Swine Disease Emergency Response Resource Manual

Prince Edward Island

Swine Emergency Response Advisory Team

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Swine Emergency Response Plan
Acronyms

AVC	Atlantic Veterinary College
AVC-DS	AVC - Diagnostic Services
C&D	Cleaning and Disinfection
CQA	Canadian Quality Assurance
CFIA	Canadian Food Inspection Agency
CVO	Chief Veterinary Officer
FAD	Foreign Animal Disease
FADES	FAD Emergency Support
JEOC	Joint Emergency Operations Centre
NC-FAD	National Centre of Foreign Animal Disease
WOAH	World Organisation for Animal Health
PEIDA	Prince Edward Island Department of Agriculture
PEIDEECA	Prince Edward Island Department of Environment, Energy and Climate Action
PIT	Public Information Team
PSC	Public Safety Canada
SERAT	Swine Emergency Response Advisory Team

Introduction

The agriculture industry in Prince Edward Island is a major contributor to the economy of both the province and the country. An outbreak of foreign animal disease (***FAD***) would have a widespread impact on Island agriculture, tourism, wildlife, and other sectors resulting in significant losses if such an outbreak was not dealt with in an effective and timely manner.

In the current system, a planned emergency disease response to a FAD is initiated by the Canadian Food Inspection Agency (***CFIA***), after confirmation of a reportable disease as listed in the *Reportable Diseases Regulations*[1] under section 2(2) of the Canadian *Health of Animals Act*[2]. Since confirmation may take as long as 14 days, there exists a gray zone during which time the disease could spread in the absence of mandated active control measures. Industry personnel traveling to and from farms could spread the disease, unaware that a disease break has occurred. In PEI, this situation could result in spread of the contagion throughout the province in a very short period of time.

This document outlines a **Swine Disease Emergency Response Plan** that could be enacted immediately following suspicion of a disease. A swine working group comprised of industry and government representatives has used New Brunswick and Nova Scotia response plans as a model, modifying, updating, and adding information to be consistent with the PEI swine industry. This working group would like to acknowledge those groups for permission to use their plan.

This document is intended to be a living document and to be updated and further revised as new information and science becomes available. The disease response plan is divided into three stages:

Stage I Suspicion of a Foreign Animal Disease
Stage II Positive Presumptive Diagnosis of Disease, and
Stage III Confirmed Diagnosis of a Foreign Animal Disease.

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1 *Reportable Diseases Regulations* http://laws-lois.justice.gc.ca/eng/regulations/SOR-91-2/
2 *Health of Animals Act* http://laws-lois.justice.gc.ca/eng/acts/H-3.3/

Section 1: Disease Response Plan

Stage I - Suspicion of a Foreign Animal Disease

A FAD is a transmissible disease which is not present in Canada which may have significant implications to human and animal health as well as the Canadian economy. If a FAD such as is suspected on a farm due to marked increase in mortality and/or presence of clinical signs *(see Section 2 for examples of clinical signs)*, the following actions must be taken:

Actions Taken by Producer

- Consult your veterinarian immediately. Provide a complete description of the problem including time of onset, duration and whether things are getting worse or resolving over time. Offer your suspicions as to what the problem might be.

- If the presence of a FAD is highly suspected, contact or have your veterinarian contact the CFIA and the provincial veterinarian. During normal business hours, contact the CFIA through the local office by telephoning **902-566-7290.** After normal business hours, contact the CFIA directly by telephoning **1-506-381-7683.**

- Contact the PEI Pork Office (*Appendix I*).

- Enhance biosecurity measures (Section 6), which includes self-quarantine
    i. Ensure that a visitor log is in place.
    ii. Service unaffected barns first or dedicate a specific employee to the affected barn(s).
    iii. Inform ALL family members and employees of the situation. Request confidentiality until diagnosis is confirmed.

iv. Suspend all unnecessary traffic. Immediately restrict on and off-farm access by locking gates and requiring phone ahead arrangements for deliveries/pick-ups.
v. If a delivery is required, service personnel are to use heightened biosecurity (Section 7).
vi. If you are required to leave the farm, change your clothing and footwear; use exit protocol as per your situation (Sections 7-9).
vii. Restrict the movement of equipment and personnel from farm to farm.
viii. Do not move livestock on or off the farm.

- Start your own on-farm investigation.
  i. Gather all relevant documents, including health records and copies of production and mortality records.
  ii. Review and list the on-farm traffic, visitors, and swine movement to and from the premises during the previous 10 days.

Actions Taken by Herd, Local or/CFIA Veterinarian

- Visit the farm and inspect the herd as soon as possible.
  i. Gather pertinent information by interviewing the herd owner including:
    - Clinical signs
    - Status of other animals on farm
    - Other farms in area
    - Recent visitations
    - Recent feed deliveries
    - Vaccination and medication history
    - Movement of animals, products, equipment, and personnel onto and off of the farm in the past 10 days
    - Environmental changes (heat, ventilation, humidity)
    - Collect samples or conduct postmortem as appropriate

ii. If the veterinarian is not suspicious of a FAD:
    - Inform lab that samples are coming
    - Advise the producer to enhance biosecurity (Section 6)

iii. If the veterinarian suspects a FAD, CFIA and the provincial veterinarian must be notified immediately.

If CFIA has not yet been part of the investigation, at this point, the local vet must immediately inform the CFIA (local office 902-566-7290 or 1-506-381-7683).

- Ensure that a visitor log is in place
- Restrict movement of livestock, equipment, and personnel from farm to farm
- Avoid unnecessary visitation and deliveries
- If deliveries are required, service personnel are to use heightened biosecurity (Section 7)
- If required to leave farm, use exit protocols
- Do not go to another farm unless approved by CFIA

Actions Taken by Swine Emergency Response Advisory Team (SERAT)

- Alert SERAT members to be on stand-by
- Confirm availability of SERAT members, personnel, facilities, equipment, etc.

Stage II - Positive Presumptive Diagnosis of Disease

A positive presumptive diagnosis can be declared by CFIA under one of the following two situations:

1. In the absence of any management or environmental problem, a high and sudden increase in mortality with:
    a. Clinical signs compatible with FAD, or
    b. History of significant contact with a confirmed infected premises or people from an infected area

and/or

2. A positive result on a screening test for a FAD.

If initial diagnoses suggest the presence of a serious disease, the following actions are to be taken:

Action Taken by Atlantic Veterinary College Diagnostic Services (AVC-DS)

In the case of a FAD *(see Section 2 for information on FADs*):

- Report suspicious preliminary diagnostic results to CFIA, and the producer's veterinarian.
- CFIA will notify PEIDA and the producer.

Action Taken by Producer

- Contact the PEI pork office.
- Contact the processor who receives market hogs or downstream sites that may have received pigs.

Action Taken by the PEIDA

- Notify the SERAT and convene a meeting within 24 hours.
- SERAT to determine appropriate communications for this stage during this initial meeting.

Action Taken by the CFIA

- Contact the producer and/or private veterinarian and provincial veterinarian to discuss the case.
- Begin investigation.
  Collect samples and/or preliminary samples from AVC-DS and forward to National Centre of Foreign Animal Disease (NC-FAD).
- Declare an infected place on index farm *(this may extend to neighboring farms in high density areas; infected zones may be enforced if there is a declaration of disease, i.e. Stage III*). This is to facilitate biocontainment and movement control.
- Commence orders and oversight of eradication activities; determined on a case-by-case basis but may include:

    1. Evaluation and risk assessment
    2. Depopulation of herd
    3. Disposal
    4. Cleaning and disinfection of the premises

Stage III - Confirmed Diagnosis of a FAD

Upon confirmation of FAD by the NC-FAD in Winnipeg, the federal Minister of Agriculture would make an official declaration of disease under section 27 of the federal *Health of Animals Act*[3]. A Control Area regulating the movement of persons, animals, things, and conveyances into, out of and within the areas established. Actions to be taken are as follows:

Action Taken by the CFIA

- Notify the producer and the PEIDA of the test results.

- Continue emergency response logistics:

  Activate Emergency Response Teams.

  Activate/expand Operations Centres.

  Activate/expand Incident Command Post(s).

- Full implementation of the Foreign Animal Disease Emergency Support (***FADES***) plan (*federal/provincial agreement that provides a framework for provincial and municipal support of the federal disease control efforts*).

- Establish internal/external communications.

3 *Health of Animals Act* http://laws-lois.justice.gc.ca/eng/acts/H-3.3/

Action Taken by the PEIDA

- Notify the PEI Pork Office of the result.
- Notify and activate Swine Emergency Response Advisory Team (**SERAT**) members of the result (*Appendix I*).
- Establish internal/external communications.

Federal Minister of Agriculture Signs and Issues a Declaration of Infection

The Minister may:

- Define a control area, including zones.
- Define movement controls within and/or between defined zones *(Section 4*)
- Order the establishment of Cleaning and Disinfection (**C&D)** stations at strategic locations
- Order depopulation and oversee disposal as follows:

  Depopulation of all susceptible swine is to be undertaken using World Organisation for Animal Health (**WOAH**) approved method (*Section 11*)

  Disposal method to be approved by CFIA in co-operation with Provincial Environment
- Order C&D of premises
- Monitor recovery for 21 days post last positive case

- Remove quarantine when outbreak is declared over

Action Taken by SERAT

- Activate the full SERAT team and establish the Joint Emergency Operations Centre (**JEOC**)

- Schedule meetings

- Communication (*two-way*) with the lead authorities and with associated PEI pork office

- Issue talking points to anyone who may have contact with the media

Summary of Notification for Stages I, II and III

Stage I - Notification

If a Veterinarian (Private or CFIA) suspects* a FAD on a:

1/ Commercial herd

- CFIA notifies PEIDA
- Producer notifies the PEI pork office, family members/employees and any service providers

2/ Non-commercial herd

- If CFIA visits the operation, CFIA notifies PEIDA
- PEIDA notifies the PEI pork office

*Suspects refers to the presence of clinical signs and is not based on a presumptive diagnostic test

Stage II - Notification

If the screening test for FAD at AVC-DS is positive or if the CFIA Vet concludes that the signs are compatible with a FAD:

1/ Commercial herd

- AVC-DS notifies CFIA, and the producer's veterinarian
- CFIA notifies PEIDA and producer

- Producer notifies the PEI pork office, the feed company, and the trucking company
- PEI Pork Office notify other swine Boards/Associations
- PEIDA notifies SERAT (Appendix I) and convenes a meeting within 24 hours

2/ Non-commercial herd

- AVC-DS notifies CFIA, and the producer's veterinarian
- CFIA notifies PEIDA and producer
- PEIDA notifies the PEI Pork Office (and other stakeholders, i.e. feed companies)
- PEIDA notifies SERAT and convenes a meeting within 24 hours

Stage III - Notification

If the test is confirmed positive by the NC-FAD in Winnipeg:

- CFIA (local) notifies the producer and PEIDA
- PEIDA notifies the PEI Pork Office (Appendix I) and activates the SERAT (see Appendix II)

PEI Pork Office notify associated stakeholders; Executive Director of the PEI Hog Marketing Board to act as local industry liaison.

Section 2: Significant Swine Diseases

Reportable Diseases

A reportable disease is usually of significant importance to human or animal health or to the Canadian economy and is outlined in the federal *Health of Animals* Act[4] and *Reportable Diseases Regulations*[5]. African swine fever, Brucellosis, Classical swine fever, Cysticercosis, Foot and mouth disease, Pseudorabies, Swine vesicular disease, Trichinellosis and Vesicular stomatitis are listed in the *Reportable Diseases Regulations* (ibid) under section 2(2) of the Canadian *Health of Animals Act* (ibid). **Any suspect or confirmed case of these reportable diseases MUST be immediately reported to the CFIA.** The CFIA will take action to eradicate and control these diseases once the diagnosis has been confirmed. Compensation is paid by CFIA for swine that are ordered destroyed as a result of a FAD.

Immediately Notifiable Diseases (*have trade implications*)

An immediately notifiable disease is a disease which is exotic to Canada for which there are no control or eradication programs and is outlined in the federal *Reportable Diseases Regulations* (ibid). Enterocirus encephalomyelitis (Teschen disease), Nipah virus are listed as Immediately Notifiable Diseases in the *Reportable Diseases Regulations* under section 2(2) of the Canadian *Health of Animals Act*. To meet import requirements of trading partners, a herd must be certified as being free from these diseases by the CFIA. **Any veterinary laboratory that detects any of these diseases is obliged to IMMEDIATELY notify the CFIA and provide full disclosure of the details of the outbreak.**

4 *Health of Animals Act* http://laws-lois.justice.gc.ca/eng/acts/H-3.3/
5 *Reportable Diseases Regulations* http://laws-lois.justice.gc.ca/eng/regulations/SOR-91-2/

Canada is obliged to report ALL federally reportable and immediately notifiable Diseases to the WOAH.

Other swine diseases of importance to the industry include Porcine Epidemic Diarrhea, Influenza, Porcine reproductive and respiratory syndrome, Transmissible gastroenteritis, Swine dysentery (Brachyspira). Prompt recognition and control of these diseases will be beneficial to industry, government, and consumers.

For additional information please see disease factsheets in Appendix IV.

When Should I Call My Vet

Vet's Name: _____

Vet's Phone: _____

_____

↑Deaths (higher than what would normally be expected)

Blisters/Vesicles
Snout/Tongue
Claw/Foot
Eg. FMD

Brain/Nervous
Paddling
Incoordination
Convulsions
Eg. Pseudorabies

Gastro-intestinal (GI)
Sudden onset of vomiting, diarrhea or loss of appetite
Eg. PED

Respiratory
↑Sudden onset of cough
Eg. Influenza

Reproductive
↑than expected abortions, stillbirths, mummified fetuses
Eg. PRRS

Skin
Reddening/hemorrhages of ears, tail, chest
Eg. Classical Swine Fever

Section 3: Disease Incident and Alert Definitions

Regardless of the nature or severity of an incident that affects the swine industry, the priorities of the industry members will be:

- Human health and food safety
- Control of disease spread
- Accurate and timely diagnosis
- Animal welfare
- Viability of the swine industry
- Trade issues

Because we are dealing with a live product, environmental emergencies (power outages, ice storms, floods, nuclear accidents, etc.) can ultimately result in mortality and situations that encourage disease conditions and or contamination issues. For this reason, even environmental emergencies are treated in this document as disease response.

There are four different incident levels in this plan. Each incident level requires a different level of biosecurity and co-ordination. The four incident levels are as follows:

Level 1 Green/Normal Biosecurity Operations

Level 2 Yellow Alert/Enhanced Biosecurity (during Presumptive stage)

Level 3 Red Alert/Emergency (during Positive stage)

Level 4 Post Emergency Recovery (Yellow Alert/Enhanced Biosecurity or Red Alert/Emergency in effect)

Level 1 Green/Normal Biosecurity Operations

In **Level 1** the risk of a disease of importance or environmental emergency is not seen to be elevated.

