



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

Canada

## Animal Biosecurity

# National Farm-Level Mink Biosecurity Standard



## **Dedication**

The Standard is dedicated to the late Dr. Bruce Hunter, professor emeritus of the Ontario Veterinary College, who laid the foundation for this document. Dr. Hunter's dedication and significant contributions to the field of veterinary medicine and the fur-bearing industry improved the health and welfare of farmed mink.

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## What is biosecurity for mink farms?

**On-farm biosecurity** encompasses a set of organized, well-planned procedures that are applied at the farm level. The primary objective is to reduce the exposure of mink to infectious disease-causing agents including their introduction, spread within the farmed mink population and release from the farm. (Appendix A provides a glossary of terms used in this document.)

**Biosecurity** is only successful if the producer commits to learning and implementing the basic principles of biosecurity. Biosecurity is not a new concept, nor are most biosecurity principles difficult or expensive for producers to implement. Many daily activities that producers perform involve biosecurity measures. To ensure maximum benefit, without wasting human and capital resources, committing to and implementing a structured biosecurity program is advised. Producers can protect their animals and ensure the success and sustainability of their industry by implementing biosecurity.

Disease can result in devastating losses. Operations with poor disease control may become a significant risk to the rest of the industry; if an infectious disease occurs on the premises, all mink farms are at risk.

**Every operation needs a biosecurity program, regardless of the number of mink that are raised.**

Common sources of infectious agents:

- **Escaped/feral mink, neighbours' mink, cats, and wildlife:** particularly wild mink, raccoon, skunk, fox, wild birds, rodents, and other pests, including other domestic animals.
- **People:** can transmit diseases on contaminated hands, footwear, clothing, and even hair.
- **Manure and Carcasses:** manure and the carcasses of diseased mink can be an important source of infection.
- **Newly Purchased Mink:** from other farms.
- **Feed and Water Sources:** including feed delivery trucks.
- **Equipment:** such as transportation crates, catching and vaccination equipment, feeders, nipples/ water cups, and farm tools.
- **Vehicles and Farm Equipment:** such as tractors and manure spreaders, including the equipment of neighbours and contractors, are exposed to various sources of infection from both inside and outside the farm.



## Biosecurity Principles

Disease prevention and control is complex. To be effective, prevention and intervention methods must be carried out in a logical sequence. Adopting one principle or recommendation without first performing another may render the action unsuccessful; for example, isolating newly purchased mink for two to three weeks to ensure freedom of disease will have reduced benefit if the producer fails to first establish the health of the herd/mink being purchased and the pathogens and pests present that must be tested, treated, or monitored.

Biosecurity programs are effective at mitigating infectious diseases caused by many microbial pathogens (bacteria [including *Mycoplasma*], viruses, fungi, and protozoa) transmitted by different routes; therefore, biosecurity programs should not be based on a single disease or method of transmission.

Aleutian disease, mink virus enteritis, mink distemper, and hemorrhagic pneumonia (*Pseudomonas*) are the most common and serious diseases that mink producers in Canada should consider when developing a biosecurity program.



## Who should use this document and how?

All mink producers are encouraged to use the National Farm-Level Mink Biosecurity Standard (The Standard). The Standard is presented in three sections: access management, animal health management, and operational management. The sections represent the foundations of an operating biosecurity system.

Each section is further divided into subsections and **Target Outcomes. Each Target Outcome represents a biosecurity related goal that all mink producers should implement to protect their herds from the introduction and spread of microbial pathogens.** The Target Outcomes are supported by basic biosecurity principles through which the Target Outcomes can be achieved. These principles are isolation, sanitation, traffic control and herd health management along with maintenance of the biosecurity program once it is in place.

With such a broad target industry audience, some of the biosecurity principles may be difficult for all producers to implement immediately. Producers should consider the ongoing implementation of additional biosecurity measures as mink operations are improved over time; for example, when facilities or equipment are replaced or refurbished.

### Who Is This Standard For?

This Standard is for producers and for those who own, manage, or work with farmed mink in Canada. It is designed for on-farm application on farms of all types and sizes, and from all regions across Canada. Awareness of the Standard will enable service providers to the mink industry to conduct their business in a manner that supports the mink industry's interests in reducing disease. The Standard will also assist researchers, educators, program development specialists, and governments in their work to advance biosecurity in the mink sector.

