Protect my Flock

Biosecurity Guide for Non-Supply Managed Poultry

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BRITISH COLUMBIA

BIOSECURITY GUIDE FOR NON-SUPPLY MANAGED POULTRY

PREPARED FOR

BC INVESTMENT AGRICULTURE FOUNDATION

PREPARED BY

SERECON MANAGEMENT CONSULTING INC.

EDMONTON, ALBERTA

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ACKNOWLEDGEMENTS

Biosecurity has been a major focus for many livestock and poultry groups in Canada over the past decade. This document has benefitted from much of the hard work that has been completed as part of this process. Since many of the basic concepts are very similar many of the key recommendations will be based directly from other initiatives. The intent was to provide the best options for the industry rather than provide a writing exercise for the committee.

A special note of thanks has to be extended to the members of the Specialty Bird Biosecurity Steering Committee (SC). This group of individuals dedicated significant time and efforts in the process and their input has had a significant impact on the ultimate product. The producers and processer members of the SC dedicated not only their own time but also facilitated the consulting team's visits to farms where the operating reality could be more closely assessed and the proposed models tested.

A significant amount of the ultimate content was initially derived from the work completed by the Small Flock Poultry Health committee in the "Disease Prevention and Good Management" documents. A second critical source of information came from the "BC Poultry Biosecurity Reference Guide". BC Poultry Association (November 2006). This information has been adjusted to suit the needs of the non-supply managed sector, but the foundation was certainly created by these groups.

Work completed by Dr. Rachel Ouckama from Curtis Chicks in Port Hope Ontario was also critical in the assessment of impacts of biosecurity adjustments. Dr. Bill Cox from the BC Ministry of Agriculture provided a significant amount of critical input to the process and his help was greatly appreciated.

Many other individuals contributed their time and knowledge to the creation of this guide. While the contributors are too numerous to list, their input was greatly appreciated. References to specific biosecurity documents, many of which have been drawn on for the recommendations in this document, are found at the end of this guide.

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Limitation of Liability and User's Responsibility

The primary purpose of the BC Biosecurity Guide for Non-Supply Managed Poultry is to assist producers in assessing biosecurity risks on their farms.

While every effort has been made to ensure the accuracy and completeness of these materials, these materials should not be considered the final word on areas of practice they cover. You should seek the advice of appropriate professionals and experts as the facts of your situation may differ from those set out in the materials.

All information in this guide and related materials is provided entirely "as is" and no representations, warranties or conditions, either expressed or implied, are made in connection with your use of, or reliance upon, this information. This information is provided to you as the user entirely at your risk.

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BACKGROUND TO THIS BIOSECURITY GUIDE

Biosecurity planning and implementation reduces the risk of infectious disease transfer within and among poultry flocks. Enhancing a farm's biosecurity protects both the producer's economic interest and that of the poultry industries. Furthermore, it reduces the risk to public health that may result from certain poultry diseases.

The non-supply managed poultry industry in British Columbia, while closely connected to other poultry sectors in the province in terms of risks associated with biosecurity, is obviously quite unique in terms of production, distribution and processing activities. This guide was developed in recognition of this reality and is designed specifically to assist the producers of non-supply managed poultry address biosecurity issues in a practical way.

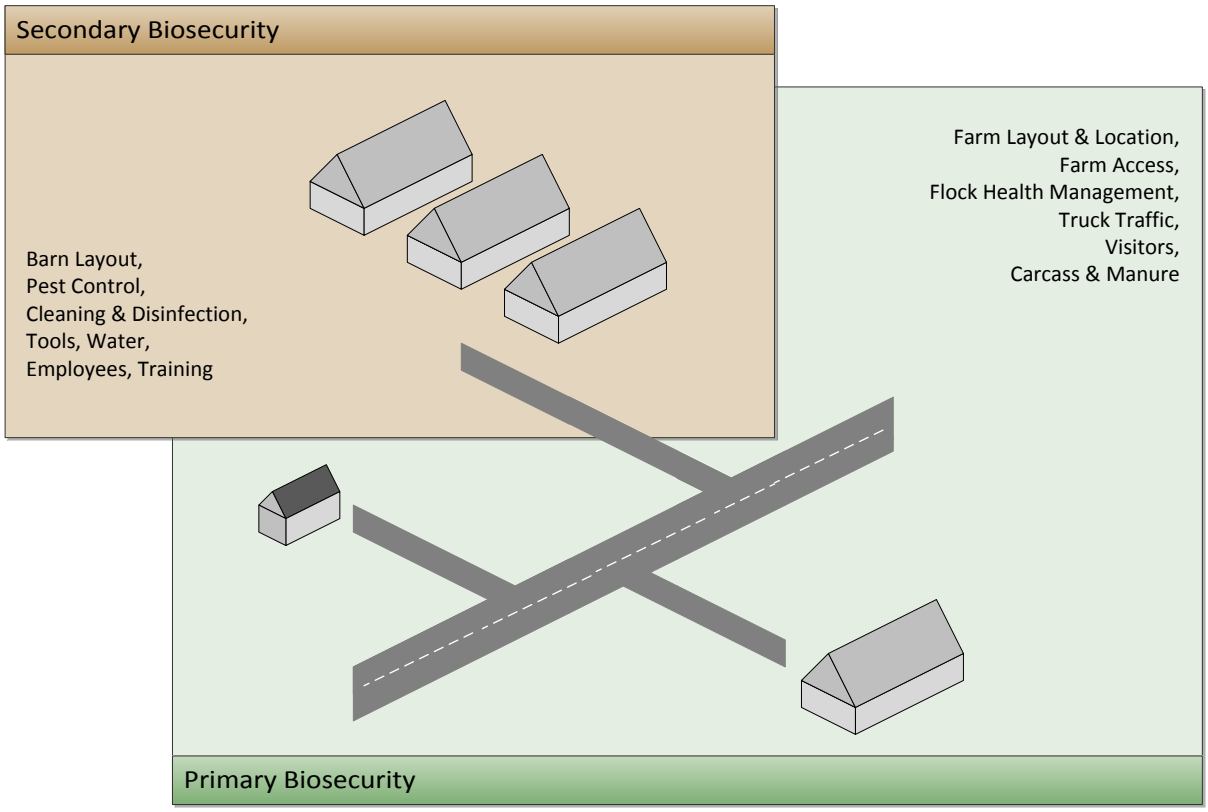
This guide is intended to be used as a reference companion to the Self-Assessment Questionnaire that was also developed as part of this project. That step-by-step, Microsoft Excel-based questionnaire allows producers to evaluate their own farm layout, operations, and management practices that have an impact on the biosecurity of their operation. The questionnaire then provides a report outlining what practices are of highest risk and should first be considered as ways to enhance the farm's biosecurity.

As with the Self-Assessment Questionnaire and its resulting recommendations, the practices are entirely voluntary and the intent is to support improvements by providing information rather than prescribing changes. Producers are of course encouraged to find out what other legislative and regulatory requirements exist for their farm, and to ensure their compliance with those.

Biosecurity and the practices associated with it have developed their own unique language and attempts have been made in this guide to simplify the terms and provide the concepts in a logical manner so that producers clearly understand what is being referred to. As a result, this guide is divided into a number of broad chapters with recommended biosecurity practices under each section. The chapters can be subdivided into Primary and Secondary Biosecurity, as outlined in Figure 1 below. Primary Biosecurity includes those management practices focused on the isolation of pathogens on a single farm to prevent the spread between farms. Generally, this is referred to as isolation within a **"Controlled Access Zone" (CAZ**).

Secondary Biosecurity Practices, on the other hand, are those which are implemented to restrict the transfer of pathogens between operational units or "**Restricted Access Zones" (RAZ's)** on a farm. Each of these general categories is further subdivided in this guide into categories of management practices.

Figure 1: Primary and Secondary Biosecurity



USING THIS BIOSECURITY GUIDE

Securing a farm is about knowing the risks of disease transmission and the ways in which flocks can be exposed to disease, and taking steps to minimize those risks. Prevention through biosecurity is the most cost-effective protection from animal diseases. Building or updating your biosecurity plan will involve reviewing your current practices, farm layout and facilities to identify where gaps in your disease prevention might occur in order to adopt practices that will reduce those risks.

