agent.

**Control Area (CA)** consists of an Infected Zone and a Buffer Zone. It contains has individual premises under quarantine for Infected Premises, Suspect Premises, and Contact Premises and movement restrictions for At-Risk Premises and Monitored Premises.

**Cows** are female dairy bovines that have calved at least once.

**Cull or ‘market’ cattle** are animals voluntarily removed from the herd and sold to a slaughter facility.

**Dairy** is the physical location where cows are milked and milk is stored until picked up for over-the-road transport.

**Dairy beef** generally refers to Holstein steers being fed for the slaughter market.

**Direct contact transmission** refers to method of spreading disease through direct contact. Transmission by direct contact requires the presence of an agent or organism in the environment or within an infected animal. An animal becomes exposed when the agent directly touches open wounds, mucous membranes, or the skin through blood, saliva, nose to nose contact, rubbing or biting.

**Disinfectants** are registered by the USEPA as “antimicrobial pesticides” and are substances used to control, prevent, or destroy harmful microorganisms (i.e., bacteria, viruses, or fungi) on inanimate objects and surfaces.

**Environmental transmission** refers to method of spreading disease through the environment. This disease agent can survive for extended periods of time in soil or other organic material like bedding, old feed, etc. Animals can then acquire the disease agent: from the environment through inhalation of aerosolized microbes, via oral consumption, or from direct contact. The routes the disease agent uses to get into the animal can be controlled if the animal's environment is controlled.

**Essential visitors** are people who need to come onto the dairy in order to perform a function necessary to maintain dairy operation and animal health. Examples of essential visitors include vendors, contractors, repairmen and veterinarians.

**Fomite transmission** refers to method of spreading disease through fomites. A fomite is an object that can carry disease agents from one susceptible animal to another. Examples of fomites include contaminated brushes, clippers, needles, balling guns, clothing, feed or water buckets, and shovels. Traffic transmission is another special type of fomite transmission in which a vehicle, trailer, or human spreads organic material to another location.

**Freestall Barns** are a type of facility to house dairy cows that provides the animals with a clean, dry, comfortable resting area and easy access to food and water. The cows are not restrained and are free to enter, lie down, rise and leave the barn whenever they desire.

**Fresh cows** are cows that have recently given birth (calved).

**Heifers** are female dairy bovine that have not yet calved.

**High Temperature / Short Time (HTST)** is the most common form of pasteurization in the dairy industry. This is milk that is heated to a required minimum temperature of 161oF for 15 seconds. Milk is pasteurized to kill any pathogenic bacteria that may be present.

**Heightened Biosecurity Measures** should be followed when a confirmed or suspected highly contagious disease exists (e.g., FMD) in the region or even anywhere in the country. Heightened Biosecurity Measures should be followed when there is an increased risk of a highly infectious disease being brought into your dairy.

**High-risk** visitors are individuals who have regular close contact with animals, their excretions, and secretions. Examples of this type of visitor include veterinarians, animal haulers, custom processors, and anyone with close contact to animals. Additionally, visitors who recently traveled to foreign countries should be evaluated as a potential high-risk visitor.

**Infected Zone (IZ)** is a defined area that immediately surrounds an infected premises (IP) where presumptive positive case or confirmed positive case exists based on laboratory results, compatible clinical signs, FMD case definition, and international standards.

**Integrated pest management** is the use of multiple tactics in a compatible manner to maintain pest populations at levels below those causing economic injury while providing protection against hazards to humans, domestic animal, plants, and the environment, (Arneson 2000). IPM strategies can be categorized as chemical, biological, cultural, physical, genetic, and regulatory.

**Low-risk** visitors are individuals with no recent livestock or poultry contacts prior to the visit. An example of this type of visitor is someone who lives in an urban area with no livestock or poultry contacts prior to visit.

**Maximum incubation period** is the longest period which elapses between the introduction of the pathogen into a susceptible animal and the occurrence of the first clinical signs (or other epidemiological evidence) compatible with the FEAD agent.

**Mechanical vectors** are vectors that carry the pathogen but the pathogen is not altered while on the vector. Infection in mechanical vectors tends to be short-lived and a mechanical vector is considered little more than a flying fomite.

**Medium-risk** visitors are individuals who have limited animal contact due to the location of worksites on premises. Examples of this type of visitor include sales representatives, equipment repairpersons, and delivery people.

**Milk hauler** is the person licensed by the State regulatory agency responsible for milk measuring, sampling, pumping, and transporting over-the-road in a milk tanker; in some states, personnel on farm can become licensed to perform these tasks.

**Mortalities** are deaths of animals; dead animals can be referred to as mortalities.

**N-95 Mask** is a respirator that is the most common of the seven types of particulate filtering facepiece respirators. This product filters at least 95% of airborne particles but is not resistant to oil. For more information see the [CDC NIOSH website](http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/n95list1.html).

