SECTION 8: BIOSECURITY

TAKE HOME MESSAGES:

- Pig diseases can transport to and from your farm on pigs, vehicles, people, footwear, through feed, and many other ways.
- Don't bring disease onto your farm and don't transfer disease off of your farm.
- Change footwear and outside clothing when working with pigs.
- The slaughter plant should be considered a HIGH-RISK area for disease spread.
- ALWAYS WASH AND DISINFECT YOUR VEHICLE AND TRAILER AFTER A TRIP TO THE SLAUGHTER PLANT BEFORE RETURNING TO YOUR FARM.
- Use double fencing to fence in pigs and keep predators out.
- Frequently wash, disinfect, and dry all equipment, vehicles, boots, buckets, and feeders.

8.1 WHAT IS BIOSECURITY?

Biosecurity is a system of checks and balances put in place to protect your pigs and other producer's pigs by preventing and controlling disease spread. It involves multiple critical control points, but it starts with your mind set – think of it as a "culture" that you are a part of. Every pig producer needs to have the right attitude about it and work together to make biosecurity a success. If done correctly, practicing good biosecurity can prevent the spread of disease and keep everyone's pigs healthy.

Biosecurity can be straight forward. For example:

- *You wash your hands after handling raw meat when cooking.*
- *You use hand sanitizer at busy places like the mall, airport, or hospital.*
- *You get vaccinated as a child.*
- *You take your shoes off at the front door to prevent tracking dirt into the house.*

Without even thinking about it, you practice biosecurity everyday to prevent spreading disease caused by germs that are not visible to the naked eye.

Pigs also carry and can contract disease from these invisible germs.

- Pigs can spread disease to other pigs.
- Pigs can spread disease to people.
- People can spread disease to pigs.
- Other animals (like rodents, birds, or cats) can spread disease to pigs.

- Manure can harbour pathogens that can spread diseases to pigs.
- Contaminated feedstuffs can carry pathogens and spread diseases to pigs.
- Contaminated equipment, clothing, and boots can spread diseases to pigs.

Biosecurity can protect pigs as well as you and your family. Section 8.3 BIOSECURITY ON YOUR FARM will go into detail in establishing a farm biosecurity plan to reduce the chances of pigs contracting diseases and spreading diseases to other farms.

8.2 WHY IS BIOSECURITY IMPORTANT?

Understanding biosecurity and your role in it as a member of the pig production system in B.C. and Canada is **CRITICAL**. Canada is one of the world's largest net exporters of pork (>70% of our national production is traded internationally). Hundreds of thousands of Canadian individuals and family livelihoods and well-being depend on the pork industry. Our ability to trade internationally in pork and pork products is a result of our excellent national health status as an industry. This privileged status can be destroyed in an instant with the introduction of any one of a number of Foreign Animal Diseases (FAD), such as Foot and Mouth Disease (FMD), or African swine fever (ASF).

How does this involve you, as a small-scale hog producer?

Many of the most recent and devastating FAD outbreaks in first world, meat-producing countries (i.e., FMD in the United Kingdom (UK) in 2001) are introduced to a country through small scale producers, using feeding, management, and husbandry practices that were not biosecure. For example, the feeding of unconventional feedstuffs (i.e., food scraps (swill) discarded from foreign ships docked at a UK port) was the cause of FMD in England in 2001, causing the destruction of millions of animals, both healthy and diseased, at a cost of many BILLIONS of dollars to the UK agriculture economy. Not to mention the untold heartache and devastation to farming families who were caught up in a situation not of their own making. One bad decision or choice by a small-scale producer in B.C. can shut down an ENTIRE industry, Canada-wide.

That is a **VERY IMPORTANT** responsibility to understand.

As someone who is considering, or already farming pigs on a small scale, it is important to understand your role in the broader pork-producing industry. With the joy and satisfaction of raising your own pork comes great responsibility to play your part in the national biosecurity effort.

Biosecurity is not limited to large scale farms. Regardless of size or production philosophy, all farms, even hobby farms, have a responsibility to prevent an outbreak or spread of animal (or plant) diseases or pests. Stay on top of industry association news and be aware of

local conditions or issues as they arise. If there is a serious disease outbreak, you don't want to be the last to know.

A wealth of information and resources is available on the Canadian Pork Council (CPC) website that also contains the Canadian Pork Excellence (CPE) Producer Manual, 2020. https://www.cpc-ccp.com(1)

8.3 BIOSECURITY ON YOUR FARM

KEY POINT CHECKLIST

FARM LAYOUT

- You should assign and outline "access zones" on your farm.
- Setting up access zones can reduce the risk of moving disease into, around, and off of your farm.