As outlined in the previous section the information provided in the following sections is broken down into 2 main categories, referred to as Primary and Secondary Management Practices. There are six areas of focus listed under Primary Management Practices

1. **Farm Layout and Location** – issues relating to isolation distances from other farms and the knowledge of the local area.
2. **Farm Access** – signage, cleaning and disinfection (C&D) fencing.
3. **Flock Health Management** – activities that are directly related to how the flock is managed including record keeping and sick bird protocols.
4. **Truck Traffic** – essentially supplier protocols.
5. **Visitors** – the management of non-essential traffic
6. **Carcass Disposal and Manure Management** – addressing issues relating to deadstock and manure

There are four areas of focus listed under Secondary Management Practices

1. **Barn Layout** – barn layout and the separation of clean and dirty areas.
2. **Pest Control** – good housekeeping activities.
3. **Cleaning and Disinfection** – relating to internal practices regarding bird and litter removal and barn C&D.
4. **Other Biosecurity Practices** – issues around employee protocols, training and tool and equipment management.

You will find that these areas are used to categorize the practices and resource materials throughout the Guide, and will be used to help you work your way through the preparation of a plan.

The Guide also contains resource materials that will help you make decisions about what to include in your plan and how to carry it out.

When you are ready to review your current biosecurity plan, or to begin developing a plan for your farm, use the following steps:

1. Complete the a farm map that is included in this document
2. Complete the self-assessment checklist from the Excel template.
3. Review the suggested high, medium and low priority areas for each of the sections
4. Develop a biosecurity plan for these issues by preparing protocols for each of the "risk management practices" you select for your plan.

It is critical to recognize that enhancing a farm's biosecurity protects both the producer's economic interest and that of the BC poultry industry. Furthermore, it reduces the risk to public health that may result from certain poultry diseases.

DEVELOP A FARM MAP

Securing a farm is about knowing the risks of disease transmission and the ways in which animals can be exposed to disease, and taking steps to minimize those risks. Prevention through biosecurity is the most cost-effective protection from animal diseases. Building or updating a biosecurity plan will involve reviewing current practices which ultimately requires a clear understanding of the farm layout and product and people flow in order to identify where gaps in your disease prevention might occur in order to adopt practices that will reduce those risks. As a result it is strongly recommended that each producer map their farm operation.

> ***Knowledge of how the farm is physically situated – including how products and people move – is a critical first step in building a biosecurity plan.***

The physical layout of the farm will have considerable impact on the ability to house flocks in a way that minimizes disease transmission risk. The layout reflects where and how closely birds are housed and how closely birds pass by one another when they are being moved. The main concerns relate to direct (beak-to-beak) transmission, aerosol transmission and contamination with potentially-infective organic matter. There is also a concern for transmission of risk materials from high-risk areas via tools and equipment and people to the pens and enclosure areas. The ease of access by service providers and visitors to the birds held in pens and other enclosed areas also represents an increased risk.

Areas that should be highlighted on the farm diagram as important areas of biosecurity risk include:

- Access points
- Gates and barriers
- Visitor parking area(s)
- The barn, other shelters and housing areas
- Receiving and storage areas
- Shipping area(s)
- Manure and deadstock management areas

Addressing these risks requires a risk analysis of the locations and pathways, and the animals, people and equipment that use them. A diagram that depicts the layout of the farm, including buildings, pens (general and special-use), and pathways, that allows simulations of housing and movement of birds of different ages, disease susceptibility and disease status will help you carry out the analysis

PREPARING A MAP

Using a pad and pencil (or working on a printed Google map of your farm) prepare a simple map or diagram of your farm, indicating the following:

- Home area
- Farm buildings:
    - Barns
    - Sheds
    - Service areas
- Pens and confinement areas
- Feed storage area
- Manure storage area
- Deadstock pickup area or compost location
- Driveways and lanes
- Parking areas
- Fuel delivery/storage area
- Paths and walkways
- Pastures
- Wells and other water sources
- Housing and pasture areas for other farm animals

1. ***Select the Restricted Access Zone (RAZ)***

Thinking about where the birds are housed and where they are likely to move about the farm, identify the production areas in which they should be protected from exposure to disease risk from outside the farm and in which they should be protected from disease cross-contamination within the farm. Also consider areas of potential traffic that are essential to the production area and areas of potential contamination that have similar risks to the active flock production areas.

2. Select the Controlled Access Zone (CAZ)

Once the RAZ has been determined, consider the areas that should be designated the Control Access Zone (CAZ). As described above, the CAZ contains operational facilities indirectly involved in flock production. It includes many areas in which farm service providers and farm workers would circulate in entering and leaving the production area, and when they are not actively engaged with the birds – laneways, parking areas and equipment sheds, for example. It encloses the RAZ.

3. Identify Access Control Points

When the zones have been designed to suit the farm's physical layout and its production practices, access points are identified (a limited number of places at which people, animals and tools/equipment/vehicles cross into and out of the zones). Some of these will be where gates, doors, lanes and pathways already exist. Others will be defined by specific activities – the movement of manure, the location of isolation areas for sick birds, the delivery of feed, for example.

Access control points are usually physically identified, and specific practices are required to be followed whenever animals, people or tools/equipment/vehicles move into or out of the zone. These are the critical points at which the principles of excluding diseases from production areas and containing diseases within production areas are applied.

At all access control points, the key concept is to dispose of or clean and disinfect any materials, clothing, equipment, or any other fomites when moving from one risk area to another, and to require people themselves to be free of potentially-infectious material before entering a zone. This principle applies to people, equipment and vehicles, and also to any movement of birds from zone to zone.

For example, solutions for workers and visitors include:

- Physical separation between zones,
- Hand washing and boot cleaning stations at the access control points,
- Availability of clean and/or zone-specific coveralls and boots or footwear coverings,
- A dedicated area set aside for people for cleaning and disinfection and changing clothes at the access control points, and
- A dedicated area set aside for cleaning and disinfection of equipment and materials at the access control points,

Solutions for bird movement include:

- Physical separation between zones,
- Sequencing of movement of birds of different disease status and relative disease susceptibility,
- Isolation until disease status is resolved, and
- Enhanced cleaning and disinfection of areas in which birds have been held and through which they have passed.

4. Identify specific risk areas

Copy the main production areas from your farm map/diagram onto a fresh sheet in larger scale. It will be useful to keep them in similar relative positions and in somewhat similar proportion as in the farm map. Identify the activities that are undertaken in each of the areas on this production-area diagram, both outside and inside the barn of the main production structure.

Looking at these and other areas that are set aside on your farm for specific activities, undertake a risk analysis on the activities and on the areas that are identified with them. This may be as simple as a classification of areas as Low, Moderate and High disease risk, based on:

- the health condition and susceptibility of the birds that could be brought into the area
- the nature of the activity
- the length of stay in the area
- the likelihood of contact with other birds