**Non-essential visitors** are people who wish to visit the dairy but whose visit is not required. Examples of non-essential visitors include someone wanting a tour, or salesmen.

**Nonsaleable milk** is milk from cows that cannot be sold commercially. Often referred to as waste milk. This milk may have antibiotic residues in it from treating the lactating cow for a disease condition or the milk could contain infectious cells from mastitis or transition milk after calving.

**Office International des Epizooties (OIE)** an international organization created by an International Agreement of January 25, 1924, signed by 28 countries. In May 2002, the OIE totaled 162 Member Countries. OIE standards are recognized by the World Trade Organization as a reference for international sanitary rules.

**Oral transmission** refers to method of spreading disease through oral means. Pathogenic agents can be transmitted to animals orally through consumption of contaminated feed, water, or licking/chewing on contaminated environmental objects. Feed and water contaminated with feces, urine or saliva are frequently the cause of oral transmission of disease agents.

**Personal Protective Equipment (PPE)** is equipment used as a barrier between an individual and a hazard that could result in an injury or occupational illness.

**Powdered/Replacer milk** isa product that when mixed with warm water provides nutrients to a pre-weaned calf.

**Pre-fresh** is the time 3 to 4 weeks just prior to calving. Cows and heifers in this part of their gestation are referred to as close-up and pre-fresh respectively. They are often housed and fed separate from other pregnant animals.

**Premises** are a tract of land, including its buildings. Also, a building together with its grounds or other appurtenances.

**Presumptive positive cases** include clinical signs consistent with the FEAD, epidemiological links, and laboratory test(s) that would support current infection or exposure to the disease of concern.

**Raw milk** is milk that has not been pasteurized or homogenized.

**Restricted-use pesticides** will state “restricted use” on the product label as required by the EPA.They may only be purchased and used by certified pesticide applicators or people under their direct supervision.

**Routine Biosecurity Measures** are those activities that should be followed during normal day-to-day operations to help protect your operation and lower the risk of a disease being brought onto your facility.

**Sanitizers** are products which destroy 99.999% of specified test bacteria in 30 seconds under conditions of the Official Detergent Sanitizer Test (sometimes called Weber & Black Test)

**Standard Operating Procedures** provide specific details related to various topic areas.

**State-limited-use pesticides** contain certain active ingredients that have the potential to cause adverse effects to non-targeted vegetation and are classified as SLU when distributed in containers larger than one quart liquid or 2 pounds dry or solid. Also includes pesticides or devices for predation control.

**Surveillance Zone** **(SZ)** is the zone 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 focuses on premises determined to be at the highest risk of infection.

**Vector-borne transmission** refers to method of spreading disease through a vector. Vector-borne transmission occurs when an insect acquires a pathogen from one animal and transmits it to another. Fleas, ticks, and mosquitoes are common biological vectors of disease, and flies and cockroaches are a common mechanical vector.

**Waste milk** originated from a number of sources including: leftover milk in pipelines and bulk tanks, mastitic milk, colostrum and transitional milk, milk from antibiotic-treated cows, spills, bulk tank failures and rejected milk loads.

**Zoonotic diseases** are transmissible between animals and humans. Human exposure to zoonotic diseases may occur through any of the five routes of transmission. Because of public health concerns, the zoonotic risk of a particular pathogenic agent should be considered in a biosecurity risk assessment.