### What Is This Standard For?

The Standard sets out guidelines to help producers establish a comprehensive biosecurity program. Applying the Standard's principles and achieving the target outcomes is intended to reduce the prevalence of current and emerging infectious diseases and to contribute to increased productivity/cost-effectiveness and improved animal welfare.

The Standard is a public document, which will be available to all stakeholders, including trade and industry officials in other countries. In this context, it will be considered together with the range of

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other biosecurity tools used or being developed in Canada (e.g. border controls, surveillance, and disease control actions), as well as biosecurity standards for other Canadian commodities.

## How Was the Standard Developed?

The Standard, while industry-driven, was a collaborative project that included producers, subject matter experts, advisory groups, and leaders in industry and government. The Canadian Food Inspection Agency (CFIA) began work with the Canadian mink industry in 2010, following the industry's submission of a draft document "Principles of Biosecurity for Mink Farms" for consideration as a National Biosecurity Standard. A project outline was prepared to develop the Standard in two phases. This work was facilitated by contractors and guided by three committees: 1) a mink biosecurity management committee, 2) a biosecurity advisory committee, and 3) a biosecurity technical advisory committee, all of which contributed ideas and comments. (Appendix B provides a list of the committees and committee members.)

The Standard's development involved

- review of cost-benefit considerations of various biosecurity practices and protocols in the mink industry;
- a gap analysis between existing mink biosecurity programming in North American and European Fur Breeder Association member countries;
- a literature review and identification of cited biosecurity practices;
- producer-level consultation on current biosecurity practices in Canada's mink industry, using a representative sample of Canadian producers;
- consultation on a draft Standard, with a cross-section of stakeholder representatives and others engaged in the mink industry; and
- development of communication materials to facilitate awareness and understanding of the Standard.

## Format of the Standard for Canada's Mink Industry

The Standard is presented in three main sections that identify 39 target outcomes. These are outcome-based guidelines and indicate an objective or goal, while enabling producers to reach it by using the means most suited to the operation. Each section is supported by text that indicates the following:

- **what** is meant by the section;
- **why** the section is important to producers and/or the industry at large; and
- **how** the section's objectives/target outcomes may be achieved.

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## What the Standard IS and IS NOT

The Standard Is	The Standard Is Not
<b>voluntary</b>	mandatory
<b>a set of risk-based management guidelines</b> , addressing disease in a broad context, warranting thought and consideration in most mink operations across Canada	a list of “must do(s),” designed for a specific disease, to be achieved regardless of regional and operational differences
<b>based upon principles</b> , each of which can be achieved in a variety of ways	a prescriptive set of practices
<b>specific to mink</b> and biosecurity practices used by the Canadian industry	taken from another sector or country, and re-designed for the Canadian mink farming sector
<b>practical and science-based</b> , developed with consideration for the transmission of infectious pathogens across the range of mink production systems	idealistic, developed without consideration for the feasibility of implementation
<b>a collaborative project</b> , developed by producers, subject matter experts, advisory groups, and leaders in industry and government	the work of one stakeholder
<b>cost effective</b> , focusing upon practices and procedures that impact disease	costly in terms of new equipment or infrastructure, or requiring significantly different ways of doing business

## Supporting Information for Producers to Implement the Standard

A Producer Guide complements the Standard. Available as a separate document, the Producer Guide sets out additional information on how to apply the basic biosecurity principles, various measures that will assist the producer in achieving the target outcomes of the Standard, the benefits of applying the Standard, and where to find additional information.





## Section 1: Access Management

The disease literature documents that the movement of people, wildlife, pets, and other disease vectors, in addition to equipment and vehicles, are important routes for bringing microbial pathogens onto a premises or into a shed. Many diseases, including Aleutian disease, mink virus enteritis, mink distemper, ringworm, and others are carried onto farms by disease-carrying vectors. **Controlling access to the site and to the areas where the mink are housed is an important biosecurity principle.**

### 1.1 Biosecure Zones – Keep Disease Out

#### 1.1.1 Target Outcome

**Biosecure zones and controlled access points are established to control access to the premises, mink sheds, and other critical production areas.**

Biosecure zones allow the separation and protection of farm areas from people, materials, animals, products, and equipment that may pose a risk to mink health due to contamination from or infection with disease pathogens.