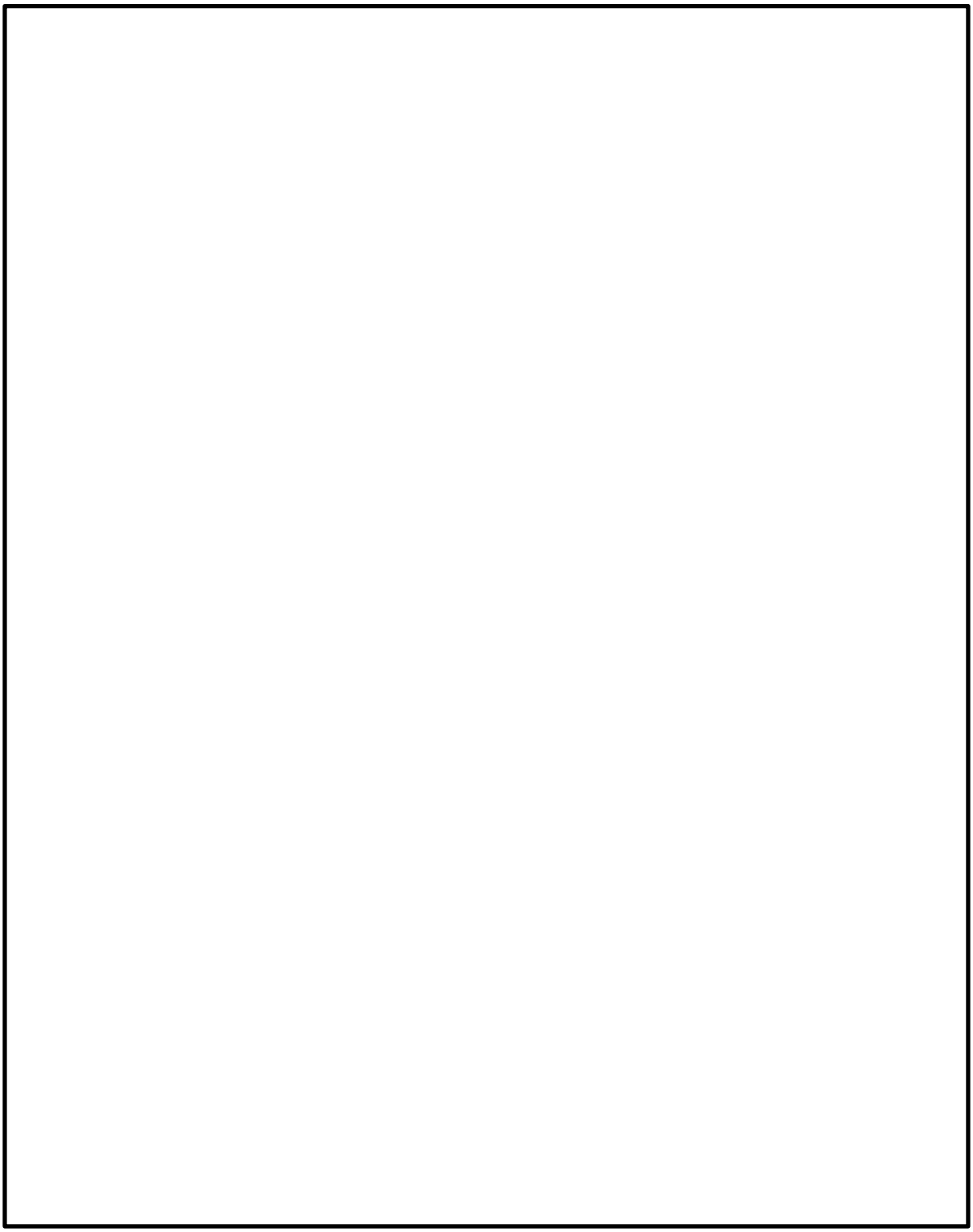
Consider also:

- areas where all visitors are allowed;
- areas where some / all visitors are restricted (e.g. should change clothing wash hands before being admitted); and
- areas where birds/flocks of differing health status are housed (e.g. new introductions, sick animals, animals on a health program)

Preparing a list of these areas and pathways, and/or locating them on a sketch of the barn(s) and other production areas will be useful for producers in illustrating where there are areas of greater or lesser risk for disease transmission, and therefore where best practices should carefully be considered. The pathways identified for animals and other activity also point out where specific contamination risks should be addressed.

Finally, for those producers who need to design zones for different stages of your production cycles, additional versions of the diagrams and the accompanying practices may be needed in order to communicate all of the zoning options to be used on your farm.

The following page provides a place to initiate the process of drawing your farm operation. You are strongly encouraged to take this opportunity to prepare a diagram of your farm, paying particular attention to the distances between operational units, as well as distances to roads, water, and other farms.



FARM LAYOUT AND LOCATION

One of the three basic components of biosecurity is prevention of the introduction of a disease agent. This requires, as much as possible, the strict physical isolation of barns and birds from potential disease agents.

- ❑ Isolation Distances
- ❑ Familiarity with Neighbouring Operations
- ❑ Personnel Working on Other Poultry Farms

Once a flock or farm is contaminated, the owner of a poultry facility is faced with the challenge and increased costs associated with cleaning and disinfection as well as the potential reliance on vaccines and medications in subsequent flocks. Especially during the time of initial establishment of a poultry operation, there exists an opportunity to locate the farm in such a way as to minimize the potential for contact with pathogens being transported from public corridors or other farms.

For existing farms, knowledge and communication with neighbouring flocks is also important in planning for the eventuality of a disease outbreak, and to facilitate timely response in the case of a disease."

The following are recommended practices relating to farm layout and location that enhance biosecurity on non-supply managed poultry operations:

ISOLATION DISTANCES

- ❑ Aerial transmission of organisms for up to 2 kilometres has been described for some viruses. Ideally, poultry operations should be situated at least 2 kilometres apart from each other, but at least 400 metres or more is considered adequate.

  Otherwise, siting buildings far enough apart that it is inconvenient to move people, equipment, or animals will help decrease the spread of pathogens.

- ❑ It is important that buildings be located far enough from public roads (ideally more than 100 metres) to help decrease the spread of pathogens both into and out of the farm.

- ❑ Water bodies are places where wild water fowl tend to congregate. Any water body within 250 metres of your poultry operation and its Controlled Access Zone is questionable and any potential options for adjusting this should be considered.

FAMILIARITY WITH NEIGHBOURING OPERATIONS

- Familiarity with neighbours is one of the simplest ways to help improve biosecurity on a farm. This knowledge will assist with planning for biosecurity incidents, as well as notification and response to ensure containment of pathogens in the case of a biosecurity event. Familiarity with neighbours may also help to protect the flock itself from theft.

  Transmission of organisms between birds may occur over distances of up to 2 kilometres. The greater the number of other operations within that distance, the tighter the biosecurity controls which should be in place, even when there is not a specific disease outbreak.

- Having contact information for any neighbouring poultry operations will allow you to quickly notify your neighbours in case of a disease or pathogen so they can enhance their biosecurity procedures.

- It would be useful to meet with neighbouring poultry operations to discuss biosecurity plans and protocols and it would be useful to involve a veterinarian in these meetings. If possible, neighbours within several kilometres of each other should agree to share full information about disease status of their flocks.

PERSONNEL WORKING ON OTHER POULTRY FARMS

- Pathogens can be potentially transmitted from people to poultry, both directly or indirectly through people wearing clothing or boots contaminated with manure from sick animals from another flock.

  This poses a particularly high risk when combined with the absence of a formal biosecurity plan or protocol being in place for your farm or the other farm(s) on which your personnel may be working. For that reason, enhanced biosecurity protocols should be considered for any personnel that also work on other poultry farms.

FARM ACCESS

Farm access represents the first critical control point for entry of an infectious disease organism into the farm. It is essential, therefore, to have a perimeter that discourages or prevents unauthorized entry by people and their equipment, while allowing authorized entry when certain conditions have been met. All visitors, including casual and professional, and equipment entering the area behind the access control, referred to as the Controlled Access Zone, should be subjected to conditions and procedures that will minimize the chance of a disease infecting the flock.

- ❑ Signage
- ❑ Vehicle Cleaning & Disinfection Site
- ❑ Driveway
- ❑ Perimeter Fence
- ❑ Gate
- ❑ Locked Barns

While all producers will agree that keeping disease out of their flock is the ultimate goal of a biosecurity program, it is equally important to keep any pathogen that may make its way onto the farm contained within the farm. Biosecurity is a two-way process.

All visitors should be strongly encouraged to comply with the entry and exit procedures required by the farm's biosecurity procedures when entering the Controlled Access Zone. Those refusing to comply can be refused entry. Vehicles should also be kept out of the Controlled Access Zone unless absolutely necessary. If a vehicle or equipment is required to enter the Controlled Access Zone, procedures to be followed should include cleaning and, when necessary, disinfection.

People accompanying the vehicles or equipment should be required to pay attention to personal sanitation, which includes wearing clean protective outerwear, especially foot covering, and washing and sanitizing hands as much as possible. Visitor entry into the Controlled Access Zone should be through the primary access. Secondary accesses should be limited to farm use only as much as possible.

Technical Service Personnel and allied trades (hatchery, feed, veterinarians, inspectors, government regulators, equipment representatives, etc.) are important but also pose a significant threat to the biosecurity of the farm and poultry industry. The reality is that these individuals have to move from farm to farm in order to conduct their jobs. Significant efforts should be made in order to ensure that they adhere to biosecurity protocols. The producer should attempt to monitor this to ensure it is happening.

The following are recommended practices relating to farm access that enhance biosecurity on non-supply managed poultry operations:

SIGNAGE

- The security of the Controlled Access Zone is strengthened by effective signage.
  a. Signs should be readily visible, clean, legible and attached to the secure barrier in a location where they can be easily viewed.
  b. The sign for secondary accesses should include instructions to locate the primary access.
  c. The intent of the sign is to clearly communicate that the zone to be entered is a biosecure area.

  Signs should be readily visible, clean, legible and attached to the secure barrier where they can be readily seen. The signs can clearly indicate that biosecurity is in effect and that access is controlled. Contact information should be part of the primary access signage and instructions to locate the primary access should be included on the secondary access signage.