WHAT ARE THE MAJOR ZONES?

1) **Controlled Access Zone (CAZ)**
   - Entry to farmyard.
   - As soon as you enter your property or farmyard, the area beside your pigs should be considered controlled.
   - CAZ = Limited access to owners, farm staff, and known visitors.

2) **Transition Access Zone (TAZ)**
   - Area where you transition from controlled zone in preparation to enter restricted zone.
   - TAZ = Restricted access to owners and farm staff planning to enter the animal housing.

3) **Restricted Access Zone (RAZ)**
   - Entry to barn or pens where pigs are physically kept.
   - RAZ = Restricted access to owners and farm staff working with the animals.

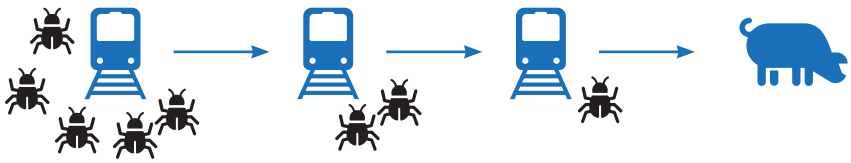
4) Quarantine

- Area for newly arriving animals.
- Pigs can be kept here for 6–8 weeks prior to entering the herd.
- This area should keep quarantined pigs completely separated from the other pigs (meaning they do not have access to each other, they do not share feeders or water troughs, and they cannot have nose-to-nose contact through a fence).

WHY DO I NEED ZONES?

- Diseases like porcine epidemic diarrhea virus (PEDv) are extremely contagious causing 100% mortality in piglets – it takes a SPECK of viral contaminated manure on the bottom of a boot to walk PEDv right into your pig pen and cause devastating disease.
- Invisible germs use boots, coveralls, and equipment as vehicles to be delivered to their desired destination (your pigs).
- Without control zones: Germs have a direct taxi service (a pair of boots, for example) to your pigs.

- With control zones: Germs take a train, and at every train station (or transition zone, for example, where boots and outdoor clothing are changed), more germs get kicked off before arriving at your pigs.



HOW DO I BUILD EFFECTIVE CONTROL ZONES?

Step 1) Have a sign to indicate entrance into the **controlled access zone (CAZ)**.

- This could be a sign at your driveway or a subsection of property where the pigs are kept.

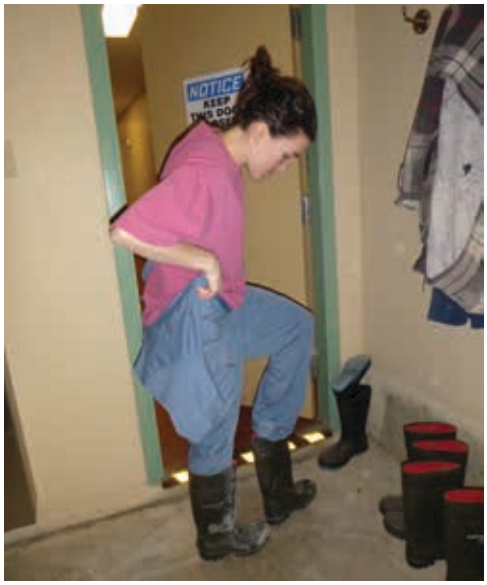
Step 2)
- Wear specific transition boots from the house to the barn.
- Have boot covers available for visitors to place over their shoes before walking with you to the barn.

Visitor stepping into boot covers before getting out of the car.
Photo: Dr. Kelsey Gray

Visitor in boot covers and coveralls to wear to the barn.
Photo: Dr. Kelsey Gray

Step 3) Have a designated **transition access zone (TAZ)**.

Stepping out of transition boots and into barn specific boots. The barn and pens are separated by a physical gate to step over. Notice the hand sanitizer available on the ledge and the gloves being worn.
Photo: Dr. Kelsey Gray



Another example stepping into clean barn specific boots and coveralls.
Photo: Dr. Kelsey Gray

- Have a transition area that has a PHYSICAL barrier to separate the outside world from your pig pens.
- This could be an area where NO pigs are kept (e.g., the house, garage, workshop) where farm specific clothing and boots are stored.