Standard biosecurity, sanitation and communication protocols are in effect (industry minimums).

There is passive surveillance for disease conditions (observation and testing where appropriate) in place.

ALL suspicious cases are to be investigated and/or immediately reported to ensure any outbreak of disease is detected early.

Level 2 Yellow Alert/ Enhance Biosecurity

In **Level 2** there is a high suspicion of a disease of importance (presumptive stage) or an environmental emergency on a particular property or within the immediate vicinity.

There has been no official provincial or federal declaration of disease or emergency situation, but the risk of a spreading impact is significantly elevated.

There is an increased level of awareness. Enhanced sanitation and communication protocols are in effect for that property and immediate area, as triggered by the owner/veterinarian/company involved.

The incident may be recognized by the SERAT as having potential to escalate and the PEI Pork Office may declare an Industry Yellow Alert/ Enhanced Biosecurity situation for a defined area surrounding the site(s).

Level 3 Red Alert/Emergency

In **Level 3** there has been an official declaration from Provincial or Federal authorities of definitive diagnosis of a disease of importance or after an event which is determined to be an environmental emergency.

There is declared to be a serious threat to human health, swine health or the viability of the industry.

Depending on the type and severity of the emergency, the government body charged will take responsibility and dictate the plan of action.

The industry will co-operate and institute red alert procedures in biosecurity/sanitation and communication (i.e., avoidance, rerouting, supply management, licensing, trade implications, etc.) with regards to the declared zone.

In the case of a reportable disease as listed in the *Reportable Diseases Regulations*[6] under section 2(2) of the Canadian *Health of Animals Act*[7], the CFIA takes the lead and declares a quarantine area and control zone. Within the zone the Red Alert/ Emergency procedures are under full control and supervision of CFIA, outside the zone a minimum of Yellow Alert/Enhanced Biosecurity procedures are in force.

6 *Reportable Diseases Regulations* http://laws-lois.justice.gc.ca/eng/regulations/SOR-91-2/
7 *Health of Animals Act* http://laws-lois.justice.gc.ca/eng/acts/H-3.3/

Level 4 Post Emergency Recovery/ Yellow or Red Alert

This is the period after an emergency where the risk of spreading impact of the event is still elevated.

This is the period where confirmation of eradication or assurance of product quality is to be achieved.

A minimum of Yellow Alert/Enhanced Biosecurity sanitation and communication protocols must be maintained.

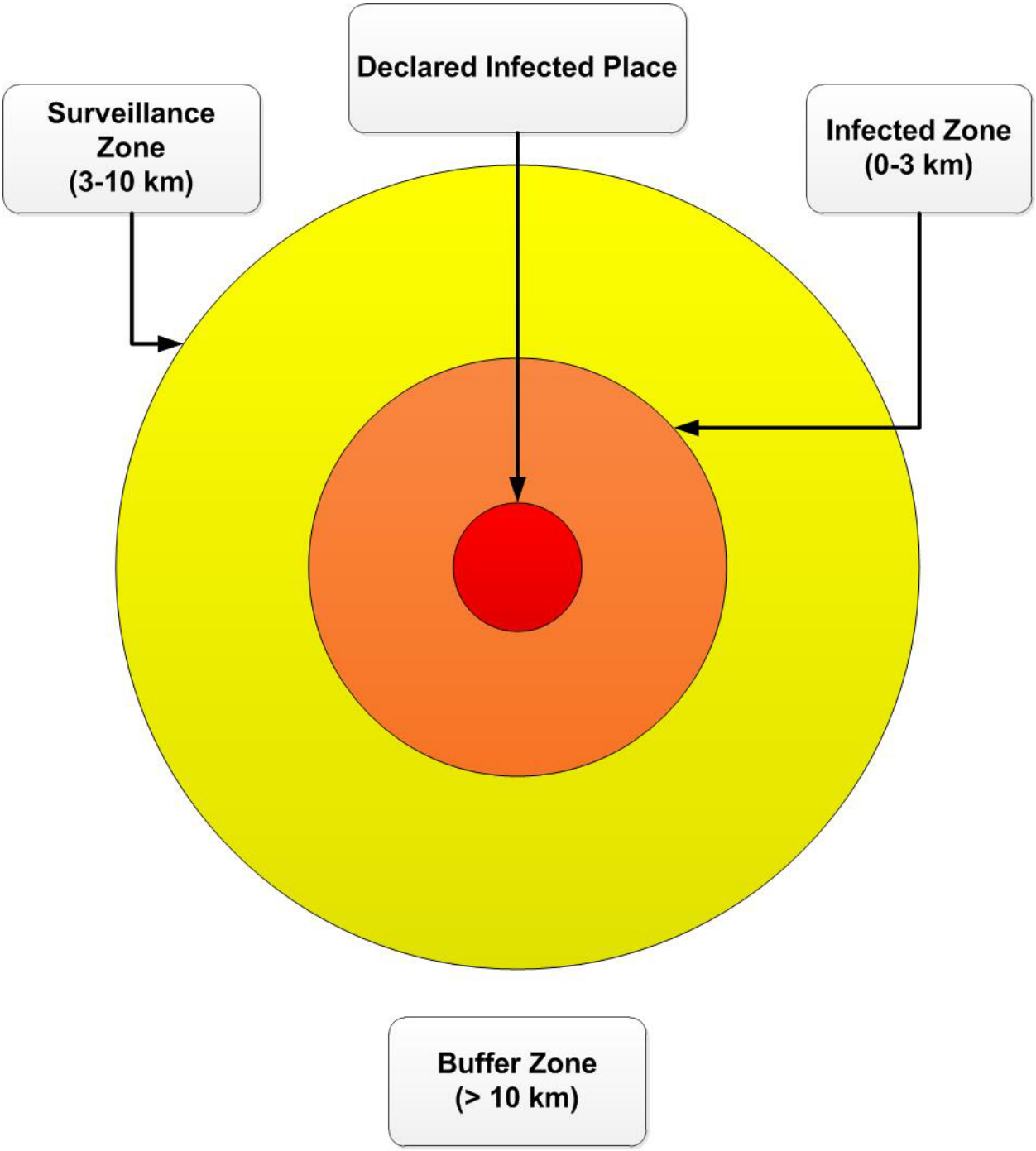
There may be additional licensure, serological surveillance and traceability requirements imposed.

Section 4: Control Area and Movement Controls

For a FAD, the Control Area and movement controls are monitored and enforced by the CFIA, and for a provincially named disease, by PEIDA. As these controls will be specific to the disease situation, *this section is intended as a guide of what might happen in a real outbreak*. A Declared Infected Place will have specific movement controls in place. An Infected Zone will be determined within 3km of any declared infected place. A Surveillance Zone is defined as the area that surrounds the Infected Zone and should be at minimum 10 km wide. A Buffer Zone may be established for the purpose of vaccination. The Infected Zone together with the Surveillance Zone and buffer zone are collectively referred to as the Control Area (Figure 1). If a Control Area is declared, strict movement controls will be invoked for the Infected Zone, the Surveillance Zone and the Buffer Zone. In order to facilitate the eradication program, the Control Area will be determined considering natural barriers and roadways.

Prior to the declaration of a Control Area, the CFIA will liaise with provincial and regional industry representatives to impose a Voluntary Cease Movement. The declaration of a Control Area prescribes the initial restriction of movement and other imposed conditions on places, risk goods, conveyances, and risk activities. This will be referred to as a Swine Standstill, the purpose of which is to minimize the risk of significant disease spread. It is anticipated that the Control Area will be restricted to a province or part of a province.

Figure 1. Foreign Animal Diseases Zones



All zones are collectively under the Control Area

Declared Infected Place

A Declared Infected Place may be an infected premises, exposed premises, control premises or simply premises in close proximity to infected premises.

Movement Controls

a. **Animals**

Prohibited from moving on or off premises except under license from CFIA, if a Federal reportable disease. Licensure may include pre-movement surveillance testing.

b. **Swine products and byproducts**

Prohibited from moving on or off premises except under license from CFIA.

c. **Feed**

Movement of feed out of infected premises is prohibited, if considered as a potential source of pathogen.

Contaminated feed (or feed suspect for contamination) will be destroyed, preferably on site.

Feed may be delivered to suspect premises under license, subject to strict quarantine and decontamination procedures on entry/exit from swine premises.

Feed mills and slaughter plants that are epidemiologically linked (contaminated) will be considered separate infected premises. Appropriate quarantine and movement controls will apply before and after declaration.

d. **Manure and Bedding and Deadstock**
    - Prohibited from moving on or off premises except under license from CFIA.

e. **Equipment and Vehicles**
    - May only be removed from infected premises after thorough C&D. Protocols will be provided.

f. **Pets**
    - Dogs, cats, and other non-susceptible potential spreaders should be confined.
    - If moved, they should be sponged or sprayed with 2% acetic acid solution and rinsed thoroughly.

g. **Personnel**
    - Personnel may leave the premises using a personal vehicle after decontamination of the vehicle. Clothes, footwear, and any other materials should be left on the infected premises. If these items need to be removed from the infected premises, they **MUST** be decontaminated (strict biosecurity).
    - All people leaving should shower and decontaminate prior to leaving the infected premises.

Infected Zone Within 3km of Any Declared Infected Place

The Infected Zone involves a 3km radius from any declared infected premises. More than one Infected Zone might be determined. This zone around the infected premises is subject to intense disease/ movement controls.

Limits of the Infected Zone(s) can be established as appropriate (the OIE minimum is three km).

The Infected Zone does NOT need to be circular but can have an irregular perimeter to follow natural barriers and roadways B provided that the boundary is at least the designated distance from any infected premises.

Prior to ministerial declaration of a Control Area, pre-movement surveillance testing and movement under license of swine, swine products may occur.

After ministerial declaration of a Control area, ALL conditions described for the infected premises will apply to ALL premises in the Infected Zone.

Movement Controls

a. **Animals**

- NO susceptible animals will be allowed to move onto or from any premises within the Infected Zone without a license.
- ONLY animals from premises with no epidemiological links to known infected places or high-risk premises can be moved, under license, for slaughter at an approved site within the Infected Zone. These herds will be inspected prior to movement and pre-movement surveillance testing will be performed.

b. **Products and By-Products**

- Prohibited from moving in or out of Infected Zone except under license.

c. **Feed**

- Movement of feed out of the Infected Zone is prohibited, if considered a potential source of pathogen.
- Contaminated feed (or suspected) will be destroyed, preferably on site.
- The feed may be delivered to suspect premises under license, subject to strict disease control and decontamination procedures on entry/exit from swine premises.
- Feed mills that are epidemiologically linked (contaminated) will be considered separate infected premises. Appropriate disease and movement controls will apply.

d. **Vehicles**

- Vehicles used to transport swine or swine products within the Infected Zone MUST undergo thorough C&D at an approved station prior to leaving zone.

e. **Livestock**

- Livestock other than swine are also included in movement restrictions but may move under license to slaughter at an inspected abattoir. Issuance of license will be contingent on procedures used to prevent the spread of disease.

f. **Swine Markets etc.**

- Live swine markets, sales, fairs, zoos, and other swine concentrations will be closed.
- If swine within these concentrations are known to be infected, they may be ordered destroyed.

g. **Personnel**

- Swine veterinarians and other industry personnel working in the Infected Zone should NOT visit swine premises in any other zone.
- Strict biosecurity protocols MUST be followed before and after any visits within the Infected Zone.

- Owners of premises within the control area are responsible for compliance with movement restrictions, biosecurity, and C&D protocols. The CFIA will issue a notice of biosecurity requirements which apply to the entire control area.

h. **Nurseries**
    - Should be NO direct or indirect contact with infected premises.
    - Weaners can be distributed ONLY within the Infected Zone under license.
    - Weaners from the nursery MUST be kept by the producer for a minimum of 21 days.

i. **Manure and Bedding**
    - Movement of manure and bedding from infected premises, or out of the Infected Zone, is prohibited, except under license.

j. **Preservation of Genetic Stock**
    - Preservation procedures of valuable genetic stocks of swine, and exotic pets and animals, may be considered by CFIA. These preservation procedures would be at the owner's expense.

k. **Processing Plants**
    - Plants within the Infected Zone can receive swine for slaughter under license.
    - Licensed transportation of swine to slaughter MUST follow CFIA approved routes.
    - NO employee should have contact with swine outside working hours at the plant.
    - Strict C&D protocols need to be in place for ALL personnel leaving the plant.
    - Waste products for further processing can be moved under license in a closed, leak-proof vehicle following approved routes.

Surveillance Zone - Within 10km of Any Declared Infected Place

The Surveillance Zone is defined as an area that surrounds the Infected Zone, being 10km from any infected place (based on WOAH standards).

The distribution of susceptible species, natural barriers, traffic routes and processing plants are important factors that should be considered in determining boundaries.

Movement Controls

a. **Animals**
   - Movement of animals is permitted within the Surveillance Zone.
   - Swine can move under license to a processing plant inside/outside this zone.

b. **Vehicles**
   - Vehicles used to handle or transport swine MUST undergo thorough C&D under supervision or satisfaction of CFIA.
   - Vehicles used to handle or transport swine must follow CFIA approved routes.

c. **Nurseries**
   - Nurseries may operate in the Surveillance Zone.
   - Movement of weaners out of the Surveillance Zone is possible only under license.
   - Good record-keeping is **essential**.

d. **Processing Plants**
   - Processing plants may receive swine under license from within the Surveillance Zone.
   - Swine from outside the Surveillance Zone can be slaughtered at a plant within the Surveillance Zone.

- Vehicles used to transport swine from outside the Surveillance Zone MUST undergo C&D prior to leaving zone and follow CFIA approved routes.
- Processing plants need appropriate protocols for ALL personnel and equipment leaving the plant.

e. **Feed**

- Movement of feed out of the Surveillance Zone is prohibited except under license.

f. **Veterinarians**

- Swine veterinarians within this zone **MUST strictly follow** biosecurity protocols.

Buffer Zone (between Surveillance Zone and Control Area border)

A Buffer Zone is a zone within the control area between the boundaries of the Surveillance Zone and the outer boundaries of the Control Area. A Buffer Zone may be established within the control area, usually for the purposes of vaccination and may vary according to the vaccination strategy.

Movement Controls

a. **Animals**
   - Movement of swine within the Buffer Zone is under license.
   - Movement of swine into the Buffer Zone is under license.
   - Producers MUST keep records of ALL swine movements.

b. **Processing Plants**
   - Movement is under license without restriction into or within Buffer Zone.