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Annex A: Disease Table

| **Disease / Pathogen** | **Zoonotic Potential** | **TAHC Reportable\*** | **OIE Reportable** | **Mode of Transmission\*\*** | | | | | | **Endemic Areas\*\*\*** | | | | **Agent Type** | **Sanitary prophylaxis** | **Medical prophylaxis** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Aerosol** | **Direct Contact** | **Fomite** | **Oral** | **Vector** | **Environmental** | **United States** | **Canada** | | **Mexico** |
| Anthrax | Y | Y | Y | M | S | S | S |  | S | L | Y | | 2010 | Bacterial Spore | Decontamination of contaminated tissues, surfaces, and environments is difficult. | Vaccine; Antibiotics effective, but course of disease usually to quick |
| Aujeszky's disease (Pseudorabies) | N | Y | Y | S | M | S | M |  | S | L | N | | L | Enveloped Virus | Prevent Feral Pig population from interacting with cattle |  |
| Bluetongue (EHD) | N |  | Y |  |  | S |  | M |  | Y | 1988 | | 2010 | Non-Enveloped Virus | No efficient treatment; insect control | Vaccine |
| Bovine babesiosis Tick Fever, Cattle Fever, Texas Fever, Piroplasmosis, Redwater | Y | Y | Y |  |  |  |  | M |  | 1943 | N | | L | Protozoan | Reducing exposure of cattle to ticks | Vaccine |
| Bovine spongiform encephalopathy (BSE) | Y | Y | Y |  |  |  | M |  |  | Y | 2011 | | N | Prion | Do not use feed containing ruminant derived proteins; Decontamination of prion-contaminated tissues, surfaces, and environments is difficult | There is no treatment for BSE |
| Bovine tuberculosis | Y | Y | Y | M |  |  | S |  |  | L | ? | | L | Acid-fast bacteria |  | Treatment of infected animals is rarely attempted because of the high cost, lengthy time and the larger goal of eliminating the disease |
| Bovine viral diarrhea (BVD) | N |  | Y | M | M | S |  |  |  | Y | Y | | L | Non-Enveloped Virus | Control is achieved with a combination of removal of infected cattle, vaccination, and enhanced biosecurity | Vaccination should be used to decrease clinical disease and to reduce the risk of viral shedding within and between groups of stocker or feeder cattle |
| Brucellosis (*Brucella abortus*) | Y | Y | Y |  | S | S | M |  |  | L | L | | L | Vegetative bacteria |  | Surveillance; Vaccine only in endemic areas |
| *Campylobacter jejuni* | Y |  | Y |  |  | M | M |  |  | L | ? | |  | Vegetative bacteria | Campylobacter species are susceptible to many disinfectants | No vaccine; Treatment is often limited to fluid and electrolyte replacement therapy; Antibiotics are occasionally given |
| Contagious bovine pleuropneumonia (CBPP) | N | Y | Y | M | S |  |  |  |  | 1892 | N | | N | Vegetative bacteria | Quarantine, test, slaughter; CBPP bacteria do not survive for long in the environment and are inactivated by most common disinfectants. | Vaccine only in endemic areas |
| Crimean Congo haemorrhagic fever | Y |  | Y |  |  |  | S | M |  | N | N | | N | Enveloped Virus | Prevention depends on avoiding bites from infected ticks and contact with infected blood or tissues. | None |
| Cryptosporidiosis *(Cryptosporidium*  *parvum )* | Y |  |  |  | S | S | M |  |  |  |  | |  | Protozoan (Spore) | The protozoa are resistant to many disinfectants; Chlorine does not effectively kill the organism | No specific treatment is available; supportive therapy is usually effective as the disease tends to be self–limiting; Vaccines have not been developed |
| *E. coli* 0157:H7 | Y |  |  |  | S | M | M |  |  |  |  | |  | Vegetative bacteria | Prevention of shedding in domesticated animals, particularly ruminants, is expected to decrease the number of human infections |  |
| Echinococcosis/ hydatidosis | Y |  | Y |  |  |  | M |  | S | ? | Y | |  | Worm | Prevention of access of dogs to livestock carcasses or slaughter wastes from farms, households, abattoirs or butchers | Vaccine |
| Epizootic haemorrhagic disease (EHD); Ibaraki disease | N |  | Y |  |  |  |  | M |  | L | ? | |  | Non-Enveloped Virus | Insect control | No vaccine |
| Foot and mouth disease | N | Y | Y | M | M | S |  |  |  | 1929 | 1952 | | 1954 | Non-Enveloped Virus | Quarantine, test, slaughter, disinfect | Vaccine |
| Giardia | Y |  |  |  |  |  | M |  | S |  |  | |  | Protozoan | Concurrent cleaning and disinfection of the environment is expected to increase the effectiveness of treatment by reducing the parasite burden. | No drug is currently licensed to treat giardiasis in these animals |
| Haemorrhagic septicemia | N |  | Y | M |  | S |  |  |  | 1969 | N | | N | Vegetative bacteria | Hemorrhagic septicemia can be eradicated with quarantines, movement controls, tracing of contacts, euthanasia of infected and exposed animals, and cleaning and disinfection of the premises. *P. multocida* is susceptible to most common disinfectants, as well as to mild heat (55°C/131°F). | Vaccine only in endemic areas |
| Heartwater | N | Y | Y |  | S |  |  | M |  | N | N | | N | Vegetative bacteria | Control tick population | Tetracycline antibiotics are only effective if given EARLY in the course of the disease, by day 2 or 3 after fever appears and before nervous signs |
| Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis (IBR, Red Nose) | N |  | Y | M | M |  |  |  |  | Y | Y | L | | Enveloped Virus | Management practices designed to reduce stress, isolate infected animals, and provide adequate food and water will limit disease transmission and severity | Vaccination prior to movement, commingling and exposure to infected cattle can be effective to prevent disease |
| Johne’s disease (Paratuberculosis) | ? |  | Y |  | S | S | M |  |  | Y | Y | L | | Acid-fast bacteria | Screening tests for new animals to identify and eliminate infected animals and ongoing surveillance of adult animals | There is no known treatment for the disease |
| Listeria | Y |  |  | S | S |  | M |  |  |  |  |  | | Vegetative bacteria | Feeding good quality silage with a low pH; Rodents should be controlled. | Can be treated with a variety of antibiotics |
| Lumpy skin disease | N | Y | Y |  |  |  |  | M |  | N | N | N | | Enveloped Virus | Virus can survive for up to 35 days in desiccated scabs and for at least 18 days in air-dried hides. | Vaccine and antibiotics |
| New world screwworm (*Cochliomyia hominivorax*) | Y | Y | Y |  |  |  |  | M |  | 1982 | N | 2001 | | Parasitic Fly | Spraying or dipping with insecticides | Subcutaneous injections of ivermectin and related compounds; treatment with larvacides |
| Old world screwworm (*Chrysomya bezziana*) | Y | Y | Y |  |  |  |  | M |  | N | N |  | | Parasitic Fly | Spraying or dipping with insecticides | Subcutaneous injections of ivermectin and related compounds; treatment with larvacides |
| Q fever | Y |  | Y | M | M | S |  | S |  | Y | Y | | N | Vegetative bacteria | Prevent contact with wild animals; Control tick population | Vaccine only in endemic areas |
| Rabies | Y |  | Y |  | M |  |  |  |  | Y | Y | | L | Enveloped Virus | Prevent interaction with wild animals | Vaccine not routine for cattle |
| Rift Valley fever | Y | Y | Y |  |  |  |  | M |  | N | N | | N | Enveloped Virus | Surveillance and vector control | Vaccine only in endemic areas |
| Rinderpest | N | Y | Y |  | M |  |  |  |  | N | N | | N | Enveloped Virus | Virus is inactivated rapidly in the environment, and decontamination is not difficult | Vaccine |
| *Salmonella spp.* | Y |  |  |  |  | S | M |  | S | Y | Y | |  | Vegetative bacteria |  | Can be treated with a variety of antibiotics |
| Surra (*Trypanosoma evansi*) | N | Y | Y |  |  |  |  | M |  | N | N | | N | Protozoan | Quarantines, movement control, and solation or slaughter; Trypanosomes cannot survive for long periods outside the host; controlling arthropod vectors is | Vaccination and antiparasitics in endemic areas |
| Theileriosis  (East Coast Fever) | N | Y | Y |  |  |  |  | M |  | N | N | | N | Protozoan | Controlling tick population | Vaccines and antiparasitic drugs available; Treatment is most effective in the early stages of the disease |
| Trypanosomosis (tsetse-transmitted);Nagana | N | Y | Y |  |  | S |  | M |  | N | N | | N | Protozoan | Quarantines, movement control, and solation or slaughter; Trypanosomes cannot survive for long periods outside the host; controlling arthropod vectors is | Antiparasitics in endemic areas |
| Tularemia | Y |  | Y | M |  |  | M | S |  | L | ? | | N | Vegetative bacteria | *F. tularensis* can survive for long periods in the environment. Good tick control programs can reduce the risk of infection. | Tularemia can be treated with various antibiotics including tetracyclines and quinolones. |
| Vesicular stomatitis | Y | Y | Y |  | M |  |  | M |  | Y | 1949 | |  | Enveloped Virus | Quarantine and movement control; uninfected livestock should kept away from any animals that could be infected | Treatment is symptomatic. Animals with mouth lesions should be provided with softened feed. |
| West Nile fever | Y |  | Y |  |  |  |  | M |  | Y | Y | |  | Enveloped Virus | Implement mosquito control measures | No specific treatment, other than supportive care, is available. |