- Here is where you step out of your transition boots and step into your BARN SPECIFIC boots and clothing.
- Only barn specific boots and clothing should be worn in the pig pens.
- This is an area to disinfect or wash hands.
- **This area separates the outside world from your pigs! You do not want to bring the outside world into your pig pens.**
- **In commercial barns, there may be an entire shower-in procedure**

Step 4) Wear BARN SPECIFIC boots and clothing when entering the **restricted access zone (RAZ)**.

- The **RAZ** should be separated by a PHYSICAL BARRIER (e.g., fences, doors, physical bench to step over).
- Leave all transition boots and clothing on the transition side of the physical barrier and step into new **RAZ** outer clothing and boots.
- If you do not have enough boots for a visitor, your visitor could put on a NEW set of boot covers at this transition zone.
- Wear DESIGNATED gloves, masks, ear plugs, and other personal protective equipment (PPE) when inside the **RAZ**.
- A separate set of coveralls is advisable to wear when working with pigs to keep the underlying clothing clean.

Gloves, ear plugs, mask, and barn specific clothes. Ready to vaccinate weaned pigs. Photo: Dr. Kelsey Gray

In addition to zones, there should be a "flow" that you follow to move through your farm.

- **Flow basic rules:**
  1. Move from clean pens to dirty pens when feeding, checking, or doing chores.
  2. Move from youngest pigs to oldest pigs.
     - *Younger pigs are more susceptible to disease, so by working with them first, you limit introducing invisible germs from older pigs back to younger pigs.*
  3. Check hospital pens and sick pigs last.
     - *If you handle sick pigs FIRST, you risk contaminating healthy pigs with the germs from sick pigs.*

4. Handle deadstock with separate coveralls, boots, and gloves or change clothing and wash hands before returning to work with live animals.
5. Have one-way traffic if possible.
6. If you have animals in a quarantine on farm, visit these last and do not return to your other animals that day.
    - *The quarantine is a place to keep NEW animals or sick animals. The goal is to prevent bringing disease into your MAIN herd… (in case the animals in quarantine have a disease, visiting them last will reduce the chances you bring the disease into your herd).*

FENCING & SIGNS

- All pig farms should have a biosecurity and no trespassing signage out front to turn away unwanted visitors.
- Proper fencing is a critical component to farm biosecurity. Ideally two rows of fencing.
- See Section 4.1 FENCING & PROTECTION FROM PREDATORS and Section 9.4 WHAT CAN I DO TO PROTECT MY PIGS FROM WILD PIGS?

CLEANING & DISINFECTING

- Is a critical component to farm biosecurity and includes washing, disinfecting, and drying of pens, trailers, and equipment.
- Cleaning, disinfecting, and drying reduces contamination and pathogen load and is critical for the health of your animals.
- See Section 4.3 HYGIENE.

VISITORS

Every time a visitor comes to your farm and interacts with your pigs, it should be considered a potential "risk event". Each visitor poses a different level of risk, and you should be mindful of who visits your farm. Being a responsible pig producer should make you proud of your farm and it can make showing off your farm to visitors quite enjoyable. **Having visitor guidelines is not meant to turn people away from interacting with you; it is meant to maintain the health of your pigs as well as the health of the Canadian pig population.** There are a few things to consider regarding farm visitors:

DO:

- Keep track of who comes to your farm and when.
  – E.g., Using a logbook and ask visitors to sign in.

- Ask if they have been around pigs prior to coming to your farm.
  - **Visitors should not handle pigs from more than one site in the same day.**
  - If you have friends with pigs whom you visit with, set up guidelines for each other to follow regarding clothing, boot covers, and vehicle washing prior to visiting.
- Ask if they have been outside of the country prior to coming to your farm.
  - Visitors arriving in Canada should spend 7 days in Canada away from any farm prior to visiting a pig farm.
- Ask visitors to wash their vehicle prior to arriving.
- Have boot covers or a change of boots, coveralls, and hand sanitizer available for visitors.
- Limit unnecessary visitors.
- Have rules and implement them to protect your pigs.
- Be a responsible visitor if you go to someone's farm – respect their rules.

SOURCING ANIMALS – AUCTION MARTS

Bringing in new animals is the #1 most likely way you will introduce disease to your farm. It is very important that you do your homework before acquiring new animals to prevent financial losses and emotional distress from acquiring animal illnesses. Being cautious about sourcing animals can reduce/eliminate the risk of introducing economically challenging, deadly, or reportable diseases that could be devastating to your farm.