VEHICLE CLEANING AND DISINFECTION SITE

- All primary accesses to the Controlled Access Zone should have a cleaning and decontamination site for vehicles and personnel.

  Accumulations of organic matter can harbour and protect infectious organisms that can then be transported onto or off of the premises. These accumulations should be removed to reduce the risk of disease transmission. In the event of an infectious disease outbreak, disinfection may be required to further reduce the opportunity for disease to spread to or from the premises.

  a. The cleaning site should include the availability of a source of pressurized water.
  b. The decontamination site should provide the potential to undertake disinfection measures as deemed necessary.
  c. Contaminated wash water and disinfectants that may pollute should be contained and disposed of in a manner consistent with regulatory requirements.
  d. Procedures should be available that describe how vehicles and personnel are to be cleaned and/or decontaminated.

  It is important to differentiate between “Cleaning and decontamination” and “disinfection”. Cleaning and decontamination removes any dirt or organic debris that may carry disease-causing organisms from vehicles and equipment. Disinfection is another step in which the vehicle or equipment is treated with a chemical that is designed to kill viruses and bacteria. During routine operations, when there is no specific disease threat, only cleaning and decontamination is required. During a disease event, such as a Notifiable Avian Influenza

outbreak, however, the additional step of disinfection will be required.FA3 "One-way traffic flow helps to prevent the transportation of pathogens.

DRIVEWAY

- Where possible, all primary accesses to the Controlled Access Zone should be constructed of hard surface or gravel that prevents any persistent accumulation of pooled water.

  Standing water can harbour infectious diseases that may be transported to or from the premises by vehicular traffic and people. Such protected pathogens also serve as a reservoir that may re-infect the farm after cleaning and disinfection.

  a. Persistent standing water should not be evident on the driveway.
  b. All driveways, particularly gravel driveways, should be maintained to prevent grades or potholes that allow the persistent accumulation of pooled water.

  Driveways should be properly graded and maintained at all times. The test for an effectively maintained driveway is that there will be no standing water evident at any time. All driveways, and particularly gravel driveways, should be maintained to prevent potholes and grades in which water may accumulate.

  The construction of the driveway should be adequate for the area and conditions under which it will be used. It is recommended that the driveway be planned and constructed by a reliable company. A well-constructed and engineered driveway will mean significantly less ongoing maintenance.

PERIMETER FENCE

- A perimeter fence significantly improves the ability to control access to the Controlled Access Zone, as it reduces the ability to enter the zone via any way other than designated primary and secondary entrances.
- Where feasible, farm residences should be accessed from outside the Controlled Access Zone, via a separate driveway.
- An occupied residence in the vicinity of the poultry operation is useful to provide security and to ensure that there is no inappropriate access.

GATE

- A gate is very useful in order to restrict unwanted vehicular traffic and discourage unauthorized foot traffic. Ideally, it should remain closed and latched, other than when a vehicle is passing into or out of the Controlled Access Zone. Regardless of the structure used, the barrier should be lockable. While it is not always necessary to lock the gate, it should be locked in times of biosecurity emergencies.

  The preferred barrier is a fixed gate. The gate should be high enough to be visible from a car or truck cab and to prevent the vehicle from moving through without opening the gate. It should be made of sturdy, rust-resistant metal with permanently fixed posts (e.g. set in concrete) at both the hinge and latching ends. Approved biosecurity signage should be securely fixed to the gate and clearly visible to approaching traffic.

- If a gate is not feasible, then the next option could involve the use of a metal chain. The main idea here is to ensure that individuals approaching the site recognize that they are entering a different zone in terms of biosecurity. The chain should be high enough to be visible from a car or truck cab, yet low enough to prevent small vehicles from passing under it. A height of approximately 1 metre at the lowest point should be sufficient. The biosecurity signage should be securely fixed to the chain or right hand post and clearly visible to approaching traffic. If the sign is attached to the post, a reflector or sign should be attached to the chain to make it highly visible, especially at night.

LOCKED BARNS

- All poultry barn entrances should remain locked at all times that the barn is unoccupied by farm personnel. Barn entrances are high disease transmission risk areas and are the last line of defence in preventing disease transmission. It is therefore necessary to prevent inappropriate access.

- Locks need not be sophisticated items. For most doors, through which routine entry is not required (e.g. load-out doors), barrel bolts or bars operated from the inside would be sufficient. On the main entry, however, a door that is lockable from the outside is required and lockable from both sides is recommended. A simple keyed passage set would be all that is required. Once inside, it is not necessary for the worker to lock the door. For emergencies, it is advisable to have two doorways near opposite ends of the barn that are easily opened from the inside to allow rapid escape if required.

FLOCK HEALTH MANAGEMENT

The farmer will be the first to see signs of illness that may be a serious infectious disease in the flock. If a Foreign Animal Disease (FAD), such as Notifiable Avian Influenza or Exotic Newcastle Disease, were to break through the farm's biosecurity protocols, then that farm becomes a serious risk to the rest of the poultry community. It is the early recognition of that first case that will be critical in containing and eliminating the disease quickly.

- ❑ Other Species
- ❑ All-In All-Out Management
- ❑ Chick Health Status
- ❑ Flock Health Records
- ❑ Diagnostic Laboratory
- ❑ Analysis of Records
- ❑ Written Vaccination and Medication Protocol
- ❑ Relationship with Veterinarian
- ❑ Sick Bird Protocols

Farm mortality records serve to alert the producer to a potential problem, which should trigger the appropriate responses, the first of which will be to find the cause of the problem. The farmer should not try to diagnose the condition but instead should consult with his or her veterinarian or the diagnostic laboratory. If an infectious disease is suspected, then the next response will be self-quarantine. Once the diagnosis has been made, a response strategy will be designed in consultation with the farm's veterinarian. This response may be as simple as a management adjustment or administration of a treatment. If a FAD is discovered, then the appropriate response will occur in accordance with various Emergency Response Plans that will be followed by the industry.

The essential elements of flock health include keeping good, consistent records, recognizing healthy birds, recognizing unusual mortality or other indicators of illness in the flock, and responding appropriately to those observations. In order to comply with OFFSAP, records of all vaccinations and treatments should also be kept.

Dead birds may be a high-risk source of infectious disease and should therefore be handled and disposed of through approved methods on the premise where they died or at a central facility with appropriate provincial permits.

The following are recommended practices relating to flock health management that enhance biosecurity on non-supply managed poultry operations:

OTHER SPECIES

- ❑ Having only one species of bird on your farm would reduce the biosecurity risks. It is very important to avoid raising poultry on bedding that was previously used for rearing waterfowl. This issue is relevant regardless of whether the previously used bedding was in the barn or imported for use within a barn. In the event that a producer decides to rear birds following

waterfowl, the producers' standard operating procedures should clearly describe the extra measures, such as manure removal, thorough cleaning, disinfection and drying that will be undertaken prior to introducing birds. These procedures will need to be thoroughly implemented in order to minimize the risk of disease transmission. All birds, whether domesticated or wild, should be discouraged from entering the Controlled Access Zone and all birds, other than those being reared for commercial purposes, should be prevented from entering the Restricted Access Zone while production is underway.

ALL-IN ALL-OUT MANAGEMENT

- ❑ Moving birds from one flock or farm to another is a high-risk practice and should be avoided as much as possible, preferably through all-in all-out management.

  However, circumstances may often require the movement of birds, so it is essential that every effort be made to move only healthy, disease-free birds. If additional birds should be added to an existing flock, this should be done in a careful manner. The source of the birds should be well known, and they should have complete health records. The vaccination program for the donor farm (for species where vaccinations are possible and commonly used)should be similar to that of the receiving farm. Also, birds should not be moved into a flock within four weeks of receiving a live vaccine. This is because, following vaccination, birds will shed vaccine virus for a period of time and this virus can cause illness in susceptible birds. A complete record of the introduced birds should be kept, including the source, number, and age of the introduced birds, the date of introduction, and complete health records, including the vaccination program.

CHICK HEALTH STATUS

- ❑ Chicks should be acquired from a registered hatchery or source with known health status. This practice of acquiring only from registered sources will generally be a very low risk for introduction of an infectious disease.