\*This list is not comprehensive. Certain zoonotic diseases (those with the ability to cause illness in both animals and people) are also reportable to the Texas Department of State Health Services

\*\*M – Major source of organism; S – Secondary source of organism

\*\*\*Y- disease present, L – Disease limited to one or more zones,? - suspected but not confirmed, N - never reported and under active surveillance; date indicates last reported case (Data obtained from 2012 annual reports to OIE)

Disease information was compiled from the Technical Disease Fact Sheets on The Center for Food Security and Public Health [Animal Disease Information Website](http://www.cfsph.iastate.edu/DiseaseInfo/index.php?lang=en).

Annex B: Sample Disease Assessment Reports

[Sample Foot and Mouth Disease (FMD) Report](#_Sample__Foot)

[Sample Rift Valley Fever (RVF) Disease Report](#_Sample_Rift_Valley)

[Sample Contagious Bovine Pleuropneumonia (CBPP) Disease Report](#_Sample_Contagious_Bovine)

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Foot and Mouth Disease (FMD) Disease Report

Outbreak History

Laboratory confirmation of an outbreak of Foot and Mouth Disease (FMD) in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was reported by OIE on \_\_\_\_\_\_\_\_. Clinical signs of FMD appeared in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on a feedyard in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, about \_\_\_\_\_ miles from the border with the United States. As of \_\_\_\_\_\_\_\_\_, the outbreak included \_\_\_\_\_\_\_\_ infected \_\_\_\_\_\_\_\_ dead, and \_\_\_\_\_\_\_ depopulated. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is now depopulating all susceptible animals within \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the outbreak.