Identifying and implementing biosecurity measures that are specific to outer and inner zones ensures that multiple protective measures must be breached before microbial pathogens gain access to the most critical area of the site – where mink are housed. It also minimizes the risk of disease pathogens spreading from the mink housing and the mortality/manure storage areas to the rest of the site and off the farm.

Employ a three-zone concept for the farm site/premises:

#### 1. Determine Boundaries of the Site – The Premises

The “premises” refers to the entire property on which the mink are raised and is interchangeable with the term “farm site.”

#### 2. Establish a Controlled Access Zone

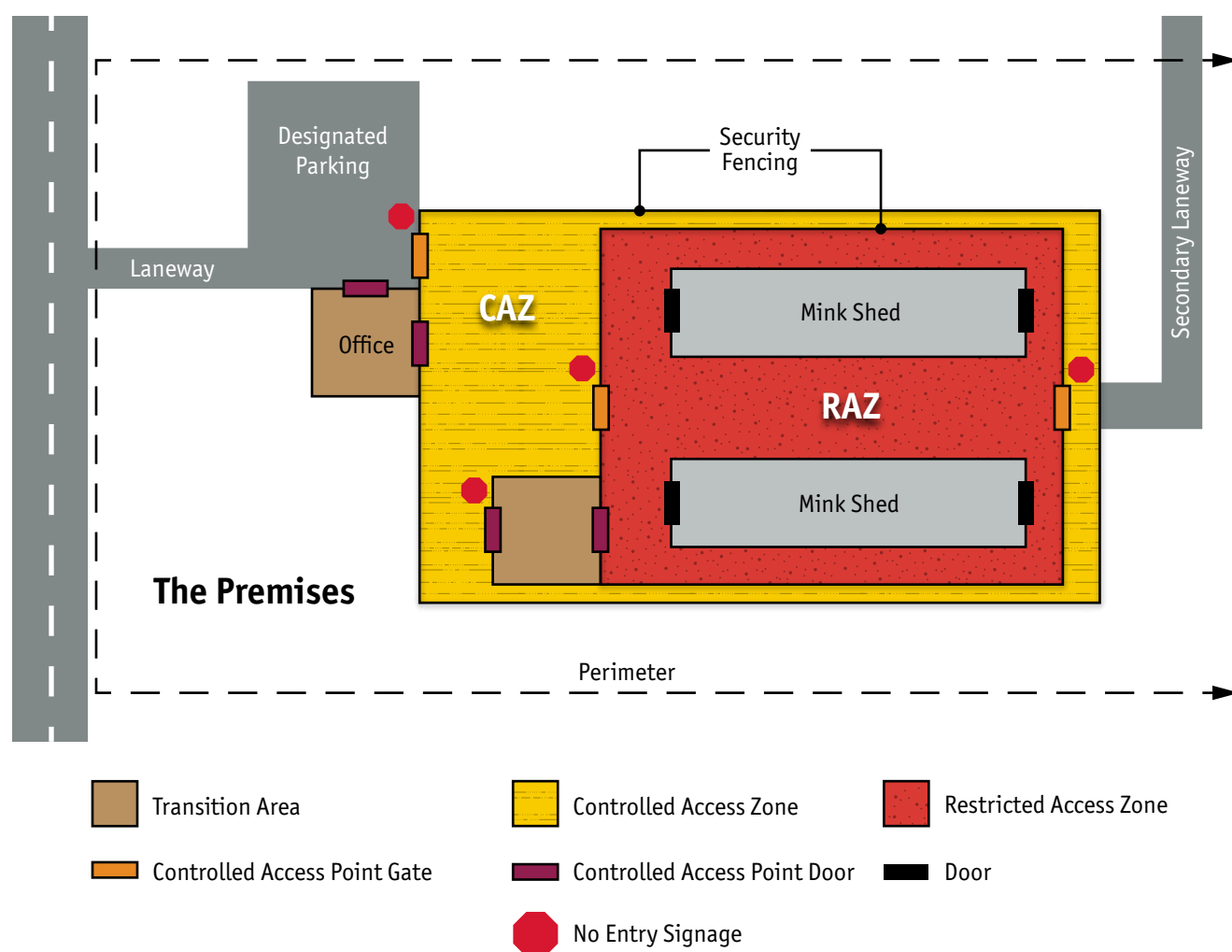
The “controlled access zone” (CAZ) refers to the area of land and buildings constituting the mink production area of the premises that is surrounded by a security fence and only accessible through a securable controlled access point. A CAZ restricts the access of visitors, vehicles, equipment, and animals (including wildlife) at the perimeter of the mink production area. The CAZ may include mink sheds/housing areas, the feed kitchen, feed storage areas, supply storage, and waste storage (manure, compost, and carcass storage). The CAZ should exclude personal residences to minimize unnecessary access by family and visitors.