FLOCK HEALTH RECORDS

- ❑ Individual flock health records should be maintained.
  a. Records should include a count of mortalities collected at least once each day.
  b. Production records, including feed intake and, for breeders or layers, egg production should be kept.
  c. Veterinary and diagnostic reports are also part of the health records.
  d. Any response to an unusual mortality rise, including submission for diagnosis, treatments undertaken, or management adjustments, should be recorded.

e. Any addition or removal of birds to or from a flock should be recorded and all health records accompanying the birds should be kept in the flock records.

Mortality records are the first step in assessing the health of a flock. The term "Mortality" should include birds that appear to be ill and may or may not be culled. If several birds appear to be ill, but no mortality occurs, your veterinarian should be consulted or a sample of these birds should be culled and submitted to your veterinarian or diagnostic laboratory for evaluation. Any rise in sick or dead birds should be recorded and the appropriate response protocol described in the farm's Standard Operating Procedure (SOP) should be followed.

At a minimum, mortality records should include the total number of dead birds found. These records should be accurately completed each day.

- ❑ Your health records should include a written record of all movement of birds on or off your farm, without exception.

DIAGNOSTIC LABORATORY

- ❑ Submissions of birds for diagnosis should occur to a certified diagnostic laboratory or to the consulting veterinarian. Birds for submission should be carefully selected. The samples should be alive or freshly killed birds that show signs typical of the predominant illness or mortality. They should be contained according to the procedures outlined in the mortality handling section of this document; that is in a sealed container that can be disinfected prior to removal from the farm. The samples should be delivered to the laboratory as quickly as possible.

ANALYSIS OF RECORDS

- ❑ It is recommended that you routinely analyze your mortality records, production data and feed/water consumption rate for signs of problems. You should always be monitoring your birds for any signs of sickness. Reviewing your records may allow you detect problems early, leading to a better chance for successful treatment and lower bird mortality or production loss.

Good records are an important part of good management. There are many observations that can be recorded that could prove to be of value when investigating a problem, even if you have only a few birds. Having ongoing records also prompts you to regularly observe the flock. There is never too much information to be recorded, but some of the basic observations should include:

- Mortality records -- not all mortalities will be the result of infectious disease, but a significant change in mortality may signal the need to do further investigation.
- Production records – even if you have only a few birds, knowing how they are producing, including egg production and weight gain, is important. Loss of egg quality, including frequency of misshapen shells and frequency of cracks, can be an early signal of disease problems and such records are also important. Some owners of very small layer flocks have records of egg production of each bird. While this may be impractical if you have 25 birds, it illustrates the detail that can be accomplished. If a drop in egg production is noted, then an investigation can be launched, even if it is only to check out and ensure that all management elements are optimum.
- Feed and water consumption – a drop in appetite is often the first effect of illness in birds. With good records, any change in consumption will be quickly spotted.

WRITTEN VACCINATION AND MEDICATION PROTOCOL

- Disease prevention and control in poultry is a multifaceted process that requires work and attention to detail rather than technical expertise. Most elements of a disease prevention plan, including biosecurity, are common sense and, once instituted, take little effort to continue. However, it is essential that a written vaccination and medication protocol be created for your farm, to document your efforts and to ensure consistency of your application of these protocols.

  Vaccination is an important and effective way of making poultry less susceptible to specific infectious diseases. It is recognized that in some cases vaccinations do not exist or are not commonly used. As a result, there are other measures including medication that can be taken to help prevent or control a disease and reduce its impact on the flock. In either event, a written protocol for both vaccination and medication is very valuable.

  Producers should make every effort to develop an effective vaccination and medication protocol for their farm. Producers should monitor industry sources for new diseases or developing threats, or for new methods of preventing or controlling disease. Your vaccination and medication protocol should be updated as new information becomes available.

- Your written health records should include all of the following:
  - medication or vaccine brand name
  - serial number
  - production date
  - storage conditions
  - application details
  - expiry date

- ❑ All vaccines (if available) should be stored and handled according to label requirements.

RELATIONSHIP WITH VETERINARIAN

- ❑ Veterinarians are educated and trained to diagnose and treat animal diseases. You should establish a relationship with a veterinarian/flock health professional in preparing their vaccination and medication protocols. This relationship with a veterinarian is essential to every animal owner for consultation and diagnostic services. A legitimate veterinarian-client-patient relationship (VCPR) is required for your veterinarian to legally dispense drugs and other medications. This is very important when you encounter a disease problem that would necessitate treatment or any further action that may involve government regulations.

  A legitimate veterinarian-client-patient relationship (VCPR) is required for your veterinarian to legally dispense drugs and other medications, so you should ensure that this relationship is created before you encounter threats. This is very important when you encounter a disease problem that would necessitate treatment or any further action that may involve government regulations.

  All veterinarians are educated and trained to diagnose and treat animal diseases. However, many practicing veterinarians do not specialize in poultry medicine/diagnostics. You should ensure that you have immediate access to a poultry health professional.

SICK BIRD PROTOCOLS

- ❑ Sick birds should immediately be culled or treated differently from all other birds in your operation. This should be based on a pre-written ""self-quarantine"" protocol that is enacted immediately upon first suspicion of disease.

TRUCK TRAFFIC

- ❑ Greet Service Vehicles at Primary Access Gate
- ❑ Feed Delivery
- ❑ Designated Delivery Locations
- ❑ Inspection of Vehicles
- ❑ Service Driver Clothing

Technical Service Personnel and allied trades (hatchery, feed, veterinarians, inspectors, government regulators, equipment representatives, etc.) serve an important function in poultry husbandry, trouble shooting, sales and communication but at the same time may pose a significant threat to the biosecurity of the farm and poultry industry. Movement from farm to farm is a requirement for technical service personnel.

Vehicles can potentially transmit poultry pathogens when manure containing disease agents is adhered to tires or the vehicle frame. The majority of poultry pathogens are spread by contaminated vehicles and the movement of people. For this reason, service personnel and allied trades should be particularly diligent in adhering to their biosecurity protocol. The producer should monitor this to ensure it is happening.

The following are recommended practices relating to truck traffic that would enhance biosecurity for egg collection, feed deliveries, and other supply deliveries on non-supply managed poultry operations:

GREET SERVICE VEHICLES AT PRIMARY ACCESS GATE

- ❑ Vehicles and the drivers of the vehicles can potentially transmit poultry pathogens. Producers should meet all service trucks at the primary access gate and ensure that the allied trade protocols and the farm's biosecurity protocols are followed.

  Following an avian influenza outbreak, the BC Poultry Association (BCPA) leveraged the knowledge of both local practitioners and leading international experts to develop a comprehensive set of biosecurity standards and protocols in the following areas: barn management, bird management, visitor protocols, allied trade protocols, and emergency protocols. These were distributed to producers in all poultry sectors (chickens, broiler breeders, egg layers, turkeys, and non-regulated). The allied trades include feed mills, hatcheries, processing plants, poultry hauling/catching companies, egg grading/processing stations, and layer breeders. It would be very helpful if both you and any service providers are aware of these allied trade protocols.

FEED DELIVERY

- It would be ideal if feed truck drivers not have access to barns during deliveries.

  Feed storage bins should be laid out to give clear, clean and dry access to feed delivery drivers. Feed should be delivered to the barn(s) away from the fan exhausts, to reduce the risk of airborne pathogens being introduced to the barn.

  If at all possible given your regional circumstances, it is best to source feed from a Hazard Analysis and Critical Control Points (HACCP) certified feed mill.

DESIGNATED DELIVERY LOCATIONS

- Delivery persons should be directed to set packages in a designated location away from the barn. The designated delivery location should be clearly marked.

INSPECTION OF VEHICLES

- Vehicles can potentially transmit poultry pathogens when manure containing disease agents is adhered to tires or the vehicle frame. Producers should meet all service trucks at the primary access gate, which is recommended be locked. Service vehicles should be inspected before entering the Controlled Access Zone.

  The majority of poultry pathogens are spread by contaminated vehicles and the movement of people. Producers should reject visibly dirty trucks and require them to be washed and disinfected prior to entering past the farm gate.

SERVICE DRIVER CLOTHING

- Service truck drivers should be required to wear clean company coveralls and new disposable booties or rubber pull-ons for each delivery.

VISITORS

- ❑ Keep Visitors Out
- ❑ Visitor Entry and Exit Procedures
- ❑ Visitor Log
- ❑ Designated Visitor Parking

Farm access represents the first critical control point for entry of an infectious disease organism into the farm. Visitor access to the Controlled Access Zone presents a biosecurity risk that can be avoided. If visitors are essential, they should comply with the number of procedures under a farm's biosecurity procedures when entering the Controlled Access Zone.