Section 5: Human Health Precautions/Considerations

Public health and/or occupational health officials should be involved in the response to swine disease emergencies, or at the very least MUST be consulted, to help minimize the risk to human health and where appropriate, prevent zoonotic disease transmission *(*i.e., diseases that can be transmitted between animals and humans*).*

Basic biosecurity precautions should be followed to ensure that persons involved in emergency response or routine work with swine, minimize their risk of exposure to pathogens *(*disease-producing agents*)*. Feces and urine *(*i.e., droppings*)*; secretions from the mouth, nostrils, and eyes; other body fluids, body parts and aerosols from swine **can ALL carry pathogens that could pose a risk to human health**.

Minimizing Exposure

Exposure to MOST swine pathogens can be prevented by wearing waterproof gloves, masks, protective clothing, and waterproof footwear. These items should be removed after working with swine or being in barns where swine are housed or have been held. Contaminated clothing should be washed with soap and hot water, and footwear should be cleaned and disinfected with an appropriate disinfectant.

Eating, Drinking, Handling Food and Smoking

Persons should REFRAIN from eating, chewing gum, drinking, or smoking while working with swine or in barns where swine are being housed or have been held.

After swine contact, people should preferably shower and wash their hands thoroughly with soap and hot water, or at the very least apply an alcohol gel disinfectant to their hands before eating, drinking, handling/preparing food, or smoking. This will help to minimize the risk of acquiring bacterial zoonotic infections.

Viral Diseases That Affect Swine and Humans

For viral diseases that can affect both swine and humans (e.g., Swine Influenza, Nipah virus) and that can be transmitted by contact with mucous membranes, protective eye wear, face masks, and possibly full protective biohazard suits may be REQUIRED. Some bacterial diseases may also mandate similar protection.

Good quality protective masks and eyewear may also be required in barns where ammonia levels are high or where other noxious odours (e.g., from decomposing dead animals) are present.

Emotions/Fatigue

Emotional support may be required for persons involved in the mass depopulation of swine, and for the owners of herds suffering high losses or requiring mass depopulation. Fatigue may put emergency responders at greater risk of making judgment errors and being exposed to potential pathogens.

Section 6: Biosecurity Measures

Production Facilities

Recommendations to Prevent the Spread and/or Introduction of Infectious Disease

Based on current understanding of the sources and transmission of most infectious diseases of swine, the following recommendations have been designed to prevent the spread between swine premises, as well as to prevent the introduction of new infections to susceptible swine. We have outlined these recommendations based on the three key principles of biosecurity: **isolation, traffic control** and **sanitation**. Recommended actions for Green/Normal Biosecurity Operations, Yellow Alert/ Enhanced Biosecurity conditions and Red Alert/ Emergency conditions are provided (see Section 3 for definitions).

Green/Normal Biosecurity Operations

When working under Green/Normal Biosecurity Operations, producers should consistently follow biosecurity procedures found in their Canadian Quality Assurance (**CQA**) program.

1. Standard biosecurity, sanitation and communication protocols are in effect (industry minimums).

2. Passive surveillance for disease conditions (observation and testing where appropriate) is in place.

3. ALL suspicious cases are to be investigated IMMEDIATELY to ensure any outbreak of disease is detected early.

4. Maintain good production, health records, and visitor logs.

In the event of a confirmed infectious disease outbreak of a reportable disease nature, the CFIA will impose isolation, traffic control, and sanitation protocols appropriate for your situation. Prior to confirmation of an infection, follow these guidelines. Your veterinarian can help you incorporate them into a biosecurity plan specific to your operation.

Further information on the Swine Operations Biosecurity Principles may be reviewed on the CFIA website: Swine Biosecurity.

Yellow Alert/Enhanced Biosecurity

Prior to confirmation of an infection, follow these guidelines. Your veterinarian can help you incorporate them into a biosecurity plan specific to your operation. In the event of a confirmed FAD outbreak, the CFIA will impose isolation, traffic control and sanitation protocols appropriate for your situation.

A. **Isolation** refers to the confinement of animals within a controlled environment that excludes vectors of disease. A barn keeps your animals in and keeps other animals out. **Mechanical transmission of virus by anything that can walk, crawl, or fly from farm to farm should be presumed.**

    1. Shower and change your clothes before entering swine facilities.

2. Keep a pair of boots in each barn that are worn ONLY in that barn. Every time you enter, put the boots on. Leave them in the barn every time you exit. Clean and disinfect the boots between swine lots.

3. Clean out vegetation around swine barns and pens to remove shelter and food for rodents that could be possible carriers.

4. Institute a vector control program for insect, bird, and mammalian (rodents) vectors. These vectors are important because they can mechanically carry infected feces from one barn, pen or premises to another.

5. Improve barriers to prevent the access of wildlife to swine barns.

6. Institute an insect control program.

7. Rodents have been implicated in the transfer of swine diseases. Rodent control and preventing their traffic between barns are essential.

8. Limit sources of food and water for wildlife. Clean up spills when they happen.

9. It is essential that you advise your employees not to raise their own swine. Also advise employees NOT to visit other swine premises when they might also have contact with your herd.

10. Avoid dead wild animals. Any found on your premises MUST be treated as though they are highly infectious. Handle them with gloves, place in a plastic bag, seal it and dispose properly, as directed by CFIA or disease control authority.

B. **Traffic Control** includes the traffic onto your farm, the traffic patterns within the farm and leaving your farm.

1. The spread of swine diseases follows the movement of people and traffic.

2. Be a good neighbor. If you suspect a swine disease of importance, initiate a self-imposed quarantine.

3. Keep **logbooks** of visitors to your facilities. Visitation logs can provide useful information for tracing a disease outbreak.

4. Keep human farm-to-farm traffic to a minimum. Conduct business by phone when possible.

5. Find out where someone has been before inviting them onto your premises, including contact with other swine. Inspect visitors for evidence of cleanliness and contact with other animals.

6. Make NO UNNECESSARY VISITS to other farms.

7. DO NOT let truck drivers, repairmen, or delivery personnel step out onto your facility without clean or new protective foot covering and clean coveralls**. It is best to provide plastic boots and coveralls for this purpose.** Contaminated shoes and clothes are an excellent vehicle for the transmission of many pathogens.

8. If your company has several farms, establish zones to PREVENT one person from traveling to ALL farms.

9. Require employees and crews to wear freshly laundered clothing or clothing supplied at the farm each day. DO NOT ALLOW people employed at other swine operations on your premises.

10. Infected carcasses can be a significant source of pathogens. Dispose of dead swine **as soon as possible**, according to Provincial Environment guidelines and regulations or as directed by the CFIA or disease control authority.

C. **Sanitation** addresses the disinfection of materials, people and equipment entering the farm and the cleanliness of the personnel on the farm. Either consult your veterinarian or refer to the list on page 6-7 to select the best product for your usage needs.

Organic material greatly increases the resistance of viruses to disinfection.

The specifics of cleaning and disinfecting any facility will depend on many factors that differ among farms. It is not possible to address each individual concern. However, these are some guidelines that generally address cleaning and disinfection and some facts that should be considered when developing a strategy for barn cleaning and disinfection. **In all situations, it is essential that your veterinarian be consulted to help develop and implement any plans.**

1. Organic material MUST be removed before disinfection can be effective.

2. Most viruses can also be inactivated by heat, such as that produced during composting. There are examples of heating barns to 90°F or higher to inactivate viruses.

3. Prevent the spread of viruses on equipment. Make sure that service personnel vehicles are NOT CONTAMINATED with bedding or feces.

Wash and disinfect the tires and wheel wells of all vehicles coming onto your premises. Alternatively, vehicles can be parked outside the farm perimeter. Service personnel can then don plastic booties and walk on to the farm. Upon leaving, the booties can be tossed in a receptacle provided at the farm exit.

4. Wash and disinfect manure clean-out equipment taken from farm to farm.

5. Enclose ALL dead swine to be taken to the laboratory in plastic bags. Disinfect any vehicles returning from the laboratory including the floor mats. DO NOT let personnel who have been to the laboratory return to your facility without a shower and a change of clothes.

6. DO NOT allow vehicles in areas grossly contaminated with manure.

7. Virus can be transmitted at swine processing plants. Equipment MUST be cleaned and disinfected at these facilities to prevent the spread of virus to producers when returning from processing plants.

8. In the event of a confirmed FAD infection, manure handling and disposal will be under control of the CFIA.

Disinfectants

It is very difficult to inactivate the viruses if they are in organic material, such as feces, bedding, or feed.

Common disinfectants:

Active ingredient	Concentration	Contact time
Oxidizing agents: Peroxigen (i.e. Virkon)	1 %	10 minutes
Oxidizing agents: Sodium Hypochlorite (i.e., bleach)	10,000 ppm (1 %)	10 minutes
Synthetic phenols: Ortho phenylphenol (i.e. One-Stroke Environ, LpH Ag)	1200 ppm	10 minutes
Alcohols	70 % ethanol	10 minutes

Disinfectants and other methods that will kill virus:

1. VIROCID
2. Virkon S
3. One-Stroke Environ
4. Formaldehyde
5. Bleach
6. Ammonia
7. Acids (i.e. Vinegar)
8. Heating to 90°F for 3 hours, 100°F for 30 min.
9. Drying

10. Iodine containing solutions
11. Almost any detergent will inactivate virus **if the contact time is long enough**. Consult manufacturers recommendations.

A comprehensive list of disinfectants and their effectiveness against various pathogens is available by contacting the Chief Provincial Veterinarian or the Director of the PEI Hog Marketing Board.

Equipment to Use in this and Other Biosecurity Programs

1. Portable high-pressure sprayers can be purchased from hardware stores. These sprayers are useful in washing and disinfecting equipment and swine barns.

2. Hand-held sprayers can be purchased from hardware stores. These items are helpful for spraying disinfectants on the floor mats of cars, disinfecting wheel wells, etc. In addition, the same type of sprayer can be used to distribute insecticides in a vector control program.

3. Disposable coveralls, boots, and caps can be purchased from several places. These items are useful to provide for visitors.

4. Other materials important in a biosecurity program including signs, gates, pylons, and other indications of barriers can be purchased for minimal cost.

Red Alert/Emergency

In the event of a confirmed FAD outbreak, the CFIA will impose isolation, traffic control and sanitation protocols appropriate for your situation.

Technical Service Personnel

Communication, preparation, and planning steps **are critical to effective biosecurity measures** when visiting farms. Technical service personnel are encouraged to call producers in advance to book the farm visit.

Technical service personnel are defined as swine veterinarians, government extension staff, salesmen, repair/maintenance, and other service personnel to the farm.

The measures outlined below are Yellow Alert/Enhanced Biosecurity measures that should be taken in the case of a suspected disease outbreak and should not preclude or replace normal biosecurity measures (i.e. On-Farm Food Safety plan).

1. **Prepare Vehicle**

   Vehicle Equipment

   a) Divide the vehicle into CLEAN (such as passenger area, interior of clean equipment box) and DIRTY compartments (such as trunk of car/truck bed, dirty equipment box). **Never enter the clean compartment with soiled footwear and/or soiled clothing.**

   b) Rubber (washable) floor mats should be placed for each person in the vehicle.

   c) Use a rubber or heavy plastic liner to cover the whole trunk or truck box. Remove it for cleaning and disinfection.

   d) Place large plastic containers on the liner as equipment carriers. Designate as CLEAN or DIRTY.

e) Fill a pump-up sprayer with appropriate disinfectant solution (such as a quaternary ammonia or phenol for tires and footwear).

Personal Biosecurity Kit

a) Disposable boots of heavy plastic (**at least 3 mm**) or rubber boots that can be disinfected.

b) Washable coveralls that can be easily cleaned and disinfected and/or disposable coveralls (reinforced paper).

c) Disposable head coverings, dusk masks, disposable gloves.

d) Polyethylene bags to store used coveralls and contaminated articles.

e) Hand disinfectant and cleaner, paper towels.

f) Smaller spray or squeeze container filled with disinfectant solution for cleaning small equipment.

g) Winter parkas should generally NOT be used over coveralls at any time around barn areas. Use warm, non-bulky layers under coveralls.

Equipment Kit

a) Load required testing equipment in a plastic, non-permeable toolbox that can be easily cleaned and disinfected. **Use separate compartment or a separate box for soiled tools.**

b) Samples for submission should be SEALED in plastic bags.

c) Use a plastic clipboard or folder (cleanable) for records.

2. **Know Your Clients' Biosecurity Expectations and Respect Them**
   - Current biosecurity procedures (could include shower in, company clothing requirement, and no previous swine visits 24 hr.)
   - Who should be present for the farm visit.
   - History of disease and of current problem if any.
   - If possible, visit youngest to oldest, healthiest to sickest.
   - Keep a personal daily log of ALL visits for possible trace-back purposes.
   - Technical service personnel must not own pigs.

Farm Entry Procedures

1. **Entering Laneway**
   a. Drive slowly (**less than 15 km/hr**) to avoid tires throwing debris into wheel-wells.

   b. Avoid large puddles, heavy mud, and obvious manure whenever possible. Inform the owner if these problems are present.

   c. Park a MINIMUM of 100 feet from the barn, in a designated area if present, away from heavy traffic areas and ventilation exhausts.

   d. Yellow Alert/Enhanced Biosecurity: park a MINIMUM of 200 feet from the barn.

   e. Yellow Alert/Enhanced Biosecurity: spray tires and undercarriage with disinfectant at road PRIOR to entering laneway.

   f. Keep vehicle windows CLOSED to prevent insects from entering.

2. **Preparing to Enter Barn**
   a. Put on CLEAN coveralls, disposable boots, (hairnet and mask also recommended) beside the vehicle. If ball caps are worn, there MUST be a clean one for each barn. A supply of CLEAN coveralls, etc. is kept in the CLEAN part of the vehicle.

   b. The use of double plastic boots is RECOMMENDED if spending longer time in barn.

   c. Take ONLY the required equipment and recording necessities into barn using cleanable toolbox.

d. Inform producer of arrival.

e. Sign and date the logbook.

f. Yellow Alert/Enhanced Biosecurity: disposable gloves, hairnet and mask are ALL required. A second pair of disposable boots is put on just prior to entering the barn. **If suspicious history, a second pair of disposable coveralls is put on prior to entering barn.**

Farm Exit Procedures

1. Wash hands well, if facilities exist, PRIOR to exiting barn.

2. Dispose of gloves, hairnet, mask, second pair outer boots/ outer coveralls (if worn) at barn door.

3. Return to vehicle area.

4. Disinfect exterior of test kits, equipment and clipboard with spray disinfectant and wipe with paper towel (and hands if not already washed). Pump hand wash units should be considered as part of the biosecurity kit.

5. If equipment is satisfactorily cleaned, it can be returned to the CLEAN area of the vehicle. If not, it is placed in designated plastic carriers in the DIRTY compartment.

6. Test samples (vials, box pads, tissue samples) are potentially contaminated and MUST be properly packaged in clean outer plastic bags and stored/carried in the DIRTY compartment.