### 3. Establish a Restricted Access Zone

A restricted access zone (RAZ) controls access to the mink sheds or areas where mink are housed and should include the feed kitchen. Consider this area a fortress where only essential personnel may enter, wearing clean biosecure clothing. Including the feed kitchen in the RAZ minimizes access to and possible contamination of feed ingredients and feed. It is practical in that it allows free movement within the zone when feeding; if the feed kitchen is located outside the RAZ, additional biosecurity measures are required to move between the mink and feed kitchen.

Figure 1 presents an example that highlights the concepts in implementing premises, CAZ, and RAZ biosecurity zones on the premises. The Producer Guide includes additional site plan examples and potential approaches to implement biosecurity zones for more complex operations that integrate feed manufacturing and pelting processes.

*FIGURE 1—Biosecurity zones for mink premises, CAZ, and RAZ*



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The sample site plan (Figure 1) identifies three biosecurity zones for the premises (i.e. outside the CAZ), the CAZ, and the RAZ. Key features include

- a. primary and secondary access points where the secondary access point or laneway is used for waste removal and mink shipments, while the primary access point is used for everything else;
- b. parking for staff and visitors, which is located outside the CAZ;
- c. an office where visitors sign in for possible entry to the transition area and the CAZ;
- d. security fencing of the CAZ and the RAZ;
- e. controlled access points and transition areas that meet biosecurity protocols to enter the CAZ and/or the RAZ; and
- f. doors, with signage, used as barriers to the CAZ and the RAZ, for managing access at the controlled access points by staff and visitors.

### 1.1.2 Target Outcome

#### **Biosecure zones and controlled access points are easily identified.**

Compliance with biosecurity measures is enhanced by ensuring staff and visitors can easily identify what areas of the premises they can and cannot access and what measures are required to enter biosecure areas.

## 1.2 Entry, Movement, and Exit Protocols – Control

### 1.2.1 Target Outcome

#### **Staff and visitors understand and respect site biosecure zones and comply with procedures for movement.**

Biosecure zones are used to create areas where the spread of microbial pathogens can be reduced by employing biosecurity measures. The zones are only effective at minimizing the transmission of infectious pathogens if measures to prevent this transmission are applied when moving between and within zones.

### 1.2.2 Target Outcome

#### **Biosecurity procedures are required for (and complied to by) staff and visitors entering and exiting the CAZ and RAZ.**

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Procedures are necessary to reduce the transmission of microbial pathogens by staff and visitors into and out of the mink production and housing areas on clothing, footwear, and the person. This may be accomplished by

- wearing clean outer clothing that is dedicated to the zone or wearing disposable cover-ups/ coveralls that are specific to that zone;
- wearing clean boots that are dedicated to the zone, or rubber boots that can be easily cleaned and disinfected between zones, or boot covers; and
- sanitizing hands.

These measures are extremely important to prevent the accidental transmission of disease agents.

### 1.2.3 Target Outcome

**Staff and visitors wear appropriate personal protective biosecurity clothing/equipment and practise strict biosecurity procedures when performing duties which either cross multiple biosecure zones and/or involve significant exposure to microbial pathogens.**

Developing and implementing appropriate biosecurity standard operating procedures (SOPs) is critical when performing tasks that involve direct contact with materials with an increased risk of exposure to microbial pathogens such as the following:

- manure
- mink that are found dead
- mink carcasses and fat from pelting

The protocols to follow and the protective biosecurity equipment to use must prevent contamination of the individual and the production area, and avoid direct or indirect transmission of microbial pathogens to live animals.