Consider the following:

DO:

- Contact your veterinarian prior to purchasing new animals to review the following:
  - Your herd's "health status" compared to the "health statuses" of incoming animals.
    - *You can avoid certain contagious diseases by being mindful of this.*
  - Vaccination history, condition and treatment of incoming animals.
  - Vaccination plan for incoming animals.
    - *Your new animals may need to be immunized for certain diseases. Remember, the health of your herd depends on each individual pig's health.*
- Source pigs from a single site.
- When bringing in new animals, use a quarantine pen with no nose-to-nose contact with your herd.
- Consider having a disease surveillance program on your farm.
  - This could include blood samples, fecal samples, nasal swabs, or other biologicals.
- See Section 2.4 BUYING & SELLING PIGS.

AVOID:

- Auction marts – this is a high-risk source for disease due to animal mixing.
- Mixing animals from multiple sources.
- Sourcing animals with unknown health or vaccination history.

QUARANTINE

A quarantine refers to isolating a group of animals. This can be as small as isolating one new pig you are bringing to your farm or can be as large as self-quarantining your entire farm due to a potential contagious disease outbreak.

It is critical that you understand why, when, and how to quarantine:

WHY:

- Introducing new animals:
  - Quarantine of new animals for 6–8 weeks is recommended to monitor and test for potentially contagious diseases prior to mixing them with your herd.
- Separating sick animals:
  - Quarantine of sick animals in a hospital pen is a good practice to reduce spreading disease within your farm.
- Suspect a reportable or foreign animal disease (FAD)
  - If you suspect a reportable or FAD you should immediately place a quarantine on your farm, call your vet, and get the Canadian Food Inspection Agency (CFIA) involved.

WHEN:

- Voluntary Quarantine:
  - Quarantine of new animals should be planned for and implemented at the arrival of new pigs.
  - Quarantine of sick animals should be implemented as soon as sickness is identified.
- Emergency Quarantine:
  - In the event you suspect a highly contagious disease or a FAD, you must quarantine your farm and immediately contact your veterinarian.

HOW:

- Voluntary Quarantine:
  - Set up space that prevents nose-to-nose contact with your current herd (ideally in a separate pen or barn).
  - Have protocols about entering and exiting the quarantine facility that everyone must follow.

  - Quarantined animals should be checked last.
  - Quarantine space should have separate boots, coveralls, personal protective equipment (PPE), and handling equipment.
  - Any objects (including your clothing) that leave the quarantine must be washed, disinfected, and dried prior to being used elsewhere.

- Emergency Quarantine:
  - Contact your veterinarian immediately.
  - Immediately stop **ALL** movement (foot or vehicle) to and from your farm.
  - Set up fencing or increased signage at your driveway to prevent any traffic onto your farm.
  - Wait for further instructions from your veterinarian or government officials.

DISEASE SURVEILLANCE

There is no farm that is completely free of disease. Every farm will have germs (pathogens) that are specific to their herd – some pathogens being more concerning than others.

Part of biosecurity is developing an understanding of what pathogens live on your farm. It is recommended that you perform routine disease surveillance. Disease surveillance can help you source new pigs safely, understand your farm better, and establish more economical vaccination and health protocols for your farm.

Disease surveillance is a combination of observing clinical signs and taking samples for diagnostic testing (this could include but is not limited to blood samples, saliva samples, fecal samples, or nasal swabs). See Section 7.9 VETERINARY DIAGNOSTICS.

Talk to your veterinarian about a disease surveillance plan suitable for your farm. **The goal of disease surveillance and other biosecurity practices comes down to protecting your herd and preventing losing pigs on your farm and neighbouring farms. Losing pigs is emotionally and financially difficult.**

TRAILERS

Pig trailers can be high risk vehicles for spreading disease due to the number of pigs they carry, manure contamination, and locations visited (such as auction marts or slaughter plants).

Consider the following biosecurity measures:

- *"I am using my own trailer"*
  - If using your own trailer, ensure you wash, disinfect, and dry it between pig loads, before picking up new pigs at someone else's farm, and after hauling pigs to the slaughter plant.

- *"I am borrowing a friend's trailer"*
  - If you are borrowing someone's trailer, ensure you wash, disinfect, and dry it prior to bringing it onto your property.
- *"I have hired a trucking company"*
  - If you are hiring a professional trucking service, ask them for truck wash receipts upon arrival to ensure their truck and trailer has been washed, disinfected, and dried prior to coming to your farm.

See Section 4.3 HYGIENE for more information on washing, disinfecting, and drying equipment and trailers.