Signs and Symptoms of Disease

Cattle

The most common sign of foot-and-mouth disease in cattle is the formation of sores on the tongue, mouth, feet, and teats. Infected cattle are depressed, reluctant to move, not able to eat which can lead to a decrease in production. They also drool, and in many cases, make a loud smacking sound. The FMD virus is considered the most highly contagious disease agent of livestock.

Humans

Foot and mouth disease (FMD) **does not** cause disease in humans. Foot and mouth disease affects cloven-hoofed animals, including domestic and wild bovids. It should not be confused with Hand, foot and mouth disease (HFMD) which is a human syndrome caused by intestinal viruses and commonly infects children.

Mechanism for Spread of Disease

FMD is spread by **direct contact** such as when a healthy animal licks an animal that is sick. It can also be spread when healthy animals eat (**oral**) from a feed trough where an infected animal has eaten or drooled saliva. The virus can also travel through the air (**aerosol**) when an animal coughs or sneezes. Finally, people can be an unexpected means of transmission (**fomites**). FMD can be carried on clothes, shoes, and even the nasal passages of people that have had contact with infected animals.

Aerosols

FMD can be spread through aerosol transmission. Aerosol transmission occurs when disease agents contained in droplets are passed through the air from one animal to another or from an animal to a human, or vice versa. The virus that causes FMD can survive for extended periods of time within the aerosol droplets.

Direct Contact

FMD can be spread through direct contact. Transmission by direct contact requires the presence of an agent or organism in the environment or within an infected animal. A susceptible animal becomes exposed when the agent directly touches open wounds, mucous membranes, or the skin through blood, saliva, nose to nose contact, rubbing or biting.

Fomite

FMD can be spread through fomites. A fomite is an object that can carry disease agents from one susceptible animal to another. Examples of fomites include contaminated nose tongs, squeeze chutes, needles, balling guns clothing, feed or water buckets, and shovels. Traffic transmission is another special type of fomite transmission in which a vehicle, trailer, or human spreads organic material to another location.

Oral

FMD can be spread through oral means. Pathogenic agents can be transmitted to animals orally through consumption of contaminated feed, water, or licking/chewing on contaminated environmental objects. Feed and water contaminated with feces, urine or saliva are frequently the cause of oral transmission of disease agents. In addition, feed and water can be contaminated with other infectious agents as well such as ruminant protein.

Environmental Transmission

FMD can be spread through the environment. This disease agent can survive for extended periods of time in soil or other organic material like hay, old feed, etc. Animals can then acquire the disease agent: from the environment through inhalation of aerosolized microbes, via oral consumption, or from direct contact with an animal or with fomites. The routes the disease agent uses to get into the animal can be controlled if the animal's environment is controlled.

Medical Countermeasures

Vaccines are available to control the spread of FMD; however, to maintain U.S. trade status they are only authorized by the USDA for use in emergency situations.

Vaccination of cattle against FMD can be used to decrease the severity of disease or prevent further spread of disease during an outbreak. However, certain limitations of vaccination, in terms of immunity, should be acknowledged.

* Vaccines provide only serotype-specific protection. Vaccination that protect against one strain may fail to protect fully or at all against other strains.
* Onset of immunity is not immediate. Inactivated FMD vaccines may decrease viral shedding and clinical signs in cattle and sheep in challenge studies as early as 4 days after vaccination with protection improving for the next 2–3 weeks.

Sanitary Countermeasures

Movement restrictions, quarantine, strict biosecurity, and vaccination are often used in combination to control outbreaks of FMD, especially in areas where the disease is endemic. In areas that are not endemic for FMD, eradication of outbreaks is traditionally achieved through depopulation of all infected animals and those in contact with infected animals, followed by burial or other appropriate disposal of the carcasses (i.e., stamping out strategy).

The virus can persist in contaminated feed and the environment for up to 1 month, depending on the temperature and pH conditions.

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Rift Valley Fever Disease Report

Outbreak History

Laboratory confirmation of an outbreak of Rift Valley Fever (RVF) in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was reported by OIE on \_\_\_\_\_\_\_\_. Clinical signs of RVF appeared in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on a feedyard in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, about \_\_\_\_\_ miles from the border with the United States. As of \_\_\_\_\_\_\_\_\_, the outbreak included \_\_\_\_\_\_\_\_ infected \_\_\_\_\_\_\_\_ dead, and \_\_\_\_\_\_\_ depopulated. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is now depopulating all susceptible animals within \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the outbreak.

Signs and Symptoms of Disease

Cattle

RVF can affect many species of animals including sheep, cattle, goats, buffalo, camels, and monkeys, as well as gray squirrels and other rodents. The primary amplifying hosts are sheep and cattle. In adult cattle, fever, anorexia (stop eating), weakness, excessive salivation, and fetid diarrhea have been reported. Icterus (yellowing of skin and whites of eyes) may also be seen, particularly in cattle.