7. Remove and dispose of plastic boots. If possible, leave ALL disposable contaminated materials at the farm. Otherwise, seal them in a clean plastic bag and store in the DIRTY compartment.

8. Remove soiled coveralls WITHOUT contaminating street clothing, and seal in a heavy-duty polyethylene bag or plastic carrier in the DIRTY compartment.

9. If in Yellow Alert/Enhanced Biosecurity, using spray canister, disinfect wheels, wheel wells and street footwear. Clean and disinfect the outside of the canister before returning to DIRTY area.

10. Clean and disinfect hands using hand wash sanitizer **before** entering vehicle. Do NOT cross contaminate by handling DIRTY material again.

11. Depart premises. In most cases, driving for **5 km at minimum 40 km/hr** produces enough heat in the tires from friction to inactivate most pathogens.

12. If you visit a suspect farm for economically significant disease, wash vehicle, shower and wait over night **before** visiting the next farm. In case of serious or exotic diseases, a waiting period of at least 72 hours MUST be imposed before having further contact with live swine or swine premises.

Return to Base and Sample Submission

1. Submit ALL samples to the lab **as soon as possible**. Leave inside the clean outer plastic bags. **Do NOT reopen.**

2. Fill out the entire submission form with identification of farm, sample, full history, and tests requested. Sanitize hands and footwear **prior** to returning to vehicle from lab.

3. Empty DIRTY compartment completely at least once daily. **Immediately dispose of ALL garbage**, preferably in exterior container. Carry DIRTY laundry inside in the closed plastic bag or container.

4. Thoroughly clean and sanitize ALL equipment used, DIRTY carry containers inside and out, and plastic base they sit on prior to returning them to vehicle.

5. Laundry facilities should allow easy sanitization and have separate area for receiving DIRTY laundry, **(handle as contaminated product**), followed by area for washer, area for dryer (CLEAN) and separate clean storage area.

6. For washing biosecurity garments, hot water, strong detergent, bleach and high dryer temperatures are recommended.

Vehicle Washing

1. Vehicle MUST be completely washed including interior cleaning, **once weekly as a minimum**.

2. Exterior of vehicle should be washed **daily** if farm visits are done.

3. For routine vehicle washing, a commercial carwash is acceptable (drive through or pressure wand). Hose washing with pails/brushes at home in an area with NO swine activity is also acceptable.

4. If in a Yellow Alert/Enhanced Biosecurity scenario, the vehicle exterior MUST be washed **between each farm visit**. The interior MUST be cleaned **daily**. If using pressure washer, wear coveralls/ boots during cleaning and remove/sanitize them before entering vehicle.

5. **Sequence is important** to go from top to bottom, outside to inside**.**

6. Half-ton truck cargo area should be considered vehicle exterior.

EXTERIOR (at least weekly or daily as required)

1. Use water **at pressure** (ideally from a pressure washer) to rinse the exterior of vehicle, including wheel wells, wheels, and exposed chassis, to remove ALL visible organic material.

2. Wash ALL areas with detergent suitable for vehicles, **ideally using hot water (**60-77°C, 140-171°F) and pressure application if available (400-500 psi).

3. Using water **at pressure** rinse ALL external areas (can be cold water). Inspect to be sure NO organic material/debris remains.

4. In Yellow Alert/Enhanced Biosecurity, disinfect ALL vehicle surface areas with appropriate approved disinfectant (such as quaternary ammonia or phenol) using hand sprayer or proportion sprayer.

INTERIOR (at least weekly or daily in alert situation)

1. Remove and dispose of ALL garbage. Remove loose objects and clean/sanitize containers before returning them to the cleaned vehicle. Clean/sanitize DIRTY containers inside and out.

2. Remove, wash, and sanitize floor mats and trunk liner.

3. Vacuum interior of vehicle including seats, floors, and trunk.

4. Clean panels, windows, steering wheel, floor pedals with detergent and disinfectant.

5. **Inspect entire vehicle and associated objects** for adequate cleaning. Re-clean any deficient areas.

6. Return containers, mats etc. to their appropriate spots.

7. In Yellow Alert/Enhanced Biosecurity situation: Mist interior of vehicle with Lysol Spray.

8. Clean up cleaning area. **Disinfect footwear and hands before entering the vehicle.**

Suitable Disinfectants/Sanitizers

Some of the more common ones are identified below. There are many more. **Note: If there is a degreaser in the formula, the product may be hard on vehicle paint.**

- **Quaternary Ammonia (QUAT)**

  dilution 1:128 (1oz/gal) to 2:128 (2 oz/ gal)

  Trade names: Ascend, Swish Food Service 1000 or 2000, Coverage 256, Enviro-Solutions

  General purpose neutral disinfectant.

- **Phenols**

  dilution 1:128 (1oz/gal) to 2:128 (2 oz/ gal)

  Trade names: One-Stroke Environ, LpH Ag

- **Hand Disinfectants**

  Trade names: Cida-Rinse, Bacti-stat, Purell hand sanitizer.

  Note: Virkon is very effective as a sanitizer, but very corrosive and hard on all metal surfaces.

- **Steam** (for Influenza)

Specific Measures for Yellow Alert/Enhanced Biosecurity

1. Spray tires and undercarriage with disinfectant at the road **prior** to entering laneway.

2. Park a MINIMUM of 200 feet from barn.

3. Disposable gloves, hairnet and mask are ALL required. A second pair of disposable boots is put on just **prior** to entering the barn. A second pair of disposable coveralls is put on **prior** to entering barn.

4. At the farm entrance **before exiting**, use a sprayer to disinfect wheels, wheel wells and street footwear. Clean and disinfect the outside of the sprayer before returning it to the DIRTY area.

5. The vehicle exterior MUST be washed **between each farm visit**. The interior MUST be cleaned **daily**. If using pressure washer, wear coveralls/boots during cleaning and remove/ sanitize them before entering vehicle. In case of serious or exotic diseases, a waiting period of **at least 72 hours**, indoors in the wintertime, may be imposed before having further contact with live swine or swine premises.

6. Disinfect ALL vehicle surface areas with approved disinfectant (quaternary ammonia or phenol) using a hand sprayer or proportion sprayer.

7. Mist interior of vehicle with Lysol Spray or approved product.

Specific Measures for Red Alert/Emergency

As a minimum, all the above procedures apply. In the event of a confirmed FAD outbreak, the CFIA will impose additional biosecurity, traffic control and sanitation protocols appropriate for the situation.

Feed Companies and Swine Transporters

Preparation Procedures

Personal Preparation

Green/Normal Biosecurity Operations

Recommended procedures in the normal course of business, under normal conditions are as follows:

1. Follow company's **standard procedures** for personal preparation.

2. The company employing the driver is responsible for ensuring that the employee has been **fully trained** in biosecurity procedures.

3. **Monthly reviews** of biosecurity procedures should be practiced.

4. Shower and change clothes at home on a **daily** basis.

5. Travel from **youngest animals to oldest** and healthy to sick animals.

6. During winter months wear layers of non-bulky clothing under coveralls.

Yellow Alert/Enhanced Biosecurity

1. **Identical to Red Alert/Emergency procedures below.**

Red Alert/Emergency

1. Change clothes and footwear at work and place in a sealed container (separate DIRTY/CLEAN containers). Wash work clothing at work or wash separately from everyday clothing.

2. Leave footwear AT WORK and spray the entire footwear with disinfectant at the end of a shift.

3. **Shower at the end of the shift.** Prevent the travel of disease by changing into **clean clothes and shoes** before entering personal vehicle.

4. Clothing and/or any other materials that are used inside the barn MUST NOT be worn/used outside the barn during and/or after the visit.

5. Be aware of the animal health status on farms.

6. Check with dispatch for routing instructions. Be aware of Red Alert/Emergency and Yellow Alert/Enhanced Biosecurity zones.

7. **Do NOT travel from a Red Alert/Emergency zone to any other area without full cleaning and disinfection.**

Vehicle Preparation

Green/Normal Biosecurity Operations

Recommended procedures in the normal course of business, under normal conditions are as follows:

1. Large washable (rubber/plastic) containers designated as CLEAN or DIRTY for storing the appropriate equipment and clothing between barn visits.

2. Keep an **information log** of **ALL daily truck activity** (company vehicle and contract carriers) for possible trace-back purposes.

Yellow Alert/Enhanced Biosecurity

1. **See Red Alert/Emergency procedures below.**

Red Alert/Emergency

1. Keep CLEAN areas and items separate from DIRTY areas and items. Designate a CLEAN (i.e. passenger area) and DIRTY (i.e. truck bed, equipment box, etc.) area of the vehicle and use those areas accordingly. NEVER enter any clean area with soiled footwear and/or soiled clothing.

2. Washable (rubber) or disposable floor mats for EACH person in the vehicle.

3. Pump up sprayer FULL of disinfectant solution (quaternary ammonia or phenol) for tires and footwear.

4. Hand disinfectant and cleaner, paper towels and Lysol or approved disinfectant in the truck cab.

5. Personal biosecurity kit should be **restocked daily** and stored in designated CLEAN area of vehicle.

6. Keep an information log of **ALL daily truck activity** (company vehicle and contract carriers) for possible trace-back purposes.

Personal Biosecurity Kit
Yellow Alert/Enhanced Biosecurity

1. Footwear that can be sanitized. If using disposable boots, should be **at least 3 mm** thick plastic.

2. If the barn MUST be entered, wear WASHABLE coveralls that can be easily cleaned and disinfected and/or DISPOSABLE coveralls (reinforced paper).

3. DISPOSABLE head coverings, dusk masks, disposable gloves (or several pairs of CLEAN work gloves for the day).

4. Polyethylene bags to store used coveralls, gloves, and other contaminated articles.

5. A small spray or squeeze container filled with disinfectant solution is useful for cleaning small areas (i.e. floor mats).

6. Plastic clipboard or folder (MUST be cleanable) for records (information log). This MUST be **cleaned on a daily basis** at the end of every shift.

Red Alert/Emergency

1. Use disposable boots of **at least 3 mm** thickness.

2. If the barn MUST be entered, use disposable coveralls (reinforced paper).

3. Use DISPOSABLE head coverings, dusk masks, and disposable gloves.

4. Polyethylene bags to store used coveralls, gloves, and other contaminated articles.

5. A small spray or squeeze container filled with disinfectant solution is useful for cleaning small areas (i.e. floor mats).

6. Plastic clipboard or folder (MUST be cleanable) for records (information log). This MUST be **cleaned after each use**.

Customer Biosecurity Requirements

Applies to all Biosecurity Zones

1. **Know the customer's biosecurity requirements and respect them.** This applies to ALL disease outbreak zones Red Alert/Emergency, Yellow Alert/Enhanced Biosecurity and Green/Normal Biosecurity Operations.

2. **Current biosecurity procedures** (could include shower in, company clothing requirement, no previous swine visits 24 hours, etc.)

3. Farm/manager owner has the **right to inspect** ALL vehicles, equipment, footwear, and clothing.

4. Clothing and/or any other materials that are used inside the barn MUST NOT **be worn/used outside the barn** during and/or after the visit.

Farm Entry Procedures

Green/Normal Biosecurity Operations

1. Follow ANY procedures required by the customer.

2. Drive **slowly** (**less than 15 km/hr**) to avoid tires throwing debris into wheel-well.

3. Avoid large puddles, heavy mud, and obvious manure whenever possible. Unsuitable driving conditions should be **reported immediately** to dispatch or office.

Yellow Alert/Enhanced Biosecurity

1. Safely pull off highway into laneway or designated area and STOP.

2. IMMEDIATELY upon exiting the truck, ALL personnel are to put on SANITIZE-ABLE or DISPOSABLE boots and clean gloves (if using gloves).

3. Ensure DISPOSABLE or clean SANITIZE-ABLE floor mat is in place in cab of truck.

4. Disinfect tires and undercarriage of vehicle.

5. Follow **any additional procedures required by the customer.**

6. Re-enter cab and drive **slowly** (**less than 15 km/hr**) to avoid tires throwing debris into wheel-well.

7. Avoid large puddles, heavy mud, and obvious manure whenever possible. Unsuitable driving conditions should be **reported immediately** to dispatch or office.

8. Keep vehicle windows and doors CLOSED while on farm property to prevent insects from entering.

9. Feed pipes MUST be disinfected before placing in storage compartment.

10. Feed truck drivers should NOT **enter the feed box** of the truck without permission from their supervisor.

11. Feed truck drivers are NOT **to enter any barn or building attached to the barn**. Swine transporters and/or other personnel MUST follow procedures outlined before entering the barn.

Red Alert/Emergency

1. Safely pull off highway into laneway or designated area and STOP.

2. IMMEDIATELY upon exiting the truck, ALL personnel are to put on CLEAN coveralls, sanitize-able or disposable boots and clean gloves (if using gloves).

3. Ensure DISPOSABLE or CLEAN sanitize-able floor mat is in place in cab of truck.

4. Disinfect tires and undercarriage of vehicle.

5. Follow **any additional procedures required by the CFIA and/or the customer.**

6. Re-enter cab and drive **slowly** (**less than 15 km/hr**) to avoid tires throwing debris into wheel-well.

7. Avoid large puddles, heavy mud, and obvious manure whenever possible. Unsuitable driving conditions should be **reported immediately** to dispatch or office.

8. Keep vehicle windows and doors CLOSED while on farm property to prevent insects from entering.

9. Feed pipes CANNOT be dragged between bins on farm. Feed pipes MUST be disinfected before placing them in storage compartment.

10. Feed truck drivers are NOT **allowed to enter the feed box** of the truck while in the Red Alert/Emergency zone.

11. Feed truck drivers are **NOT to enter any barn or building attached to the barn** for any reason.

12. It is unlikely that swine transporters will be allowed to enter the Red Alert/Emergency zone.

13. Follow any additional specific procedures, licensing, disinfection and sealing of trucks required by the CFIA.

Barn Entry Procedures

Green/Normal Biosecurity Operations

1. Put on CLEAN coveralls, DISPOSABLE boots (or easily sanitized boots which can be sanitized prior to barn entry), and hairnet **at the doorway to the barn**.

2. Try to **minimize the tracking in and out of the barn**.

3. **Disinfect hands** and **walk to door** leading into the barn area.

4. Follow **any additional procedures as required by the customer.**

Yellow Alert/Enhanced Biosecurity

1. Put on CLEAN DISPOSABLE coveralls, disposable gloves, disposable boots, mask, and hairnet **beside the vehicle**.

2. **Carry** a pair of DISPOSABLE boots to be **worn into the barn**.

3. **Disinfect hands** and **walk to door** leading into the barn area.

4. Put on a **second pair of boots** and **enter barn**.

5. Disposables should be **disposed of on-farm**.

Red Alert/Emergency

1. **Do NOT enter Red Alert/Emergency zone.** Use other means of communication such as telephone to reach farmers in the Red Alert/Emergency zone.