FEED & WATER

Pig feed is made up of multiple ingredients – some ingredients can carry harmful agents like bacteria, viruses, and toxins. Ingredients imported from countries with Foreign Animal Diseases (FAD) carry an added risk of introducing a foreign animal disease like **African swine fever (ASF)** or **Foot and Mouth Disease (FMD)** to Canada.

See Section 5: NUTRITION & FEEDING MANAGEMENT for more information.

DO:

- **Store feed securely.**
  - Keep away from rodents, birds, pests, and other wildlife.
  - Sweep up feed spills.
  - Store in dry, cool areas with good ventilation.
  - Store in an area with good lighting for easy visual inspection.
  - Keep chemicals away from stored feed.
- **Purchase feed from safe credible sources.**
  - Purchase feed from companies that follow Animal Nutrition Association of Canada (ANAC) FeedAssure® biosecurity guidelines.[2]
- **Follow recommended holding times for imported purchased feed ingredients that do not follow a national biosecurity program.**
  - Store for 20°C for 20 days or 10°C for 100 days to reduce any virus survival.
- **Test feed for mycotoxins.**
  - Talk to your veterinarian.

- **Water**
  - At least annually, water should be tested from the source to ensure its suitability for livestock production.
  - Design and position water bowls, troughs, and waterers to prevent fecal contamination.
  - Routinely give water bowls, troughs, and waterers a thorough cleaning.

AVOID:

- **Feeding food wastes or swill to pigs.**
- **It is *illegal* to feed meat scraps or international waste to pigs.**
- **Feeding food wastes from any unknown source.**
  - Never feed food waste if there is a possibility of meat or meat products contamination. Even very small amounts of meat can be infectious. Feeding food scraps has the potential to spread diseases to your pig herd such as **African swine fever (ASF)**.
  - Food wastes may also contain harmful molds and toxins that seriously damage swine health as well as cause abortions.
- **Importing ingredients:**
  - Especially exclude high-risk ingredients like **imported soybean or soybean-meal** from countries such as China.
- **Feeding high-risk ingredients:**
  - Rice hulls and corn cobs, conventional soybean meal, organic soybean meal, soy oil cake, and distillers dried grains are considered high-risk because viruses and bacteria can survive the easiest in those ingredients.
  - Feeding your hogs anything containing **meat or meat by-products** (or food that is suspected to contain meat or meat by-products) is NOT PERMITTED in Canada because of the risk of transmission of exotic diseases (for example, foot-and-mouth disease, African swine fever, classical swine fever and zoonotic diseases such as Trichinellosis).
  - For more details concerning 2019 Canadian Food Inspection Agency (CFIA) regulations regarding the feeding of Recycled Food Products to pigs, please visit their website at: http://www.inspection.gc.ca/animals/feeds/regulatory-guidance/rg-1/chapter-3/eng/1329319549692/1329439126197?chap=19 [3]

OTHER ANIMALS

Other animals can be carriers for disease. **Many outdoor production systems house multiple species on the same site leading to interactions.** Although this cannot be entirely prevented, actions can be taken to reduce risk of disease transmission between species.

Consider the following points:

SPECIES INTERACTION	CONCERN	MANAGEMENT ACTION
Domestic Pigs 	• Pigs can carry pig diseases.	• See Section 2.4 BUYING & SELLING PIGS.
Wild Pigs 	• Wild pigs are prevalent in certain parts of Canada. • Wild pigs are known to be a high risk of spreading diseases.	• See Section 9.1 WILD & FERAL PIGS IN CANADA.
Cats 	• **Cat feces can carry Toxoplasmosis.** – This is a parasite. • **It is a human health concern.** • **Undercooked pork is a risk.** • Symptoms in humans range **from flu-like symptoms** to permanent **eye diseases** or even **pregnancy loss**. • Growing pigs will ***not*** show signs of disease.	• Keep cats away from pig feed. • Cook pork raised outdoors to an internal temperature of 71°C (160°F).
Rodents 	• Rodents can spread pig disease. • Rodents can actively shed salmonellosis, leptospirosis, erysipelas and E. coli.	• Have a rodent control program. • See Section 4.3 HYGIENE.
Birds 	• Starlings and pigeons can carry different viruses that cause diarrhea in all ages of pigs. • Waterfowl and domestic poultry can spread influenza to pigs. • Bird feces can spread a mycobacterium resulting in losses at the slaughterhouse.	• Put lids on feed storage containers and bins. • Fence off feed storage areas. • Put chicken wire or screen on barn windows. • House poultry, waterfowl and pigs separately (especially during migration season).
Other Domestic Farm Animals 	• Other species can shed E. coli bacteria. • For example, E. coli O157:H7, (can cause illness from undercooked hamburger) is a cattle pathogen but has been associated with swine.	• House domestic farm animals separate from pigs. • Keep animal pens and equipment clean.