An activity log book should be kept for the premises to record visitors and daily on-farm activities relevant to the biosecurity standard operating procedures. In the event of a disease outbreak the activity log book for the premises will provide critical information to assist in containing the outbreak. The premises log book will also provide documentation verifying that biosecurity standard operating procedures are being followed. The activity log book for the premises will regularly document activities including but not limited to:

- ➥ Primary and secondary access maintenance.
- ➥ Cleaning and decontamination undertaken including barn sanitation and dust management.
- ➥ Pest control measures undertaken.
- ➥ Premises visitors including the allied trades entering controlled access area(s) and restricted area(s).
- ➥ Biosecurity training undertaken.
- ➥ Flock health diagnostic reports, treatments and mortality.
- ➥ The name of company or individual transporting manure off the farm and, where known, the receiver.

The following are recommended practices relating to visitors that enhance biosecurity on non-supply managed poultry operations:

KEEP VISITORS OUT

- ❑ Farm access represents the first critical control point for entry of an infectious disease organism into the farm. Visitor access to the Controlled Access Zone presents a biosecurity risk that potentially can be avoided. For that reason, the best security is to keep visitors out of the Controlled Access Zone and the barn altogether. If visitors are essential, they should comply with the entry and exit procedures required by the farm's biosecurity procedures when entering the Controlled Access Zone.

VISITOR ENTRY AND EXIT PROCEDURES

- All visitors should comply with the entry and exit procedures required by the farm's biosecurity procedures when entering the Controlled Access Zone. In an ideal situation visitors could potentially be asked to phone ahead so that they can be met by the farmer.

  There should also be a requirement for visitors wear clothing provided by your farm. Your visitor entry and exit protocols should also include the requirement for visitors to shower in and out when entering or leaving the barn.

VISITOR LOG

- Ultimately It is the responsibility of the farm owner to have a record of all traffic and visitors entering the farm. Delivery invoices may be used as records; however a list may be needed quickly in the event of a disease outbreak to facilitate rapid response. For this reason it is suggested that the farm owner fill in the visitor log at least weekly with information on invoices left at the farm.

DESIGNATED VISITOR PARKING

- The goal is to keep vehicles out of the Controlled Access Zone unless absolutely necessary. In order to facilitate this, it would be ideal if designated visitor parking outside the Controlled Access Zone could be provided. If a vehicle or equipment is required to enter the Controlled Access Zone, procedures to be followed should include cleaning and, when necessary, disinfection.

CARCASS DISPOSAL AND MANURE MANAGEMENT

- Approved Methods of Carcass Disposal
- Proper Carcass Storage & Composting
- Proper Manure Storage
- Proper Manure Transportation

Dead birds and cull eggs may be a high-risk source of infectious disease organisms and should therefore be handled and disposed of in an responsible and consistent manner.

a. Producers should dispose of mortalities and cull birds and eggs in a manner that is consistent with provincial standards such as incineration or composting.
b. Disposal of mortalities and cull eggs on-farm is preferred to off-farm transport.
c. All mortalities transported off-farm should be placed in clean disinfected containers and the containers sealed prior to leaving the premises. It is recommended that carcasses be frozen before batch disposal.
d. Large numbers of mortalities that result from a disease outbreak should be handled in a manner consistent with industry and government requirements.

Pathogens may also be introduced to your farm or leave your farm through improper handling of manure. Care should therefore be taken to appropriately compost and transport waste.

The following are recommended practices relating to carcass disposal and manure management that enhance biosecurity on non-supply managed poultry operations:

APPROVED METHODS OF CARCASS DISPOSAL

- The on-farm disposal methods approved by the BC Agricultural Waste Control Regulation include composting, incineration and burial. Burial is only an accepted on-farm disposal practice in areas with low rainfall and suitable ground water tables. In addition, utilization of a pick-up service for centralized disposal options such as rendering, composting or incineration are acceptable practices provided that the receiver is certified to deal with mortalities and has all relevant permits in place for the centralized facility.

PROPER CARCASS STORAGE AND COMPOSTING

- Compost should be conducted in a manner to ensure proper composting temperatures are attained and full and rapid decomposition of carcasses occurs. The compost should be checked for proper internal operating temperature (40 – 60 degrees Celsius) twice per week.

  Carcasses should be covered or placed in a secure container, which does not allow escape of feathers or organic matter, immediately after collection and not be left exposed to the environment. If disposal does not occur immediately after the collection of mortalities the dead stock should be intermittently stored in an approved manner. The approved storage methods are:

  a. impermeable covered storage bins if the storage period is short;
  b. freezing in sealed bags for longer storage periods.

- Mortalities should be stored inside the Controlled Access Zone (CAZ) and away from water or feed sources.

- Feeding carcasses to scavengers is disallowed under biosecurity standards. It is very important that carcasses be kept in an enclosure that prevents access by any scavengers, pets, rodents or wildlife.

PROPER MANURE STORAGE

- Manure should be stored and covered as far away from the bird holding area as possible. Proper manure composting will significantly reduce the pathogen load as high temperatures are generated by the fermentation process.

PROPER MANURE TRANSPORTATION

- It is really important to try to ensure that manure transporters observe all trucking biosecurity protocols, since vehicles can potentially transmit poultry pathogens.

  All vehicles and equipment used to handle manure should be washed and disinfected prior to re-entering the farm gate. Vehicles can potentially transmit poultry pathogens when manure containing disease agents is adhered to tires or the vehicle frame. The majority of poultry pathogens are spread by contaminated vehicles and the movement of people.

- ❑ Employees and owner operators should wear coveralls and boots designated for specifically for hauling manure. They should not resume farm duties until they have washed their hands and/or showered, and are wearing clean clothing and boots.

BARN LAYOUT

The design and location of a barn contribute greatly to reducing the potential for pathogens to enter the barn, and also the ability to contain pathogens within the barn in the case of a disease outbreak. In addition to the barn's location, which is often difficult to change after construction has been completed, the interior design should take into account the need for changes in clothing, disinfection and washing stations. It is essential that there be clearly delineated "clean" and "dirty" areas within the barn.

- ❑ Separate Breeder Operation
- ❑ Barn Layout and Airborne Pathogens
- ❑ "Clean" and "Dirty" Areas
- ❑ Designated Barn Clothing
- ❑ Sequencing Work

In the case of non-supply managed poultry it is recognized that many of the production units themselves have been adapted for use from other types of livestock/poultry production enterprise. While perhaps not ideal, this reality only serves to increase the importance of being flexible and adapting any biosecurity options that can be addressed. The following suggestions are made with this context in mind.

The interior door of any barn is the last real opportunity to stop the spread of disease to a producer's flock. Similarly, the exterior door is the last possibility to contain any material, virus or biological agent from being taken away to another location. Therefore, it is essential that there be an area for the farmer and visitors to utilize to minimize the probability of moving a disease agent into or out of the facility.

The following are recommended practices relating to barn layout that enhance biosecurity on non-supply managed poultry operations:

SEPARATE BREEDER OPERATION

- ❑ Your breeder operation should be in a separate physical space from raising areas. When possible, flocks which have significant value (breeder flocks, flocks with rare/unique genetics) should be located on different premises from that of the main flock, and measures employed to ensure there are no epidemiological linkages between them.

BARN LAYOUT AND AIRBORNE PATHOGENS

- ❑ Barns should be built with prevailing wind and other poultry facilities in mind. The time of construction of facilities is a primary time to consider biosecurity factors, to safeguard your flock and to reduce the possibility of entry or exit of pathogens.

Special care should be taken to ensure that barn vents do not point towards an adjacent barn's air intake. If the vents of adjacent barns create a situation where they share a common air space, it is not possible to create a separate restricted access zone for each of those barns. This situation creates the possibility of spreading airborne pathogens between the barns.

"CLEAN" AND "DIRTY" AREAS

- Your barns should all have clearly defined, visible and maintained "clean" and "dirty" areas. If possible, this would include a well-designed "anteroom" to act as a barrier between these areas.
- Good housekeeping and sanitation are central to pest control in all facilities. All entryways and workrooms should be routinely cleaned (swept and kept dry) and disinfected.
- Your barn entry and exit points should all have hand wash stations conveniently located.
- Your footbaths/footmats with disinfectant in entry ways should be changed routinely. It is recommended that your protocol should include checking footbaths at least daily and maintenance at least weekly. If a footbath requires cleaning or recharging, that should be done immediately.