Humans

Humans can become infected with the RVF virus. Most people infected will not have any symptoms or only a mild to moderate, non-fatal, flu-like illness with fever and liver abnormalities. Most people recover spontaneously within two days to a week.

However, a small number of people can develop hemorrhagic fever two to four days after the initial symptoms. The symptoms may include jaundice (yellowing of skin and whites of eyes), hematemesis (vomiting of blood), melena (bloody stool), a purpuric (purple-colored spots and patches that occur on the skin) rash, petechiae and bleeding from the gums. Hemorrhagic fever frequently progresses to frank hemorrhages, shock and death.

Mechanism for Spread of Disease

Vector-Borne Transmission

RVF is transmitted by mosquitoes and is usually amplified in ruminant hosts. In endemic regions, cases can occur sporadically or in epidemics. The virus appears to survive in the dried eggs of *Aedes* mosquitoes; epidemics are associated with the hatching of these mosquitoes during years of heavy rainfall and localized flooding. Once it has been amplified in animals, the RVF virus can also be transmitted by other vectors, including many mosquito species and possibly other biting insects such as ticks and midges. The virus can be transmitted *in utero* to the fetus. It has also been found in semen and raw milk.

Zoonotic

RVF is a zoonotic disease. Zoonotic diseases are transmissible between animals and humans. Humans do not seem to be infected by casual contact with infected animals, but can be infected by aerosols or direct contact with tissues during parturition, necropsy, slaughter, laboratory procedures or meat preparation for cooking

Medical Countermeasures

**Cattle:** Vaccines are generally used to protect animals from RVF in endemic regions. During epidemics, vaccination of susceptible animals can prevent amplification of the virus and protect people as well as animals.

Sanitary Countermeasures

Mosquito repellents, long shirts and trousers, bednets, and other arthropod control measures should be used to prevent transmission by mosquitoes and other potential insect vectors. Outdoor activities should be avoided, if possible, during periods of peak mosquito activity. Insecticides may be helpful. During epidemics, vaccination of susceptible animals can prevent amplification of the virus and protect people as well as animals.

Barrier precautions should be used whenever contact may occur with infectious tissues or blood from animals; recommended measures include personal protective equipment such as protective clothing, gloves and goggles. Diagnostic tissue samples should be processed by trained staff in appropriately equipped laboratories.

Contagious Bovine Pleuropneumonia (CBPP) Disease Report

Outbreak History

Laboratory confirmation of an outbreak of CBPP in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was reported by OIE on \_\_\_\_\_\_\_\_. Clinical signs of CBPP appeared in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on a feedyard in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, about \_\_\_\_\_ miles from the border with the United States. As of \_\_\_\_\_\_\_\_\_, the outbreak included \_\_\_\_\_\_\_\_ infected \_\_\_\_\_\_\_\_ dead, and \_\_\_\_\_\_\_ depopulated. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is now depopulating all susceptible animals within \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the outbreak.

Signs and Symptoms of Disease

Cattle

After cattle are exposed to the bacteria, signs of illness can appear 1 to 3 months later and include fever, cough, labored breathing, outstretched neck, wide stance of the front legs, loss of appetite, loss of body condition, and decreased milk production. The disease can cause death in 10-70% of the cases. Some animals may have no signs of disease yet are still infectious to other cattle (carrier animals). Calves are more likely to show signs of arthritis and lameness than respiratory illness.

Humans

People **cannot** become infected with the bacteria that cause CBPP.

Mechanism for Spread of Disease

CBPP is mainly transmitted from animal to animal in aerosols. The bacterium causing the disease is also found in saliva, urine, fetal membranes and uterine discharges. Carrier animals, including subclinically infected cattle, can retain viable organisms in encapsulated lung lesions (sequestra) for up to two years. These animals may shed organisms, particularly when stressed.

Close, repeated contact is generally thought to be necessary for transmission; however, disease might be spread over longer distances (up to 200 meters) if the climatic conditions are favorable. Although there are a few anecdotal reports of transmission on fomites, this organism does not survive for long periods in the environment and indirect transmission is thought to be unimportant.

Aerosols

CBPP can be spread through aerosol transmission. Aerosol transmission occurs when disease agents contained in droplets are passed through the air from one animal to another or from an animal to a human, or vice versa.

Direct Contact

CBPP can be spread through direct contact. Transmission by direct contact requires the presence of an agent or organism in the environment or within an infected animal. A susceptible animal becomes exposed when the agent directly touches open wounds, mucous membranes, or the skin through blood, saliva, nose to nose contact, rubbing or biting.

Medical Countermeasures

Vaccines are used to control CBPP in endemic areas. Antibiotics are ineffective in chronically affected animals. For these reasons, antibiotic treatment is discouraged, even in endemic regions.