Barn Exit Procedures

Green/Normal Biosecurity Operations

1. Sign the visitor **logbook** and fill out any necessary paperwork.

2. **Wash or disinfect your hands before exiting the barn.** Shower if possible.

3. Remove and DISPOSE of disposable items **at barn door**.

4. Return to vehicle; sanitize any equipment with disinfectant.

5. CLEAN and sanitize footwear **before** entering the vehicle.

6. Remove washable coveralls **without contaminating** street clothing and **seal** in plastic bag and keep in DIRTY section of vehicle.

7. **Clean and disinfect hands before entering vehicle.**

Yellow Alert/Enhanced Biosecurity

1. Sign the visitor **logbook** and fill out any necessary paperwork.

2. **Wash or disinfect your hands before exiting the barn.** Shower if possible.

3. Upon exit, remove the second pair of boots, hairnet, mask **at the barn door** and DISPOSE of them.

4. Return to vehicle; sanitize any equipment with a disinfectant.

5. Remove and DISPOSE of first pair of boots.

6. Remove coveralls **without contaminating** street clothing and DISPOSE of **on the farm**.

7. **Clean and disinfect hands before entering vehicle.**

Red Alert/Emergency

Do NOT enter Red Alert/Emergency zone. Use other means of communication such as the telephone to reach farmers in the Red Alert/Emergency zone.

Farm Exit Procedures

Green/Normal Biosecurity Operations

1. Follow **any procedures required by the customer**.

2. Drive **slowly** (**less than 15 km/hr**) to avoid tires throwing debris into wheel-well.

3. Avoid large puddles, heavy mud, and obvious manure whenever possible. Unsuitable driving conditions should be **reported immediately**.

Yellow Alert/Enhanced Biosecurity

1. Feed pipes MUST be disinfected before placing them in storage compartment.

2. Proceed to end of laneway or designated area and STOP.

3. Disinfect tires and undercarriage of vehicle. Remove as much mud and manure as possible.

4. DISPOSABLE mats MUST be removed or SANITIZE-ABLE. The mats MUST be disinfected, and the steering wheel sprayed with disinfectant.

5. Remove DISPOSABLE boots and gloves or disinfect SANITIZE-ABLE boots and hands (if no gloves worn) **before** entering cab. Place DIRTY materials in appropriate container and return to mill for proper disposal or sanitization **or leave on farm if possible**.

Red Alert/Emergency

1. Feed pipes MUST be disinfected before placing them in storage compartment.

2. Proceed to end of laneway or designated area and STOP.

3. Disinfect tires and undercarriage of vehicle. Remove as much mud and manure as possible. If leaving a quarantined premises, **a full wash and sanitizing supervised by CFIA will be required** before leaving the property. A **second wash may be required** before leaving the zone.

4. The cab should be inspected and any mud and/or manure in the cab should be removed.

5. DISPOSABLE mats MUST be removed, or SANITIZE-ABLE mats MUST be disinfected and steering wheel, pedals, and handles sprayed with disinfectant.

6. Remove coveralls, gloves (if worn), and DISPOSABLE boots or disinfect SANITIZE-ABLE boots and hands (if no gloves worn) **before** entering cab. Place DIRTY materials in appropriate container and return to mill for proper disposal or sanitization **or leave on farm if possible**.

Return to Base Procedures

Yellow Alert/ Enhanced Biosecurity

Identical to Red Alert/Emergency Procedures. **See Below.**

Red Alert/Emergency

After leaving the quarantined farm **prior** to returning to base the vehicle MUST **be cleaned and disinfected** at the designated cleanout area.

Vehicle Washing:

Minimum requirement is DAILY washing of vehicle however the minimum could be that the vehicle is washed EVERY LOAD if it is delivered into the quarantine area.

1. Vehicle MUST **be completely washed**, including interior, when leaving quarantine zone.

2. For vehicle washing, a commercial truck wash is acceptable (drive through or pressure wand) or use a nozzle hose with pails/brushes.

3. If using a pressure washer, wear coveralls/boots during process and REMOVE/SANITIZE at completion **before** entering vehicle.

4. Half-ton truck cargo area should be considered vehicle exterior.

5. **The sequence for vehicle washing is important.** Go from top to bottom, outside to inside.

Exterior Washing:

1. Use water **at pressure**, (ideally pressure washer) spray to rinse exterior of vehicle (including wheel wells, wheels, and exposed chassis), removing all visible organic material.

2. Wash ALL areas with detergent suitable for vehicles **ideally using hot water** (60-77° C, 140-171°F) and pressure (400-500 psi) application if available.

3. Using water **at pressure,** rinse ALL external areas (can be cold water). Inspect to be sure NO organic material/debris remains.

4. Once the exterior of the truck has been washed, the truck should be **moved a minimum of one truck length from where the exterior was cleaned**, **before the cleaning of the interior may proceed**.

Interior Washing:

1. Remove and DISPOSE of ALL garbage.
    - Loose objects and containers MUST be removed, and exteriors cleaned and sanitized before returning to the cleaned vehicle.
    - DIRTY containers MUST be emptied, cleaned, and sanitized inside and out.
    - Thoroughly CLEAN and sanitize ALL equipment used.
    - CLEAN any DIRTY carry containers inside and out, as well as the base they sit on.
2. Remove, wash, and sanitize floor mats and trunk liner. DISPOSE of any disposables.

3. Vacuum interior of vehicle including seats, floors, and trunk.

4. CLEAN panels, windows, steering wheel, floor pedals with detergent and disinfectant.

5. INSPECT entire vehicle and associated objects for adequacy of cleaning procedure. **Re-clean any deficient areas.**

6. Return containers, mats etc. to their appropriate locations.

7. **Clean up cleaning area.**

Vehicle Disinfecting:

Minimum requirement is DAILY washing of vehicle however the minimum could be that the vehicle be washed EVERY LOAD if it is delivering into the quarantine area.

1. Complete a thorough inspection of the vehicle and ensure that NO debris remains on the exterior of the vehicle.

2. The appropriate disinfectant, for the disease, MUST be thoroughly applied using appropriate washing procedures i.e. top to bottom.

Exterior Disinfecting:

1. In Red Alert/Emergency, the exterior of the vehicle MUST be disinfected with approved disinfectant for the disease outbreak. Use a hand sprayer or pressure washer to apply disinfectant to ALL external areas including wheel wells, wheels, exposed chassis.

Interior Disinfecting:

1. In Red Alert/Emergency, mist interior of vehicle with Lysol spray or other approved product.

2. **Disinfect footwear and hands before entering the vehicle.**

3. **After** the truck has been CLEANED and DISINFECTED in the above manner the truck will return to base where **it will be determined** if the truck will take another load into the quarantine area or if the truck will sit idle. If the truck is NOT required to deliver into the quarantined area, it is **recommended that the truck sit idle for 72 hours** (indoors in the wintertime).

At Home Base

1. Laundry facilities should be EASILY sanitized and have SEPARATE area for receiving DIRTY laundry, (handle as contaminated product); followed by area for washer, area for dryer (CLEAN) and separate CLEAN storage area.

2. Carry DIRTY laundry inside in the CLOSED plastic bag or container. For washing biosecurity garments, hot water, strong detergent, bleach, and high dryer temperatures **are recommended.**

Suitable Disinfectants/Sanitizers:

Some of the more common ones are listed below. There are many more available. **Note that if there is a degreaser in formula, the product may be hard on vehicle paint.**

Quaternary Ammonia

dilution 1:128 (1oz/gal) to 2:128 (2 oz/ gal)

Trade names: Ascend, Swish Food Service 1000 or 2000, Coverage 256, Enviro-Solutions General purpose neutral disinfectant.

Phenols

dilution 1:128 (1oz/gal) to 2:128 (2 oz/ gal)

Trade names: One-Stroke Environ, LpH Ag

Hand Disinfectants

Cida-Rinse, Bacti-stat, Purell hand sanitizer

Note that **Virkon** is very effective as sanitizer, but **very corrosive** on **ALL** metal surfaces. Use 2oz in 10L of water. (In winter substitute 40% of the water with windshield washer fluid.)

Section 7: Humane Depopulation Protocols (Humane Euthanasia of Large Numbers of Swine)

The goal of euthanasia is to ensure that death is painless and free from distress to the animal. Humane depopulation approaches of swine vary depending on the age of the animals, as different methods are preferred.

Proper training and properly maintained equipment are fundamental to protect both animal welfare and human safety. Proper equipment for handling and restraint is a priority. Handlers should be aware of low stress animal handling. The use of existing systems such as holding rooms or load out areas to perform euthanasia away from the other animals should be incorporated. On-farm depopulation should not be in the hands of the barn staff but conducted by a designated team of trained individuals.

Sensibility signs:

- Rhythmic breathing
- Constricted pupils
- Righting reflex
- Vocalization
- Palpebral or corneal reflexes
- Response to painful stimulus
- Blinking
- Jaw tone

After euthanasia, it is important to check for signs of insensibility.

Animals should be assessed and ranked according to euthanasia need. This decision may be based on clinical signs of disease, feed availability and other factors. Animals must not be dragged, prodded, or made to move, incurring pain prior to euthanasia.

Preferred methods of euthanasia by age group

Suckling piglets

This age group should be euthanized first with the use of non-penetrating captive bolts (e.g. Zephyr guns) as the preferred method.

Nursery piglets

A free bullet (i.e., 0.22 caliber long rifle, solid bullet) is the preferred method for depopulation, however non-penetrating captive bolts may be used.

Growers/finishers

A free bullet (i.e., 0.22 caliber long rifle, solid bullet) is the preferred method for depopulation. Penetrating captive bolts may also be used.

Breeding stock

A free bullet (i.e., 420 shotgun or 12, 16, 20-gauge shotgun, slugs) is the preferred method for depopulation. Penetrating captive bolts may also be used.

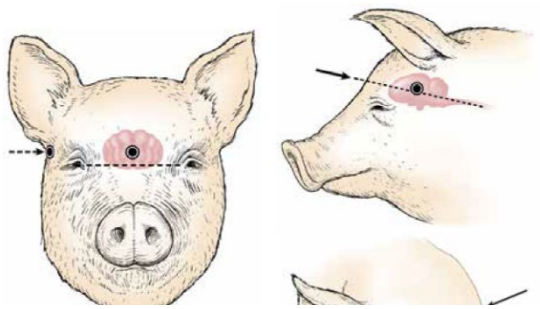


Image: Procedures for Humane Euthanasia, J.K. Shearer & A. Ramirez, Iowa State University, 2013.

All circumstances need to be considered when making the decision to depopulate a herd or group of animals based on availability of equipment, manpower and training, disposal, and acceptability.

References:

Euthanasia, www.livestockwelfare.com (Accessed February 7, 2018)

Shearer, J.K. & Ramirez, A. 2013. Procedures for Humane Euthanasia, Iowa State University

National Farm Animal Care Council, 2014. Code of Practice for the Care and Handling of Pigs, www.nfacc.ca

Livestock Market Interruption Strategy. 2014. Depopulation Research and Analysis.

Livestock Market Interruption Strategy. 2015. Investigation of Humane Depopulation and Carcass Disposal Methods, and Development of Plans and Procedures for a Livestock Market Interruption Strategy.

Section 8: Disposal Options for Deadstock and Manure

In the case of a CFIA declared Yellow Alert/Enhanced Biosecurity or Red Alert/Emergency, **CFIA will direct how to proceed with deadstock and manure disposal** from affected barns. However, it is important that every producer be aware of acceptable disposal options and have a **plan for disposal**. The options will differ depending on the number of carcasses to be disposed, the location of the farm in the province, and whether there is a confirmed presence of an infectious disease.

Disposal Options - Confirmed Infectious Disease

CFIA will assess the situation and decide the appropriate action. Removing any infected swine from barns before heat or time treatment **should be avoided**.

1. **Composting**

    - In-barn partial composting followed by complete composting outside or incineration **is the preferred option.** This may not be possible in all types of barns. The Prince Edward Island Department of Environment, Energy and Climate Action (PEIDEECA) MUST approve the sites before composting can take place.
    - Depending on the disease, composting in **bio-bags** is encouraged.

2. **Incineration**

    - Incineration is ONLY feasible for **a few animals**.
    - Any removal of diseased carcasses from barns MUST be done in containers that are disinfected as they leave the barn. Containers MUST be incinerated with carcasses or thoroughly disinfected.

- Approval from the PEIDEECA **is required** to operate an incinerator.

3. **Burial**

    - Small volumes (**up to 7000 lbs. per acre**) can be buried on-farm **when approved** by the PEIDEECA.
    - Large volumes **(over 7000 lbs./acre**) REQUIRE **approved sites** authorized by the PEIDEECA. These sites are either pre-approved or approved at the time of an emergency disease declaration.
    - Any removal of diseased carcasses from barns MUST be done in containers that are disinfected as they leave the barn. Containers MUST be disinfected or handled in a manner that would **prevent the spread of disease**.

Disposal Options - Without Infectious Disease (Uninfected swine destroyed in a control zone or mass mortalities from a power outage, etc.)

1. **Composting**
    - In-barn partial composting, followed by complete composting outside or incineration is the **preferred disposal option**. This may **NOT** be possible in all types of barns.
    - Composting in **bio-bags** is encouraged.

2. **Incineration**
    - Incineration is ONLY feasible for **a few animals**.
    - Any removal of diseased carcasses from barns MUST be done in containers that are disinfected as they leave the barn.

- **Approval** from the PEIDEECA **is required** to operate an incinerator.

3. **Burial**
    - Small volumes (**up to 7000 lbs. per acre**) can be buried on-farm **when approved** by the PEIDEECA.
    - Large volumes **(over 7000 lbs./acre**) **REQUIRE approved sites** authorized by the PEIDEECA. These sites are either pre-approved or approved at the time of an emergency disease declaration.

Manure and Bedding Disposal from FAD Infected Barns

In the event of a confirmed FAD, manure handling will be under the control of the CFIA.

1. Manure and bedding may NOT be removed from infected barns **until temperature and/or time treated**. Heat treatment may include in-barn composting or raising the barn temperature to 38°C for 72 hours.

2. Manure/bedding should be left in the barn **for at least two weeks** and be **tested before removal**. Manure and bedding testing negative may be disposed of using normal practices.

3. With the exception of PED, manure removed more than **four months after** initial infection may be handled normally. Special precautions are NOT required.

Manure and Bedding Disposal from Non-infected Barns

1. Manure and bedding may be disposed of using normal practices.

Section 9: Cleaning and Disinfecting Protocols for an Infected Premises

The following C&D protocols are those used by CFIA in a FAD outbreak and are included here for information purposes. **During any outbreak of FAD, all C&D procedures will be under the direction of CFIA.**

Cleaning and disinfection activities on infected premises will **be limited to areas inhabited or exposed to swine**. Veterinary inspectors assigned to each infected premises will determine whether materials can be effectively **cleaned and disinfected or should be discarded**. In the case of a federally reportable disease as listed in the *Reportable Diseases Regulations*[8] under section 2(2) of the Canadian *Health of Animals Act*[9], cleaning and disinfection will be carried out according to CFIA requirements and internationally accepted standards.