DESIGNATED BARN CLOTHING

- Having several pairs of exterior clothing and footwear in each barn for anyone working in the barns and visitors is recommended. Regardless of the type of clothing or footwear, it is important that the clothing and footwear not leave the biosecurity zone to which it is dedicated and that it is sanitized on a routine basis.

SEQUENCING WORK

- Your biosecurity protocol should provide direction on the sequence of work and visits in your barn. The specific sequence will depend on the type of poultry and the details of your operation, but normally these sequences would include contact with birds from healthy-to-suspect and from youngest-to-oldest.

PEST CONTROL

- ❑ Good Housekeeping
- ❑ Rodent Control
- ❑ Insect Control
- ❑ Control Other Birds
- ❑ No Access by Other Animals

The primary goal of all pest control programs is the prevention and elimination of insects, rodents, free-flying birds, predators (i.e. raccoons and weasels) and other pests. Pests may introduce or maintain disease causing agents on a farm, kill or maim your birds and consume and contaminate animal feeds. Also many pests, like boring beetles and rodents, can destroy barn insulation, chew on electrical wiring and create serious fire hazards.

Good housekeeping and sanitation are central to pest control in all facilities. Chemical and physical pest control measures may be necessary in conjunction with proper sanitation, storage practices, insect and rodent proofing, and a regular maintenance program. An Integrated Pest Management program (IPM) is a requirement for a successful and productive operation. IPM is a system that makes use of several tools to manage pests and lessen their impact on your bird's health. The first line of defense in an IPM program includes proper facility design and construction, regular facility maintenance, an organized and tidy environment and proper sanitation. Pesticides should be used only as a second line of defense. A facility that relies only on chemical control and does not focus on more basic preventive measures runs the risk of inadequate control, environmental damage, and non-target species effects.

A complete pest control program would have four key elements:

- ➟ A sound construction program for new or rebuilt structures creates a barrier that prevents pests from entering the facility. This includes, easily cleanable barn floors (such as concrete), proper sweeps on barn doors to keep out rodents and careful screening of soffit and fan openings to prevent wild bird entry.
- ➟ A sound maintenance program ensures that any breaks in these construction barriers are promptly repaired and sealed.
- ➟ A sound exclusion program prevents the entry of pests through windows, doors, vents, and on incoming goods.
- ➟ A sound sanitation program removes pest hiding places, and spilled feed or water on floors/around feed bins that could attract and support a pest population.

The following are recommended practices relating to pest control that enhance biosecurity on non-supply managed poultry operations:

GOOD HOUSEKEEPING

- Good housekeeping and sanitation are central to pest control in all facilities. Ideally, a 3 meter perimeter should be kept free of all debris and vegetation should be trimmed.

- A management program that prevents the contamination of feed and water sources should be in place. It is critical to limit the potential for environmental contamination including, but not limited to the elimination of water leaks.

  Feed should be stored in clean, closed bins that prevent access by pests and prevent water and debris from entering.

- Lowering suitable habitats like brush and long grass will reduce risks. It is ideal to have a concrete pad around storage bins and buildings and the area beyond should be kept free of debris. This is especially the case for spilled feed, which should be cleaned immediately. All foliage, including grass and weeds, in that area should be kept trimmed.

RODENT CONTROL

- Rodents are major vectors and reservoirs of bacteria and viruses. A written rodent control plan should be maintained outlining your rodent control strategies.

  Watch for droppings, rodent runs, burrows, gnawing marks, odours, and other signs of activity. Obtain baiting stations or traps and choose the bait that is applicable to your problem. Bait stations can be bought from feed supply stores, from rodent control companies, or they can be home-made. The most common one is a simple 18"" × 3"" diameter PVC pipe. Bait stations keep the rodenticides protected from the elements and away from non-target animals. These bait stations should be placed about 20‑60 feet apart (depending on severity of problem) around the perimeter of the building, in the attic, entry rooms, or even near fences. Bring the baits to the rodents! Baits should be monitored for activity and always kept available, dry, and fresh (no moulds, dust, stale bait). Wear gloves when handling them.

  Pest control requires an integrated pest-management strategy involving many techniques. The producer's first objective should be to prevent, or at least greatly reduce, rodent numbers through management programmes that eliminate entrance to the facility, nesting sites for the rodents, food supplies and water. Populations build when food, water and nesting sites are readily available.

INSECT CONTROL

- Your pest control program should also include the control of insects.

  Darkling beetles (adults) and lesser mealworms (larvae) have been found to carry Salmonella and other organisms including some viruses. They shed them in their droppings for up to 28 days. Examine used bedding and floor wall junctions for larvae and adult beetles after a flock is removed or pens are being cleaned. If beetles are found, implement appropriate control measures.

  Monitor the severity of the fly infestation using sticky tapes, speck fly counting, or baited jug traps. Flies are best controlled through:

  a) Proper management of feed, manure, and facilities;

  b) Use of beneficial insects (tiny wasps) that feed on immature fly eggs and larvae;

  c) Use of chemicals including various fly baits and papers.

  Several types of mites can occur in poultry and feed on blood and are found close to the skin. Due to the birds' feathers, penetration of insecticide to the site of infestation is often difficult. Spraying or direct contact application with a rag is necessary. Chemicals like permethrin (Ectiban), carbaryl (Sevin), malathion (Malathion 50) and dichlorvos (Ravap) have been used successfully.

CONTROL OTHER BIRDS

- All other birds, wild or domestic, should be kept out of your facilities. Predatory birds like members of the accipiter hawks (Sharp-shinned hawk, Cooper's hawk and Goshawk) are common predators in pigeon lofts and game bird operations. Proper fencing and netting, secure penning and screening of windows will help prevent these pests from entering. If these species become a problem contact a pest control professional.

  For wild bird control, the following practices are recommended:

  a. Screen all openings into the barn.
  b. Do not put out wild bird feeders.
  c. While trees may be used for dust control on the exhaust side of a barn, the number and type of trees used should be limited. Eliminate any unnecessary trees and shrubbery that is close to the barns.

NO ACCESS BY OTHER ANIMALS

- No dogs, cats, or wildlife should have access to the barn or feed storage areas. Mammal pests such as weasels, foxes, skunks, raccoons, moles, gophers, ground hogs and squirrels may damage facilities. The best defence against this is to minimize habitats which pests find comfortable for nesting and make certain they do not have access to feed. There should be no wood or garbage piles in the area. Small rodents and mammals can cause severe damage and are a disease risk.

  Humane removal of pests is recommended. There are also some mechanical repellants available including irritants, water sprayer, and sound devices. Eraze, Mole and Gopher Bait, Ground Squirrel Bait, and Tomcat are some chemical preparations that can be used.

CLEANING AND DISINFECTION

- ❑ 3-Step Process
- ❑ Bird & Litter Removal
- ❑ Thorough Cleaning
- ❑ Disinfection
- ❑ Downtime

Animals are continually exposed to microorganisms, many of which can cause diseases. Some of these microorganisms can survive in the environment, flock after flock, because they are protected by organic materials/manure or biofilms that are in the environment. In order to prevent diseases, we have to break the chain.

Cleaning and disinfection are two very important steps of a complete biosecurity program and are important tools used in breaking the chain of infection. A good sanitation plan should always be included in any health program. Isolation of the birds and sterilizing the environment would be the ultimate objectives but are not realistic. Therefore, attainable goals should be established so an effective level of sanitation can be maintained.

The main objectives of a cleaning and disinfection program include:

- ➸ Thoroughly cleaning all animal facilities, handling or transport equipment and barn tools – there should be no exception in the areas that are included in the program. After cleaning there should be no visible organic matter left behind.
- ➸ Reduction of microorganisms to the lowest possible level through proper disinfection.
- ➸ Obtaining new birds from known, disease free sources – to ensure that they do not arrive at facilities harbouring pathogens.

The following are recommended practices relating to cleaning & disinfection that enhance biosecurity on non-supply managed poultry operations. It is recognized that, given the nature of the sector, all of these may not be possible as stated. Farmers are encouraged to try to meet the basic standards adapting these techniques and principles to their own operations. It is also recognized that it is difficult to have an all-in-all-out management system in some non-supply managed poultry operations. In this case the farmers should try to segment the facility as much as possible and still attempt to address as many of the following elements as possible:

3-STEP PROCESS

- ❑ A three-step process (litter removal, cleaning, disinfection) should be followed before new birds are placed.