Sanitary Countermeasures

Outbreaks are eradicated with quarantines, movement controls, depopulation of infected and in-contact animals, and cleaning and disinfection. Many routinely used disinfectants are effective.

Annex C: Seven Cardinal Rules of Risk Communication

The following fact sheets can printed be distributed to employees as necessary.

**Direct Source: Adapted for a Dairy from EPA’s Seven Cardinal Rules of Risk Communication.**

1. **Accept and involve the public as a legitimate partner**
   1. Clarify that decisions about risks will be based not only on the magnitude of the risk but on factors of concern to the stakeholders
   2. Involve all parties that have an interest or a stake in the particular risk in question
   3. Recognize that people hold leaders accountable; follow the highest moral and ethical standards
2. **Listen to the audience**
   1. Do not make assumptions about what people know, think, or want done about risks
   2. Listen to all parties that have an interest or a stake in the issue
   3. Identify with audience and try to put yourself in their place
   4. Recognize people’s emotions
   5. Let people know that you understand concerns and are addressing them
   6. Understand audiences often have hidden agendas, symbolic meanings, and broader social, cultural, economic, or political considerations that complicate the task
3. **Be honest, frank, and open**
   1. State credentials, but do not ask or expect to be trusted by the public and stakeholders
   2. Express willingness to follow up with answers if the question cannot be answered at the time speaking
   3. Make corrections if errors are made
   4. Disclose risk information as soon as possible, emphasizing appropriate reservations about reliability
   5. Do not minimize or exaggerate the level of risk
   6. Lean toward sharing more information, not less, to prevent people from thinking something significant is being hidden
   7. Discuss data uncertainties, strengths, and weaknesses, including the ones identified by other credible sources
   8. Identify worst-case estimates and cite ranges of risk estimates when appropriate
4. **Coordinate and collaborate with other credible sources**
   1. Devote effort and resources to the slow, hard work of recovery, partnerships, and alliances with other dairies
   2. Use credible and authoritative intermediaries
   3. Consult with others to determine who is best able to answer questions about risk
   4. Try to release communications jointly with other trustworthy sources, such as:
      1. Industry groups
      2. University scientists
      3. Physicians
      4. Local or national opinion leaders
      5. Citizen advisory groups
      6. Local officials
5. **Meet the needs of the media**
   1. Remain open with, and accessible to, reporters
   2. Respect deadlines
   3. Provide information tailored to the needs of each type of media, such as sound bites, graphics and other visual aids for television.
   4. Agree with the reporter in advance about specific topics and stick to those during the interview
   5. Prepare a limited number of positive key messages in advance and repeat the messages several times during the interview
   6. Provide background material on complex risk issues
   7. Do not speculate
   8. Say only those things that you are willing to have repeated. Everything you say in an interview is on record.
   9. Keep interviews short and follow up on stories with praise or criticism, as warranted
   10. Establish long-term trust relationships with specific editors and reporters
6. **Speak clearly with compassion**
   1. Use plain language
   2. Remain sensitive to local norms, such as speech and dress
   3. Strive for brevity, but respect people’s needs and offer to provide more information if needed
   4. Use graphics and other pictorial material to clarify messages
   5. Personalize risk data by using anecdotes that make technical data come alive
   6. Acknowledge and respond to emotions that people express, such as anxiety, fear, anger, outrage, and helplessness
   7. Recognize and respond to what the public deems as important in evaluating risks
   8. Use comparisons to help put risks in perspective
   9. Avoid comparisons that ignore distinctions that people consider important
   10. Include a discussion of actions that are either underway or can be taken
   11. Promise only what can be delivered
   12. Follow through with promises and commitments
7. **Plan carefully and evaluate performance**
   1. Begin with clear, explicit objectives

* Provide information to the public
* Offer reassurance that something is being done
* Encourage protective action and behavior change
* Stimulate emergency response
* Involve partners, businesses, and colleagues in dialogue and joint problem solving
  1. Assess technical information about risks. Know its strengths and weaknesses.
  2. Pretest messages
  3. Identify important organizations and subgroups within the audience
  4. Aim communications at specific groups and subgroups in the audience
  5. Recruit spokespersons with effective presentation and human interaction skills
  6. Train staff, including technical staff, in communication skills
  7. Recognize and reward outstanding performance
  8. Evaluate efforts and learn from mistakes

Annex D: Foot and Mouth Disease Fact Sheet

The following fact sheet can printed be distributed to employees as necessary.

Foot and Mouth Disease (FMD) Fact Sheet

**What is FMD?**

FMD is a highly contagious viral disease of cloven (divided) hooved animals with significant economic impact, in cattle and swine as well as sheep and goats. FMD causes painful sores and blisters to develop on the feet and teats of animals and in their mouth. The FMD virus is highly contagious and easily spread among susceptible animals by wind, animals, people and vehicles. Dogs, cats, horses and other animals without cloven hooves are not susceptible to FMD.