Cleaning and Disinfection of Barns

1. ALL infected premises will be visited **a minimum of three times** by a veterinary inspector (C&D Protocol for Depopulated Premises).

2. The first inspection, the **Site Evaluation**, will involve an assessment of the property indicating any **potential problem areas**. The **cleaning and disinfection protocol** will be reviewed with the owner/manager of the premises. **Water and power supplies** will be identified. The owner/ manager will be provided instructions as to **personal safety** and **biosecurity**.

8 *Reportable Diseases Regulations* http://laws-lois.justice.gc.ca/eng/regulations/SOR-91-2/
9 *Health of Animals Act* http://laws-lois.justice.gc.ca/eng/acts/H-3.3/

3. An **action plan** is to be developed for the infected premises and the **extent** to which C&D should be carried out.

4. The **methods** of cleaning, the **vector control** program, the **detergent**, the **disinfectant**, the **contractor** performing the cleaning and disinfection, and an **estimated completion date** will be identified.

5. The second inspection, the **Clean Inspection**, will involve a thorough **walk-through** of the infected premises to ensure that ALL **organic material has been removed**. If the cleaning process is NOT approved during this visit, then **another visit** will be required **before** disinfection is allowed to proceed.

6. The third inspection, the **Disinfection Inspection**, will involve the **observation** of the disinfection process. The **disinfectant** will be **identified** and **monitored** to ensure that the proper dilution rate is used.

7. The cleaning and disinfection of an infected premises is approved ONLY once the veterinary inspector is satisfied that ALL **requirements** of the C&D protocol and the **Cleaning and Disinfection Checklist** have been met.

Equipment on Infected Premises

1. Equipment on an infected premises will be identified. The C & D procedure of equipment will be reviewed with the owner/manager. Storage areas will be **inspected** and the extent to which C&D should be taken will be discussed with the owner/manager.

2. Movements are **licensed** and anything or anyone coming on to, or going off an infected premises MUST be subjected to thorough C&D.

Biosecurity

1. **Biosecurity of the infected premises is vital throughout the C&D process.**

2. Biosecurity protocol will be followed as set out by CFIA.

    - Cleaning and disinfection are the **financial responsibility of the owner** and are labour intensive and time consuming.
    - The highest standards MUST be maintained at all times.
    - If the owner requires manpower to assist in the C&D of his/her premises, the appropriate industry representative (SERAT member) **should be contacted**.

Cleaning and Disinfection Checklist

Step 1: Dry Cleaning

Removal of ALL **organic matter is essential**, as manure, bedding and feathers may contain high levels of contamination and are major sources of infection.

- Ensure that decontamination facilities for vehicles and personnel are set up. Biosecurity procedures MUST be followed at all times.
- Empty feeders and bins
- Shut down ventilation fans
- Close all windows, etc.
- Remove ALL mobile equipment, e.g. feeders, drinkers, pen dividers, etc.
- Clean and dust ceiling, walls, and fixed equipment, including fans, fan hoods and inlets.
- Remove manure and bedding. Scrape and sweep the floor. Remove the top 3 cm of dirty soil if applicable.
- Rodent and insect control programs MUST be in place.

Step 2: Water System Disinfection

ALL water systems, tanks, pipes, drinkers, and trays **may contain contaminants**.

- Clean ALL watering systems. Flush water lines.
- Put the disinfecting solution **through the medicator** to get the recommended dose.

- Make sure ALL your disinfectant has reached the end of the water line by letting the water run through until you can see or smell the disinfectant. **Please note that mold and debris may be released during the disinfection process.**
- Leave the solution in the drinking water system for **at least 10 minutes** before draining.
- Fill water lines with fresh water.

Step 3: Cleaning of Facilities and Equipment

Cleaning with the use of a detergent/degreaser helps to remove organic material and biofilm. ALL units and equipment which are physically or functionally connected to the premises MUST be thoroughly cleaned and disinfected.

- Begin the cleaning process by **thoroughly wetting** the ceiling, walls and fixed equipment finishing with the floor. A low-pressure sprayer could be used with detergents. Foaming agents work well.
- Soak heavily soiled areas for **at least 20 minutes** and use a brush if necessary.
- Rinse with a high-pressure washer.
- Clean entries, walkways, and ALL other adjoining rooms.
- Clean around the barn: the entries, walkways, exhaust fans, doors, loading docks, etc.
- Allow surfaces to dry. Auxiliary heat may be necessary. Heating the barn will also help bring out any beetles.
- Feed tanks MUST be cleaned and fogged with the approved disinfectant.

- Treat the facility for beetles. Afterwards, sweep up and dispose of them appropriately.

Step 4: Mobile Equipment and Vehicle Cleaning

Mobile equipment (feeders, drinkers, etc.), vehicles and storage areas **may be highly contaminated** and will require cleaning. ALL vehicles areas which are physically or functionally connected to the premises must be cleaned.

- Remove ALL organic material by pressure washing with a detergent/degreaser.
- Foaming agents may be helpful for hard to clean equipment.

Step 5: Clean Inspection

- Contact CFIA for Clean Inspection

Step 6: Disinfection

Approved disinfectants used according to label instructions are essential.

- Make sure that ALL surfaces and equipment are as dry as possible.
- Apply disinfectant on ALL surfaces according to label instructions paying particular attention to contact times.
- Start from the apex of the roof and work down the walls to the floor.
- When finished, leave, and close ALL openings.
- Allow surfaces to dry. Auxiliary heat may be necessary.

- **Fogging is recommended for inaccessible areas (corners, cracks, seams, feed tanks, attics).**

Step 7: Final Inspection

- Contact CFIA for final inspection and approval.

Section 10: Communication Plan - Crisis Communications for Foreign Animal Disease Outbreaks

Roles and Responsibilities

Producer

1. When a problem with the herd is observed, the producer will contact their veterinarian or service rep and ensure that samples are sent to AVC-DS.

2. Based on AVC-DS or veterinarian recommendations, the producer will:
    a. **Implement** self-quarantine: Yellow Alert/Enhanced Biosecurity.
    b. **Inform** and **document** ALL services that have visited the farm over the past 48 hours of Yellow Alert/Enhanced Biosecurity.
    c. **Cancel** ALL service visits to the farm within the next three days of Yellow Alert/Enhanced Biosecurity.
    d. **Inform** PEI Pork Office representative of possible disease problem and agree to supply ALL contact information.

Local Veterinarian

1. **Visit** the farm for investigation, post-mortem, diagnostics.

2. **Relay** suspicions and/or tentative diagnosis to owner.

3. **Inform** the CFIA and Provincial Veterinarian of suspicion of disease of importance.

4. **Submit** samples to AVC-DS, Charlottetown along with farmer information.

5. Based on suspicions, the local veterinarian will:
    a. **Request** permission from farmer to alert industry and invoke Yellow Alert/Enhanced Biosecurity.
    b. Highly **recommend** that the farmer contact the PEI Pork Office about possible disease of importance.
    c. Highly **recommend** that the farmer contact ALL service/input providers that have been on the property in the last 48 hours.
    d. Highly **recommend** that the farmer contact ALL service/input providers that will be visiting the property within the next three days.
    e. If farm is a **non-commercial** farmer who agrees to alert industry, advise him to **contact PEIDA**.
    f. Recommend no livestock be moved off premises.

AVC-Diagnostic Services

1. Determines through preliminary testing whether samples support a disease of importance:
    a. If negative, will contact the person who submitted the samples and advise that NO further action is required.
    b. If testing supports suspicion. AVC-Diagnostic Services will:
        i. **Contact** the person who submitted the samples (farmer/service person/vet) and **advise** that Yellow Alert/Enhanced Biosecurity be put in place or continue if already in place.
        ii. **Alert** the CFIA who collects samples for AVC-DS and for NC-FAD, Winnipeg. Yellow Alert/Enhanced Biosecurity **may continue** as is or it **may change** to Red Alert/Emergency.
        iii. **Alert** the PEIDA of suspicion of disease of importance.

PEI Pork Office

1. Keep ALL members **up to date** on disease information.

2. Ensure that the media has access to **accurate and current information** of the disease outbreak as it relates to their sector.

Swine Emergency Response Advisory Team (SERAT)

1. **Gather** at the JEOC office in Charlottetown to assemble the team and bring forth the GIS/GPS information and membership lists.

2. **Generate** a 3 and 10-km radius GIS/GPS map around the suspect farm. Make maps and associated data **available to CFIA as soon as possible**.

3. **Advise** CFIA that SERAT is in place.

4. **Inform farmers** within a 10-km radius of identified farm of Yellow Alert/Enhanced Biosecurity and/or Red Alert/Emergency and **recommend** heightened biosecurity be put in place.

5. **Inform feed manufacturers** of the 10-km radius area involved under Yellow Alert/Enhanced Biosecurity and/or Red Alert/Emergency and **recommend** heightened biosecurity be put in place.

6. **Inform processors** of the 10-km radius area involved under Yellow Alert/Enhanced Biosecurity and/or Red Alert/Emergency and r**ecommend** heightened biosecurity be put in place.

7. **Inform** remaining organizations on the **Emergency Industry Contact List** (Appendix III) of the 10-km radius area involved under Yellow Alert/Enhanced Biosecurity and/or Red Alert/Emergency and **recommend** heightened biosecurity be put in place.

Canadian Food Inspection Agency (CFIA)

1. **Submit** additional samples to the National Centre for Foreign Animal Diseases and to AVCDS.

2. Based on confirmation and/or suspicion, the CFIA will invoke the **Emergency Preparedness Plan** and will:
    a. Work under **Yellow Alert/Enhanced Biosecurity** or Invoke **Red Alert/Emergency**
    b. **Quarantine** farm
    c. **Alert** Health Canada if deemed appropriate
    d. **Alert** PEIDA
    e. **Alert** AVC-DS if applicable
    f. **Alert PEIDHW in case of zoonotic disease**
    g. **Alert** all FADES participants
    h. **Alert** SERAT, who alert industry
    i. **Alert** Media through JEOC communications when deemed appropriate

The CFIA operates under its own Emergency Preparedness Disease Plan, but it is suggested that they form partnerships with industry to improve communication and information transfer during a disease outbreak:

1. CFIA will forward **guidelines** and **protocols** for expected best management practices to provincial, local, and industry representatives.

Protocols address the **notification** of suspected FAD, **movement** restrictions and **quarantines**, vehicle **cleaning** and **disinfection**, sanitary and other procedures at infected premises, methods of **destruction**/euthanasia, **disposal**/composting, sentinel animals/**restocking**, and **valuation** and **compensation** payments.

2. Provide a FAD **outbreak contact list** that will be distributed to the provincial veterinarian's office, the SERAT, national, provincial, local, and industry representatives, laboratory officials and local practitioners.

3. **Work with the SERAT. SERAT** will be available to provide specialized knowledge and training, advise on industry infrastructure, industry politics and relationships and provide connections to other specialists, and will be available as consultants on disease strategy and control as it pertains to the swine industry.

   SERAT will produce **reports** and **forward information** on disease location/spread so industry can implement stricter biosecurity measures, including truck rerouting and enhanced disinfection procedures to industry.

4. Create a **Public Information Team** (PIT) to produce information for public use. The PIT shall consist of appropriate representatives from **CFIA**, **PEIDA**, **SERAT**, **PEIDHW** (in the case of zoonotic disease) and the swine **industry** including **farmers** and **communications officer(s)** from the PEI pork office. Their aim is to provide enough information to the media to prevent them from going into quarantine areas by **providing adequate video footage, interviews etc.**

5. In addition to information from CFIA, **SERAT will electronically maintain and forward copies of reports** and forward to the PIT, which may be used in developing general public releases.

6. The PIT will prepare and electronically maintain a **copy of press releases and a time-line (log)** of public information activities.
7. The spokesperson for the PIT will **brief the news media** as new information becomes available. In some cases, briefings may be pre-scheduled to occur at designated times.

8. Information released to the public should be **timely** and include **at least** the following general information:
    a. **Nature** and **extent** of the emergency.
    b. Impacted or potentially **affected areas** of the province.
    c. Human health **implications** or lack thereof.
    d. **Activities** that are being carried out by government officials and industry leaders **to respond** to the outbreak or mitigate its effects.
    e. **Assurance that food safety is unaffected.**

9. The PIT will **monitor** national, provincial, and local news broadcasts to ascertain if information released is being reported **accurately**.

10. The PIT will counter unfounded rumors with the preparation of **factual information**, which can be released to the public in a timely manner. Previously prepared documents on FADs, biosecurity, movement controls, destruction and disposal etc. will **speed up response time**.

11. The use of radio, television and social media may include **prepared announcements, interviews, question and answer sessions, live footage, up to date web sites**, posts, tweets, and so forth depending on the circumstances. **Tele-seminars** effectively deliver important information in a bio-secure way. Information released may also include **newspaper inserts** or supplements, which provide detailed information the public could use, and information about the steps being taken by the province and industry to protect them.

12. After the outbreak, **public information records will be collected** by the PIT and filed. All public information media releases will be maintained in an electronic format when possible.

13. After the outbreak, information records will be **filed by SERAT**. **ALL** industry information reports will be maintained in an electronic format when possible.

14. After the outbreak, industry will have access to **ALL** files for developing educational training seminars and workshops. These are intended to maintain **awareness** of the disease both within the veterinary profession and in the agricultural community. Disease awareness campaigns should be targeted primarily at **stock owners** and at **non-professional personnel** who regularly visit herds. The campaigns should emphasize the following:
    - importance of the FAD,
    - clinical signs,
    - importance of prompt notification,
    - epidemiological inquiries (tracing and surveillance), and
    - infected premises procedures including biosecurity, sanitation, destruction, and disposal.

15. After the outbreak, CFIA will seek input from the SERAT when and if government policies regarding infectious diseases are changed.

Section 11: Appendices

Appendix I PEI Swine Emergency Response Advisory Team

PEI Pork Office	Denise Cassidy	(902) 892-4201	
AVC Swine Health Management	Dr. Dan Hurnik	(902) 626-5840	
Canadian Food Inspection Agency	Martha Hagar, DVM	902-393-2860	
PEIDA	Dr. Carolyn Sanford Dr. Jill Wood Kelly Hughes Dr. Yosdany C. Garcia Jeffery Campbell	(902) 368-5660 (902) 628-7072 902-370-4923 902-368-4880 (902) 368-5654 (902) 314-0814 (902) 316-1095 (902) 218-3568	
Swine Producer	Dale Murray		demurray@islandtelecom.com
Swine Producer	Donald MacDonald		donaldmacdonald@live.ca

Appendix II SERAT Roles and Responsibilities

Roles and Responsibilities

1. Activate and deactivate the Swine Emergency Response Plan.

2. Provide direction to manage the industry response.

3. In the case of a presumptive positive diagnosis of an FAD, SERAT will:
   a) Activate the Emergency Response Plan.
   b) Consult with CFIA, PEIDA, the affected producer, and their veterinarian on the merits of self-quarantine, movement control, and depopulation.
   c) Arrange for any assistance and information that might be required by the producer (depopulation and disposal protocols, materials and equipment, biosecurity procedures, etc.).
   d) Inform all producers, feed mills, processors, and other industry services in the province within, or operating within, a 10 km radius of the suspect farm of an industry declared Yellow Alert/Enhanced Biosecurity and recommend heightened biosecurity be put in place.