MANURE MANAGEMENT

DO:

- Clean up manure daily.
- Keep farrowing areas clean of manure.

- Keep bedding fresh.
- Store manure in a safe area away from live animals or feed ingredients.
- Clean manure away from feeding or drinking areas.

AVOID:

- Allowing manure to build up.
- Allowing wet manure piles to seep into water, feed, or housing areas.

DEADSTOCK HANDLING & DISPOSAL

Deadstock can be a major source of pathogen spread. All deadstock should be removed from pens as soon as possible to prevent the spread of disease and to prevent cannibalism. For safe deadstock management, consider the following:

DO:

- Record the mortality event (number of pigs, age of pigs, date, suspected cause of death, pig ID number if available).
- Contact your veterinarian when unusual or unexpected deaths occur.
- Remove deadstock from pen ASAP (wear appropriate personal protective equipment).
- Have a secured room or bin where deadstock can safely be stored away from healthy pigs until final disposal is completed.
- See Section 7.9 VETERINARY DIAGNOSTICS to learn more about post-mortems and diagnostic services provided by the B.C. Veterinary Lab.

Contained freezer used ONLY for storing deadstock until they can be removed from the farm.
Photo: Dr. Kelsey Gray

- Dispose of deadstock appropriately:
  - Disposal can be through a deadstock pickup service provider for rendering, or
  - Disposal can be on-farm (in B.C. it is legally acceptable to):
    - Bury
    - Compost
    - Incinerate

- The table below outlines the general rules for deadstock handling and disposal, although it is not an exhaustive list of all the requirements. For further information on regulations pertaining to deadstock handling and disposal, in addition to the information below, please refer to B.C.'s new Agricultural Environmental Management Code of Practice (AEMCoP) that came into effect on February 28, 2019. https://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements

DISPOSAL METHOD	GENERAL RULES
Deadstock pickup service provider	• Have deadstock picked up prior to carcass decay.
On-farm burial	Burial pits must be: • A minimum of 30 m away from all water sources (e.g., wells, streams). • A minimum of 4.5 m away from property boundaries. • Located at least 60 m apart. • Located away from areas with coarse textured soils and that are prone to annual seasonal flooding. • Capped with at least 1 m of compacted and mounded soil when closing. • A minimum of 1.5 m above bedrock or the seasonal high water table (measured from bottom of pit). • Do not put more than 2500 kg of mortalities per pit. • Document location of the pit, type and amount of mortalities, and the date the pit was closed.
On-farm compost if composting in the field	• Pile must be minimum of 30 m from all watercourses and drinking water sources. • Pile must be at least 4.5 m from property boundaries. • Do not erect a pile on coarse-textured soil if in a vulnerable aquifer recharge area. • If your area receives 600 mm of precipitation or more from October 1 to April 1, cover your pile during this period. • Direct runoff away from the pile and prevent leachate from escaping. • Locate the pile away from areas prone to annual seasonal flooding. • Ensure the pile does not exist for more than 15 months and that composting does not occur in the same spot for 3 years. • Deter the attraction and access by vectors, pets, and wildlife. • Monitor the pile at least once per week. • Document the type and source of material, location of pile and results from monitoring. If composting in a structure: • The structure must be 15 m from a watercourse, 30 m from a drinking source, and 4.5 m from property boundaries. • Ensure the structure has a protective base (e.g., concrete pad) and that it is maintained to prevent leakage. • Ensure runoff is diverted from the structure and that leachate is captured. • Deter the attraction and access by vectors, pets, and wildlife.
On-farm incineration	• This does NOT mean burning in open fire. • Large capital investments are required to safely do this. • Refer to the AEMCoP if planning on incineration.

AVOID:

- Allowing pigs to cannibalize deadstock.
- Allowing dogs or other wildlife to eat deadstock.

NOTE: If you suspect mortality is due to a federally or provincially reportable disease, you must contact your veterinarian, CFIA, or the B.C. Ministry of Agriculture immediately.

SECTION 8 REFERENCE LIST

1. Canadian Pork Excellence, Canadian Pork Council (2020)
2. Animal Nutrition Association of Canada (ANAC) FeedAssure® (2019)
3. Canadian Feed Inspection Agency, Chapter 3 – Specific Registration Information by Feed Type, 3.19 Recycled Feed Products (2019)