**What animals get FMD?**

FMD affects cattle, pigs, sheep, goats, deer, and other cloven-hooved animals. Cattle are the indicator hosts of the disease because they become very sick and usually develop the well-known mouth and feet sores. Pigs are amplifiers of the disease, meaning when infected with FMD they make large amounts of the virus that can infect other species. Sheep and goats are considered maintenance hosts. They get sick, but the disease is mild and often goes unnoticed, thereby giving it a chance to spread to other cloven hooved animals.

**How do cattle get FMD?**

The disease is spread by **direct contact** such as when a healthy animal touches, rubs, or licks an animal that is sick. It can also be spread when healthy animals eat (**oral**) from a feed trough where an infected animal has eaten or drooled saliva. The virus can also travel through the air (**aerosol**) when an animal coughs or sneezes. Finally, people can be an unexpected means of transmission (**fomites**). FMD can be carried on clothes, shoes, and even the nasal passages of people that have had contact with infected animals.

**How does FMD affect Cattle?**

The most common sign of foot and mouth disease is the formation of sores on the tongue, mouth, feet, and teats. Infected cattle are depressed, reluctant to move, not able to eat which can lead to a loss in weight. They also drool, and in many cases, make a loud smacking sound. The disease causes severe production losses and while the majority of affected animals recover, the disease often leaves them weakened and debilitated.

**Can I get FMD?**

No. FMD is not readily transmissible to humans. FMD is not related to Hand, Food and Mouth Disease (HFMD), a common viral illness of infants and children.

**How can I protect my Cattle from FMD?**

FMD is considered a foreign animal disease and has not been found in the United States since 1929. The best approach to prevention is proven biosecurity practices. Becoming aware of the signs of the disease (sores in the mouth, on the feet, teats) and the conditions resulting in the transmission of the disease (the introduction of infected animals into the herd, or contaminated feed or objects from unknown sources) is the best way to protect your animals. The best defense in a FMD outbreak is to limit all contact with animals and visitors and quarantine all newly introduced animals for a period of time established with your herd veterinarian.

For More Information

CFSPH Technical Fact Sheets. Foot and Mouth Disease at http://www.cfsph.iastate.edu/DiseaseInfo/

Foreign Animal Diseases. The Gray Book. http://www.aphis.usda.gov/emergency\_response/downloads/nahems/fad.pdf

OIE Foot and Mouth Disease Portal. http://www.oie.int/en/animal-health-in-the-world/fmd-portal/

Annex E: Standard Operating Procedures

*The procedures described below are industry best practices for typical operations at a biosecure dairy.*

| **Cleaning Procedures:** | |
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| ☐ | **Wear personal protective wear**—gloves, long pants, long sleeves, and possibly a mask when cleaning an area that will generate dust |
| ☐ | **Dry clean**—remove all visible material by brushing, scraping, sweeping and hauling to a disposal area. Handle waste material in such a way to prevent contamination of other areas such as feed, water or other animals. |
| ☐ | **Soak**—soak the area with hot water and a detergent or cleaning agent, wash and soap down all equipment in the area- waterers, feed troughs, pails, etc. |
| ☐ | **Wash**—wipe, spray or scrub the area, starting with the highest area (e.g., ceiling of feed mill or roof of truck), after it has soaked for a period of time  ☐ Use pressure washers when cleaning wood, cement, or other porous surfaces  ☐ Use caution when using high pressure washers (200-1000 psi) as they can aerosolize disease organisms and spread them to other areas or expose the person cleaning |
| ☐ | **Rinse**—remove all detergent residue by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor |
| ☐ | **Dry**—allow the area to dry completely before applying a disinfectant so that it can work effectively |

| **Disinfection Procedures:** | |
| --- | --- |
| ☐ | **Read the product label**—this is important to make sure the solution is handled correctly. Personal protective wear (gloves, mask) may be needed when mixing up solutions. |
| ☐ | **Disinfect**—apply disinfectant at the correct dilution and let it “sit and work” for the suggested amount of time |
| ☐ | **Final rinse**—remove all disinfectant by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor |
| ☐ | **Dry**—allow the area to completely dry before allowing animals to have contact with the area or item that was just cleaned and disinfected |

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| **Pasteurization Methods:** | |
| ☐ | Start with good quality milk with minimal bacterial contamination |
| ☐ | Chill raw pre-pasteurized milk to prevent fermentation |
| ☐ | Milk should be heated to and maintained at the correct target temperatures   * 161oF for no less than 15 seconds– High temperature/Short time (HTST) * 145oF for no less than 30 minutes– batch |
| ☐ | Cool post-pasteurized milk rapidly to prevent incubation |
| ☐ | Store milk in a closed, clean container; milk should be chilled if not used immediately or if there is a delay between feeding |