4. Authorize and direct the commitment of industry resources.

5. Recommend movement controls.

6. Participate in a joint PIT, established by CFIA. The SERAT will be the official spokesperson for industry throughout an emergency. SERAT may assign individual members as a spokesperson for their sector as required.

7. Provide specialized knowledge, advise on industry infrastructure, industry politics and relationships to CFIA, EMO and other agencies, as well as provide connections to other resource people.

8. Maintain a log of ALL group activities for use during the debriefing process.

9. Each member is responsible for maintaining individual logs during any emergency.

10. Prepare situation reports during the response to emergencies.

11. Provide government agencies (CFIA, EMO, PEIDA) with any geographical data and information of swine producers and swine industry support groups in the province as might be required.

12. Maintain an updated list of contacts for the emergency plan.

13. Prepare and disseminate information to the industry (nationally, provincially) on the state of the emergency. Responsible for notifying industry members of the actions of the SERAT during a response to an emergency.

Appendix III Swine Emergency Response Contacts

Group	Contact	Organization	Office Tel.	Cell	Home Tel.	Fax	Email
PEI Pork Office	Denise Cassidy	PEI Pork Office	902-892-4201				harvey-denise@hotmail.ca
Feed Mills	Trevor Towers	Trouw Nutrition		902-940-2671			trevor.tower@trouwnutrition.com
Provincial CFIA	Martha Hagar, DVM	CFIA, Charlottetown	902-566-7290 Ext. 2038	902-393-2860			martha.hagar@inspection.gc.ca
Provincial CFIA District Veterinarian	Lauren Howard, DVM	CFIA, Charlottetown	902-566-7290 Ext. 2038	782-324-1078			lauren.howard@inspection.gc.ca
Atlantic CFIA Regional Vet Officer	Dr. Lynn Hood	CFIA	902-893-6863				lynn.hood@inspection.gc.ca
Atlantic CFIA Emergency Coordinator	Suzanne Nadeau	CFIA, Moncton	506-777-3925			506-777-3942	suzanne.nadeau@canada.ca
Atlantic CFIA Communications Officer	Greg Rogers	CFIA, Moncton	506-378-0294			506-851-2689	greg.rogers@inspection.gc.ca
Provincial Agriculture	Kelly Hughes	PEIDA	902-368-5654	902-314-0814		902-368-4857	kellyhughes@gov.pe.ca
Assistant Deputy Minister Agriculture and Land	Carolyn Sanford, DVM	PEIDA - Regulatory	902-838-0625	902-314-1376		902-368-4857	cjsanford@gov.pe.ca
Provincial Vet	Jill Wood, DVM	PEIDA	902-370-4923	902-218-2665		902-368-4857	jwoods@gov.pe.ca
AVC	Dr. Dan Hurnik	Professor, Swine Health Management	902-566-0963	902-626-5840			hurnik@upei.ca
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Appendix IV Swine Diseases of Interest

Reportable Diseases

African Swine Fever

Cause
African swine fever (ASF) is a contagious viral disease of swine similar to classical swine fever that affects all swine.

Clinical signs
Severity of clinical signs is strain dependent. ASF can cause high death rates in affected herds and can cause the animal to bleed internally. The most damaging strains (with almost 100% case fatality) of ASF virus cause: bleeding in the skin and internal organs; bloody diarrhea; high fever; loss of appetite; vomiting. Less harmful strains produce milder clinical signs such as slight fever, reduced appetite and depression. Chronic ASF manifests as extreme weight loss, pneumonia, and enlarged lymph nodes.

Human health risk
None.

Transmission
ASF can be spread directly between sick and healthy pigs through contact with blood, tissues, secretions, and excretions from infected pigs.

Animals that recover may become persistent carriers. The virus also persists in the body tissues after death. The main way it is transmitted from country-to-country is through people feeding pigs uncooked food scraps that are infected with the virus.

It can also be spread by indirect means. The ASF virus can survive for long periods of time outside of the host, it can be spread by contamination of objects, such as farm equipment, clothes and livestock feed.

In Africa, the virus is found in wild pigs (warthogs and bush pigs) but they do not show clinical signs; therefore, they act as a reservoir of the virus. This disease is actively spreading in Eastern Europe.

Diagnosis
An owner or veterinarian may suspect ASF based on clinical signs and disease lesions in affected pigs, and a high death rate in affected herds.

Laboratory tests are essential to detect the virus and confirm the diagnosis. It cannot be distinguished from Classical Swine Fever without laboratory testing.

Treatment and control
There is no treatment or vaccine for ASF.

Prevention

The CFIA imposes strict regulations on the import of animals and animal products from countries where ASF is known to occur. Visitors to Canadian farms are required to follow biosecurity procedures prior to entry.

Classical Swine Fever (Hog Cholera)

Cause

Classical swine fever (CSF) is a highly contagious viral disease that affects domestic and wild pigs.

Clinical signs

Severity of clinical signs is strain dependent. CSF can cause high death rates in affected herds occurring within one to two weeks with highest mortality seen among piglets. The most damaging strains of CSF virus cause: high fever; loss of appetite; depression; vomiting; diarrhea; conjunctivitis; nasal discharge; lack of coordination; stiffness; convulsions; labored breathing and possible red or purplish skin blotching on the ears, snout, limbs, and abdomen. Less harmful strains produce milder clinical signs with affected pigs dying one to three months post-infection.

Infection in pregnant sows can result in abortions; stillbirths; weak piglets; or persistently infected piglets which though born apparently healthy will die within months.

Human health risk

None.

Transmission

CSF can be spread directly between sick and healthy pigs through contact with blood, tissues, secretions, and excretions from infected pigs. Airborne transmission may also be possible.

Animals that recover may become persistent carriers. The virus also persists in the body tissues after death and may live in pork and processed pork products.

It can also be spread by indirect means. The CSF virus can be spread by contamination of objects, such as farm equipment, clothes, and livestock feed.

Classical swine fever exits in Europe, Asia, and some Caribbean and Latin American countries.

Diagnosis

An owner or veterinarian may suspect CSF based on clinical signs and disease lesions in affected pigs, and a high death rate in affected herds.

Laboratory tests are essential to detect the virus and confirm the diagnosis. It cannot be distinguished from ASF without laboratory testing.

Treatment and control

There is no treatment for CSF. Vaccine for CSF are used by some countries to control disease.

Prevention

The CFIA imposes strict regulations on the import of animals and animal products from countries where CSF is known to occur. Visitors to Canadian farms are required to follow biosecurity measures.

Vesicular Diseases

Foot and Mouth Disease

Cause

Foot and mouth disease (FMD) is a highly contagious viral infection that affects cloven-hoofed animals.

Clinical signs

The disease is characterized by fever and blisters in the mouth, on the teats and around the hooves. These lesions result in a reduction in food consumption, excessive salivation, and significant lameness.

Human health risk

Rarely, mild human disease can occur most often associated with consuming milk from infected animals or having direct contact with FMD blisters.

Transmission

FMD is a very contagious disease, and the virus may survive for several weeks, even months, in favourable conditions. It is easily transmitted by contact with infected animals, contaminated people or equipment, semen, through contaminated animal products and through the air. The virus can spread by air over long distances, and this is a particular source of spread in swine. FMD is present in Asia, Africa, and some Latin American countries.

Diagnosis

An owner or veterinarian may suspect FMD based on clinical signs and disease lesions in affected pigs. Laboratory tests are essential to detect the virus and confirm the diagnosis. FMD resembles two other vesicular diseases very closely - swine vesicular disease and vesicular stomatitis.

Treatment and control

There is no treatment for SVD. Vaccines for FMD are used by some countries to control disease.

Prevention

The CFIA prohibits imports of susceptible animals and animal products from countries that are not “free of FMD”. Visitor control and biosecurity protocols should be used.

Swine Vesicular Disease

Cause

Swine vesicular disease (SVD) is a viral infection that closely resembles FMD, however, the lesions are generally less severe and do not affect cattle and sheep.

Clinical signs

The disease is characterized by fever and loss of appetite; lameness; vesicles on the snout, feet, mouth, tongue, and teats; vesicular ruptures. These lesions may be mistaken for FMD.

Human health risk

Rarely, human disease can occur most often associated with laboratory personnel working with the virus.

Transmission

The SVD virus is very resistant to the environment. It is easily transmitted by contact with infected animals and contaminated people, equipment or food including pork and processed pork products. It is present in Mediterranean countries.

Diagnosis

Laboratory tests are essential to detect the virus and confirm the diagnosis given its resemblance to other vesicular diseases including FMD.

Treatment and control

There is no treatment for SVD.

Prevention

The CFIA imposes strict regulations on the import of animals and animal products from countries where SVD is known to occur. Visitor control and biosecurity protocols should be used.

Vesicular Stomatitis

Cause

Vesicular stomatitis (VS) is a viral infection that closely resembles FMD and other vesicular disease, and affects swine, ruminants, and horses.

Clinical signs

The disease is characterized by fever and loss of appetite; lameness; vesicles on the snout, hooves, mouth, and lips; and vesicular ruptures. These lesions may be mistaken for FMD.

Human health risk

Human disease resembles a mild influenza-like illness.

Transmission

VS is transmitted by contact with infected animals and contaminated equipment. The disease is seasonal and biting insects are probably involved in its transmission. It is found in southwest USA.

Diagnosis

Laboratory tests are essential to detect the virus and confirm the diagnosis given its resemblance to other vesicular diseases including FMD.

Treatment and control

There is no treatment for VS.

Prevention

The CFIA imposes strict regulations on the import of animals from countries where VS are occurring is known to occur. Visitor control and biosecurity protocols should be used.

Seneca Valley Virus (not federally reportable)

Cause

Seneca Valley Virus (SVV) is a viral infection that closely resembles other vesicular disease.

Clinical signs

The disease is characterized by lesions on the snout, mouth, teats, and coronary bands. Some sows will be anorexic, febrile, and lethargic and may show lameness. Piglets may have diarrhea and increase in mortality within one week of birth.

Human health risk

None documented.

Transmission

The transmission of SVV is not well understood.

Diagnosis

Laboratory tests are essential to detect the virus and confirm the diagnosis given its resemblance to other vesicular diseases including FMD.

Treatment and control

Treatments for SVV are not documented. Common industry biosecurity practices should be in place.

Prevention

The CFIA does not include SVV in their list of reportable or immediately notifiable diseases, however given its similarity to other vesicular diseases such as FMD, animals with vesicular lesions should be immediately reported to your veterinarian and the CFIA veterinarian for investigation. Visitor control and biosecurity protocols should be used.

Brucellosis

Cause

Brucellosis is a disease caused by several species of the *Brucella bacterium*. It is chronic and contagious *Brucellosis suis* is specific to swine.

Clinical signs

Following infection, the bacteria spread through the blood and lymphatic system of the animal, infecting many tissues-particularly the reproductive organs, mammary glands, and joints. This can cause abortions, weakened offspring and infertility. Any infected animal may carry brucellosis for life.

Human health risk

Zoonotic. While brucellosis can cause a disease in humans called "undulant fever," human cases are rare in Canada. Sanitary practices in slaughterhouses and pasteurization of milk are effective in preventing the vast majority of human cases of brucellosis. Wildlife in Canada may carry Brucellosis.

Transmission

Animals can become infected with brucellosis in a number of ways, including direct contact and consuming feed, colostrum, milk or water that has been contaminated.

Diagnosis

The best method for a definitive diagnosis of brucellosis has been to culture the organism from tissues or fluids. Modern tests are now able to detect the presence of the DNA of the bacteria in tissues and fluids.

Treatment and control

The bacteria that cause brucellosis are susceptible to certain antibiotics. However, treatment of infected livestock does not effectively eliminate the infection because the bacteria are able to "hide" from the drug inside the cells of lymph nodes and other organs. Treatment requires a very long course of antibacterial drugs, which is not suitable for animals and does not always eliminate the infection, achieving temporary remission only.

Vaccines have been developed to prevent the disease symptoms (abortion, infertility, etc.) of brucellosis in animals. However, these vaccines do not necessarily prevent animals from becoming infected with the bacteria. Some vaccines may interfere with diagnostic tests because they result in the production of antibodies that cannot be distinguished from those produced by a true infection.

Prevention

Management plans are in place to prevent the spread of brucellosis from the Canadian wildlife populations, namely Wood Buffalo National Park (Alberta and Northwest Territories) and in the artic/sub-

arctic to domestic livestock. In addition, CFIA maintains a series of programs to maintain Canada's brucellosis-free status which includes swine brucellosis surveillance through slaughter-house sampling. Visitor control and biosecurity protocols should be used.

Cysticercosis

Cause

Cysticercosis is a parasitic disease caused by human tapeworm larvae. The larva will enter the muscles of swine and form cysts which if consumed by people can cause tapeworm infections. Porcine cysticercosis has never been detected in Canada.

Clinical signs

Swine infected with cysticercosis are unlikely to show any clinical signs.

Human health risk

Zoonotic. The most likely method for a human to contract pork tapeworm is by ingestion of raw or uncooked pork. Cooking pork to safe internal temperatures (71°C/160°F) will inactivate any larvae if present. Once infected a person cannot transmit the infection to someone else.

Transmission

Pigs can become infected when they eat materials contaminated with tapeworm eggs. The infection is not transmitted directly between animals.

Diagnosis

Diagnosis occurs through the detection of cysts in the muscle tissue during carcass inspection. Identified lesions are submitted to the lab for further confirmation.

Treatment and control

There is no treatment.

Prevention

Slaughter plants have inspection protocols in place to identify any potential cysts. All suspicions must be reported to CFIA for further investigation. At home, pork should be cooked to a safe internal temperature to eliminate the potential for foodborne illness.

Pseudorabies (Aujeszky's disease)

Cause

Pseudorabies is a viral infection that can affect most mammals except humans. Pigs are the main reservoir of infection for the virus and this disease is always fatal for other susceptible species.

Clinical signs

The severity of clinical signs varies. Among piglets, it manifests itself as central nervous system problems (tremors, convulsions) with very high mortality. Piglets many sit like dogs due to posterior paralysis. Among weaner and feeder pigs, it causes an influenza-like illness (fever, depression, loss of appetite, respiratory problems). In sows, it is displayed by fever, depression and abortions and other reproductive problems. The disease may easily be confused with PRRS.