The first step is to remove all birds and any litter. Removal of all organic matter is essential. Litter, feces and refuse contain high levels of contamination. High levels of soil reduce the efficacy of the cleaning and disinfecting processes. Remove any residual feed from the feeder system and the silos.

The second step is cleaning. Thorough washing with a detergent is essential to reduce time and water required for the cleaning process, to help remove the biofilm, and to help maximize the efficacy of disinfectants.

The third step is disinfection. It is really important to recognize that many disinfectants do not work effectively if steps 1 &2 do not eliminate a significant amount of the organic material present – disinfection without cleaning first is not effective. On the other hand, even though cleaning eliminates > 90% of the contaminants, what's left will be more than enough to be harmful to your flock if disinfection does not occur. Live organisms and porous surfaces lead to higher contamination and more viruses. Using a proven disinfectant against bacteria, fungi and especially viruses is therefore essential.

BIRD AND LITTER REMOVAL

- It is best to discuss biosecurity with your catching company and do you know exactly what the catching company does on your farm. The removal of birds is an essential part of the cleaning & disinfection process between flocks.

  Ultimately, the biosecurity of your farm is your responsibility. If you have contracted others to provide litter removal, cleaning and/or disinfection for you, it is essential that you monitor service sector procedures on your farm.

- It is best to clean when there are no birds in the facility at all. Only if there is no way to accomplish this, at a bare minimum all birds and other animals should be kept away from the area/pen that is being cleaned.

THOROUGH CLEANING

- Equipment and buildings should be thoroughly cleaned before they are disinfected.

  The goal of cleaning is to physically remove all visible debris, dirt, soil, feces, and other organic matter. You need to use a lot of elbow grease! Sweep/blow down dust, cobwebs, and feathers from walls, nest, cages, beams, rafters, fans, and other accessible areas inside and outside the barn. Do not forget the service rooms.

  Scrape off any built-up debris and pay attention to hard to reach areas. Wash all surfaces with water and detergent. The detergent or cleaning agent aids in decreasing surface tension

(makes water “wetter”), splits up organic material, emulsifies oils and fats, floats dirt particles, dissolves salts, and carries dirt off the surface that you are cleaning.

The thoroughness of cleaning (use of high pressure washer), use of detergent and exposure time (low pressure application of foam/gel remains on surface longer), and use of hot vs. cold water all contribute to the efficacy of the cleaning job.

DISINFECTION

- Even though cleaning eliminates > 90% of the contaminants, what’s left will be more than enough to be harmful to your next flock. Live organisms and porous surfaces lead to higher contamination and more viruses. Using a proven disinfectant against bacteria, fungi and especially viruses is therefore essential.
- Disinfectants should not be selected based on price or by random selection. If possible, a cleaning & disinfection expert should be consulted in preparing your disinfection protocols and selecting a proven disinfection product. The products should be selected based on the label claims.
- While some good documentation is available when determining disinfection products and procedures, it is best to consult a disinfection expert for suggestions when developing your farm's cleaning and disinfection protocols.
- All medicators and dispensers should be cleaned and disinfected after each use.
- All ceiling, walls, flooring, and equipment should be cleaned and disinfected between flocks.

DOWNTIME

- It is recommended that there be a minimum of 21 days of "downtime" between flocks. This allows for sufficient time for effective cleaning and disinfection, and the downtime helps to reduce the potential for pathogens to contaminate the following flock.
- If this is not possible, a goal to have a downtime of at least 10 days would be advised. In this case it would be important to have a formal plan for compartmentalizing sufficiently for effective cleaning and disinfection.

OTHER BIOSECURITY PRACTICES

Farm management is the essential component of putting the standards into practice. If all aspects of management are handled to their optimum, then farm biosecurity will be a success. All the technology put into place then managed incorrectly, however, will be equivalent to not having biosecurity measures in place. Farm management is a collection of programs, procedures, and rules that are put into place to activate an overall biosecurity program.

- ❑ Tools & Equipment
- ❑ Water Sanitation
- ❑ Employee Protocols
- ❑ Training

Previous sections of this report have outlined the primary and secondary biosecurity practices that should be addressed on your farm. However, even smaller management practices can have a significant impact on the overall biosecurity of your operation. This section outlines a number of other possible improvements to your management practices.

The following are other recommended secondary biosecurity practices that would also enhance biosecurity on non-supply managed poultry operations:

TOOLS AND EQUIPMENT

- ❑ Your farm should maintain its own sets of tools and equipment for repairs as much as possible. All small tools and equipment should be cleaned and disinfected before being brought onto the farm.
- ❑ All tools and equipment should also be cleaned and disinfected before they *leave* your farm, regardless of their destination. It is also recommended that all tools and equipment be cleaned and disinfected when moving between farm buildings.

WATER SANITATION

- ❑ Water quality should be checked on a routine basis. Water analysis reports should be kept with the farm records.
- ❑ Wells should be properly constructed and maintained. Even if the wells themselves are properly maintained, the water lines may be a source for transfer of pathogens. For that reason, they should be properly and regularly sanitized.
- ❑ In-line water filters in the water lines are an effective barrier to the spread of pathogens. To remain effective the filters should be changed regularly.

EMPLOYEE PROTOCOLS

- Pathogens can be potentially transmitted from people to poultry, both directly or indirectly through people wearing clothing or boots contaminated with manure from sick animals from another flock.
- This poses a particularly high risk when combined with the absence of a formal biosecurity plan or protocol being in place for your farm or the other farm(s) on which your personnel may be working. For that reason, written biosecurity protocols should be in place and adhered to by your employees.
- Your written biosecurity protocol should require that following contact with other poultry flocks when disease concerns are present, all employees have a minimum 24-hour ""away time"" before re-entering your farm.
- The consequences of coming in contact with off-farm poultry and the importance of adhering to your biosecurity protocols should be explained to all employees.
- Your written biosecurity protocol should specifically address procedures following any repair work that your employees may have undertaken on other farms. Ensure that your employees adhere to this element of your biosecurity protocol.
- Consider having your employment agreement (particularly for new employees) outline the importance of and requirements for adhering to your biosecurity protocols.

TRAINING

- Consider providing biosecurity training for your employees and updating their training as required. If possible and appropriate, recommend they attend industry meetings or educational seminars to supplement on-farm training.
- The owner/producer should also take every opportunity to attend industry meetings and educational seminars to keep updated on new developments in disease control.

CONTACT LIST

If a future potential disease outbreak were to impact your farm or neighbouring operations, it is crucial that steps be taken immediately to diagnose the issue and to notify the appropriate authorities. For that reason, it is crucial to have contact details for the right people accessible immediately. You are encouraged to record those here for quick reference. Wherever possible, record cell phone numbers as well.

Name	Phone Numbers	Details / Comments
Animal Health		
		Veterinarian
		Diagnostic Laboratory
		CFIA
Farm Employees		
Service Companies		
		Feed
		Bird Removal / Catching
		Animal Health
		Supplies
Neighbours		
		Distance?
Other		

ADDITIONAL BIOSECURITY REFERENCES

"BC Poultry Biosecurity Reference Guide". BC Poultry Association (November 2006).

"Small Flock Poultry Health – Disease Prevention and Good Management". Animal Health Centre, BC Ministry of Agriculture (January 2011)
http://www.agf.gov.bc.ca/ahc/poultry/small_flock_manual.pdf

"National Farm Biosecurity Manual – Poultry Production". Australian Department of Agriculture Fisheries and Forestry (May 2009)

"How to Prevent And Detect Disease In Backyard Flocks". CFIA
http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/bird-health-basics/eng/1323643634523/1323644740109

"National Avian On-Farm Biosecurity Standard". Office of Animal Biosecurity CFIA.
http://www.inspection.gc.ca/english/anima/biosec/aviafrme.shtml

"Biosecurity Recommendations for Commerical Poultry Flocks in Ontario". OMAFRA
http://www.omafra.gov.on.ca/english/livestock/poultry/facts/05-077.htm

"Biosecurity Recommendations for Small Flock Poultry Owners". OMAFRA
http://www.omafra.gov.on.ca/english/livestock/poultry/facts/12-039.htm

"Rodent Control in Livestock and Poultry Facilities". OMAFRA
http://www.omafra.gov.on.ca/english/livestock/dairy/facts/10-077.htm