Human health risk

None.

Transmission

The virus is highly contagious in pigs and is transmitted by contact with infected animals, contaminated people, or equipment as well as through the air. Wild pigs may be a reservoir for Pseudorabies in North America.

Diagnosis

Lab testing is done on tissue and blood samples.

Treatment and control

There is no treatment for the disease. Vaccination is used for control or eradication in several countries. The last time pseudorabies was diagnosed in Canada was in 1931. It is quite common throughout the world, including wild pigs in certain states of the United States.

Prevention

CFIA conducts swine serological surveys at slaughter plants with randomly tests blood samples for evidence of the virus. If serological testing turns up a positive result, the CFIA locates the animal's farm of origin and traces the animal's history.

Trichinellosis

Cause

Trichnellosis is a parasitic disease of carnivores. The larvae enter the muscles of swine, which if consumed by people can cause disease. Outbreaks of human trichinellosis associated with pork from slaughter plans operating under modern inspection systems rarely occur; however, cases which are associated with the consumption of undercooked meat from wild boars, wildlife such as walrus and bear, and outdoor-reared and home-processed swine continue to be reported.

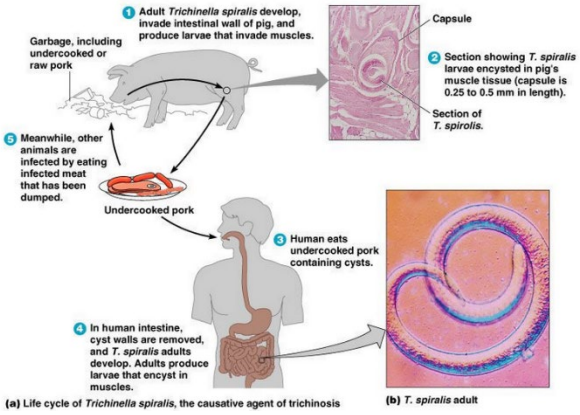
The most recent Canadian occurrence of trichinellosis in swine occurred in January 2013 in a pig raised on a non-commercial farm. It was slaughtered and consumed on the farm. No product entered the commercial food system.

Clinical signs

Swine infected with trichinellosis are unlikely to show any clinical signs.

Human health risk

Zoonotic. Human can contract trichinellosis is by ingestion of raw uncooked pork or dry cured meats such as prosciutto. Cooking pork to safe internal temperatures (71°C/160°F) will inactivate any larvae if present. In Canada, consumption of bear and walrus meat continue to be the most common human exposure for disease.



Transmission

Pigs can become infected when they eat materials contaminated with infected raw meat materials. Wild pigs can become infected through scavenging infected domestic or wild animals.

Diagnosis

Most infections in animal species are undiagnosed.

Treatment and control

The treatment of trichinellosis is pigs is not practical.

Prevention

CFIA administers a Trichinellosis control program which includes swine serological surveys at slaughter plants with randomly tests blood samples for evidence of the virus. If serological testing turns up a

positive result, the CFIA locates the animal's farm of origin and traces the animal's history. At home, pork should be cooked to a safe internal temperature to eliminate the potential for foodborne illness or frozen for more than 40 days.

Immediately Notifiable Diseases

Enterovirus encephalomyelitis (Teschen disease)

Cause

Teschen disease is caused by a porcine enterovirus, serotype 1, of which there are highly virulent and mildly virulent variants. The virus probably exists throughout the world wherever pigs are kept but most infections are sub-clinical, and outbreaks of clinical disease are rare.

Clinical signs

In mild disease, signs are essentially incoordination and weakness, the latter more rarely progressing to paralysis. Only young pigs (unweaned or weaned) are susceptible, and recovery is frequent.

Acutely, clinical signs appear 1–4 weeks after exposure in pigs of all ages. Incoordination is often seen first, followed by fever, lethargy, and anorexia. Seizures and coma may occur. Paralysis, initially evident as paraplegia but progressing to quadriplegia, is frequent in severe cases. Death is common within 3–4 days of onset of signs.

Human health risk

None.

Transmission

The virus can be spread both through direct and indirect contact. The virus multiplies in the intestines and is shed in large quantities in the feces. It can survive outside the body and is highly infectious requiring only a small dose of infected feces to be ingested to transmit.

Diagnosis

Clinical signs offer a presumptive diagnosis; however lab testing is required for confirmation.

Treatment and control

There is no treatment for the disease, however vaccination is used in some countries for control.

Prevention

CFIA lists Teschen disease on its list of immediately notifiable diseases and would investigate any presumptive diagnoses. Visitor control and biosecurity protocols should be used.

Nipah Virus

Cause

Nipah virus is a severe disease that can affect both animals and humans. The virus was first identified in swine, and people who worked with them in Malaysia. It has subsequently been identified in dogs, cats, horses, and goats.

The Asia fruit bat, also known as the "flying fox" is the natural host for the virus.

Clinical signs

Nipah virus affects both the nervous system and the respiratory system. The clinical signs in swine include fever; a loud, barking cough; respiratory distress (open mouthed breathing, rapid and laboured respiration); trembling; muscle spasms; weakness in the hind limbs; and a lack of coordination.

In sows and boars particularly, the following signs can be observed: agitation; head pressing; increased salivation and nasal discharge; seizures; and sudden death. Abortions have been reported in affected sows.

The illness can affect 100 per cent of the herd, but mortality is generally less than five per cent, except in piglets, where it is higher.

Human health risk

Nipah virus is a zoonotic disease that can cause influenza-like illness symptoms in humans. Serious infections can affect the central nervous system and cause seizures, coma and may progress to inflammation of the brain. The risk to human is extremely low in Canada as there are no species of fruit bats in Canada which are the natural host for infection.

Transmission

There is uncertainty about how the virus is spread. Initial human cases were associated to exposure of excretions and secretions of infected pigs, however more recent human outbreaks have occurred without animal illness.

Diagnosis

Lab testing is conducted on brain and lung tissue.

Treatment and control

There is no treatment or vaccine for the disease.

Prevention

CFIA imposes strict regulations on the import of animals and animal products from countries were Nipah virus is known to occur. Visitor control and biosecurity protocols should be used.

Other Contagious Swine Diseases of Importance

Transmissible gastroenteritis

Cause

Transmissible gastroenteritis (TGE) is caused by a coronavirus which damages the intestinal tract resulting in compromised gut function and malabsorption in pigs of all ages.

Clinical signs

Acute outbreaks of diarrhea, dehydration, vomiting and death. Neonatal piglets experience high morbidity and mortality. Gestating sows occasionally abort.

Human health risk

None.

Transmission

TGE can be transmitted directly or indirectly on fomites including farm vehicles.

Diagnosis

Intestinal samples and fecal samples should be submitted to the lab for diagnosis as it is not possible to distinguish TGE from PED and other swine gastrointestinal diseases.

Treatment and control

There is no treatment for the disease however some farms may benefit from vaccination programs. Disease outbreak control would be focused on enhanced biosecurity measures to prevent spread and work on elimination within the herd without depopulation.

Prevention

Strong industry and on-farm biosecurity practices are important to keep PED out of the farm.

Porcine reproductive and respiratory syndrome (PRRS)

Cause

Porcine reproductive and respiratory syndrome (PRRS) is caused by a virus and may also be referred to as blue ear disease.

Clinical signs

As the name implies, PRRS presents as two syndromes: reproductive failure (adults) and respiratory disease (young pigs).

Adults may experience fever and anorexia followed by reproductive signs such as: abortions (with mummified fetuses); stillbirths; and weak piglets.

Piglets experience respiratory signs such as severe respiratory disease and decreased growth. The abdomen, ears and vulva may appear blueish due to lack of oxygen. Morbidity can be high with mortality around 10%.

Human health risk

None.

Transmission

PRRS can be spread both directly (including semen) and indirectly and airborne spread in pig dense areas.

Diagnosis

Serology can be used to detect past exposure to the virus, PCR and molecular tests can detect the virus and can determine the strains.

Treatment and control

There is no treatment other than supportive care. Antibiotics may be effective in preventing secondary bacterial infections in immune-compromised animals.

Prevention

Strong biosecurity practices including the testing of replacements and appropriate isolation of new animals help to keep PRRS out of farms.

Emerging Diseases

Coronaviruses

Porcine Epidemic Diarrhea and Delta Corona Virus

Cause

Porcine epidemic diarrhea (PED) is a viral disease of pigs that can cause extensive diarrhea in all ages. Swine delta coronavirus (SDCV) is caused by a coronavirus which damages the intestinal tract resulting in compromised gut function and malabsorption in pigs of all ages.

Clinical signs

Acute outbreaks of watery diarrhea. Nursing piglets will exhibit severe disease with mortalities up to 100%. Growing pigs will show diarrhea with low mortality. Mortality rates appear to be lower in cases of SDCV than in cases of PED.

Human health risk

None.

Transmission

PED is typically transmitted by direct contact between infected and non-infected pigs. It can also be spread through people's clothing, boots, vehicles, equipment, and other items contaminated with the feces of infected animals. SDCV can be transmitted directly or indirectly on fomites including farm vehicles.

Diagnosis

Intestinal samples and fecal swabs should be submitted to the lab for diagnosis. PED and SDCV can be difficult to distinguish from other swine gastrointestinal diseases including such as Transmissible Gastroenteritis (TGE).

Treatment and control

There is no treatment for the disease however for PED there may be access to vaccines for emergency use. Disease outbreak control would be focused on enhanced biosecurity measures to prevent spread and work on elimination within the herd without depopulation.

Prevention

Strong industry and on-farm biosecurity practices are important to keep PED and SDCV out of the farm. This virus spread from China to North America in 2013. Care must be taken to ensure foreign diseases do not spread to North America.

Influenza

Cause

Swine influenza is caused by some strains of the Influenza A virus. Classical swine influenza is caused by strains H1N1 and H3N2. New strains such as H1N2 are arising and human adapted stains such as pH1N1 and vH3N2 are evolving.

Clinical signs

Swine influenza may produce the following clinical signs: fever; ocular and nasal discharge; sneezing; deep painful coughs; anorexia and prostration.

Human health risk

Some strains of swine influenza are zoonotic disease that can be shared between pigs and humans.

Transmission

Swine influenza is a highly contagious disease and is transmitted directly within a herd.

Diagnosis

Nasal swab, ROPE testings, PCR, and serology.

Treatment and control

There is no treatment other than supportive care, however vaccines are available. Vaccinations may not be 100% effective due to the strain variations and shifts that can occur over time with the influenza virus.

Prevention

Some strains of influenza are endemic in swine herds, however strong industry and on-farm biosecurity practices are important to keep non-endemic strains out of the farm.

Swine dysentery (Brachyspira)

Cause

Swine dysentery (SD) is an infectious diarrheal disease caused by *Brachyspira hyodysenteriae* that affects the large intestine.

Clinical signs

Signs of SD are more apparent in growing pigs and present as diarrhea which often becomes blood and mucoid. Diarrhea results in dehydration and poor growth and sudden death may occur in finishers.

Human health risk

None.

Transmission

SD can be spread both directly and indirectly. Carrier pigs can shed virus for long periods of time which can cause challenges in disease control.

Diagnosis

Lab testing and postmortem are used for diagnosis although history and clinical signs are helpful.

Treatment and control

Antibiotics may be effective if they are started early in the course of the disease.

Prevention

Strong biosecurity practices including the appropriate isolation of new animals help to keep SD out of farms. New strains of SD have been recently emerging in the US Midwest.

Appendix V Disaster Emergency Response Plan

Risks to the swine industry can occur beyond the scope of a disease outbreak. Natural and man-made disasters can pose significant risk to human and animal health, property, and markets. It is important to identify potential risks and take steps to prevent and prepare for those possibilities, thereby enabling efficient response and recovery. Potential disasters may include, but are not limited to:

- Fire
- Prolonged power outages
- Hazardous material spills
- Severe weather (i.e. ice storms, hurricanes, etc.)
- Structure collapses
- Gas leaks

In such circumstances, special measures may be required to shelter, care for, or transport livestock, or prepare for potential mass disposal. By planning ahead, you will already have in place pertinent information that will be required to respond during a crisis situation. Being prepared will save crucial time and make for a more efficient response.

Developing a Disaster Emergency Response Plan

The following are steps a producer can take to develop their own farm Disaster Emergency Response Plan. The Plan should be kept where it is accessible to all family, staff working on the farm, and emergency responders. In addition, a back-up copy should be kept off site. For example, an electronic version could be kept on a data sharing application such as Dropbox, ICloud, Google Drive, etc.

Self-Assessment

How prepared are you if an emergency should strike? Have you taken the necessary steps to minimize the impact and severity of an emergency? Make a list of potential risks and hazards that could be faced by your farm. Identify potential practices or

strategies which could be implemented to prevent mitigate potential. Ontario Pork10 provides a self-assessment checklist as part of their On-farm Emergency Response Planning Guide which can be used as a tool by all producers.

Prepare Key Information

Key information to have available during an emergency response includes:

- An up-to-date contact list of individuals you would need to reach in case of an emergency.
- An inventory of animals, including approximate ages and sizes, on farm
- An inventory of emergency equipment and supplies
- An inventory of equipment, vehicles, and machinery
- An inventory of hazardous materials
- A map of the farm including:
    - Description and location of facilities, animals, and equipment
    - Clearly identified locations of flammable or hazardous materials
    - Identify locations of water supplies
    -

Training

Human safety is the priority. Ensure you, your family, and your employees have first aid training. In addition, train or provide training to family members and employees on the proper use of emergency equipment, power supply shut-off, stopping the flow of liquids and gases, etc. Keep up to date documentation on all completed training.

Review and Update Plan Annually

Emergency plans should be reviewed and updated each year or whenever there are significant changes, whichever is sooner. Test the emergency plan on occasion to help identify any potential issues or gaps that could be addressed prior to an emergency.

10 http://www.ontariopork.on.ca/Resources/Producers

Additional Resources

2017 On-Farm Emergency Response Planning Guide
From Ontario Pork
(http://www.ontariopork.on.ca/Resources/Producers)

Emergency Management Guide for BC Pork Producers
Prepared for BC Ministry of Agriculture, Prepared by Zamaca Consulting with BC Pork Producers' Association
https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/farm-management/emergency-management/bc_pork_emergency_management_guide_march2015.pdf

Emergency Preparedness for Farm Animals
From the Government of Canada
(https://www.getprepared.gc.ca/cnt/rsrcs/pblctns/frm-nmls/index-en.aspx)

Appendix VI Document Revisions

Updated department names and team members and appendix IV contact information	December 2022 - Saad Javed Cheema
Updated department names, contact information, minor words changing and formatting	January 2024 – Kelly Hughes