### 1.2.4 Target Outcome

**Controlled access points (CAPs) have the necessary equipment and materials to implement biosecurity procedures.**

The requirements established for entry and exit at each zone dictate the equipment and materials that must be provided for staff and visitors to comply. This may include, but is not limited to, clean boots and coveralls, boot cleaning, and disinfecting materials, hand sanitizers, and paper towels.

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## **Access Management Key Points: Biosecure Zones and Movement Protocols**

Keep mink secure from strangers, visitors, and wildlife by controlling access to the sheds and farm and by establishing protective zones and implementing movement controls:

- a. Control entry to the mink housing and other production facilities on the farm site.
- b. Use barriers and signage or other readily visible indicators to alert visitors that they require the producer's permission to enter.
- c. Use dedicated on-farm clothes (i.e. not worn off the farm) to improve biosecurity.
- d. Provide visitors with protective clothing; at a minimum, supply boot covers and clean outerwear for visitors to put on before entering the RAZ and to take off when leaving the RAZ.
- e. Provide and require the use of equipment and supplies to wash or sanitize hands at the entrance of sheds.
- f. Provide and maintain an area at the entry of the CAZ and RAZ with the necessary equipment and supplies to clean and disinfect boots (i.e. a transition area with a boot wash).
- g. Ensure the entrance to the farm site and / or CAZ can be closed in the event the farm needs to be locked down.
- h. Locate designated parking for staff and visitors outside the CAZ.
- i. Install and maintain a properly constructed security fence that is designed to prevent the escape of mink and access by wildlife, feral animals, and escaped farmed mink.



## Section 2: Animal Health Management

### Animal Introduction, Movement and Removal

#### 2.1 New Animals – Buy Clean

Many diseases, including ringworm, Aleutian disease, and even genetic diseases such as hereditary tyrosinemia can be brought onto a farm. The purchase of diseased and subclinically infected mink is one of the most significant methods of disease introduction.

Purchase breeding replacements or new genetic stock only from reputable breeders who disclose all potential health problems and who follow and document current science-based Aleutian disease control/eradication programs. Ideally, these programs would be developed collaboratively by industry and veterinary specialists (private practitioners and academia) and implemented at an industry level.

##### 2.1.1 Target Outcome

**Obtain new breeding stock from reputable breeders with healthy herds; verify herd health and, when warranted, treat new breeding stock with booster vaccinations and for other health issues such as injury during transport and parasites.**

It should always be an objective to obtain healthy breeding stock from reputable breeders to minimize the possibility of introducing disease pathogens to farms from outside sources.

#### 2.2 Scheduling Animal Movements

Every time new mink are introduced or resident mink are moved, there is the opportunity to introduce and transmit microbial pathogens by people, animals, birds, equipment, and supplies.

##### 2.2.1 Target Outcome

**Limit the frequency of new mink introductions and movements of all mink to reduce opportunities for the transmission of microbial pathogens.**

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Newly acquired mink pose a significant opportunity for disease introduction, affecting the health of the herd and the microbial pathogen load on the premises. Infected mink can shed microbial pathogens; however, not all infected mink may appear clinically ill, and this can occur

- early in the course of an illness before clinical signs appear;
- when the microbial pathogen only causes mild illness; and/or
- after a mink appears to have clinically recovered from an illness, but may still be shedding pathogens.

### 2.2.2 Target Outcome

#### **Maximize downtime between mink groups on the premises and in the housing area.**

The microbial pathogen load can be reduced in the absence of a host to maintain it. Downtime, leaving pens and sheds empty, allows for the natural reduction in numbers of disease-causing pathogens within the herd/housing area and for appropriate removal of organic material and a thorough cleaning and disinfection process.

To maximize microbial pathogen reduction in pens/sheds, the area that has been emptied should be clearly separated from other housing areas that contain live mink to avoid cross contamination and re-contamination. Although the full turnover of mink on a premises (all in – all out) is unlikely to occur, mink sheds or areas within the shed should be cleaned, disinfected, and left empty for two to three weeks whenever mink are moved.

### 2.2.3 Target Outcome

#### **Practise strict biosecurity measures when handling mink.**

Mink pens provide a secure environment that can mitigate the contact by mink with infected animals and contaminated people, equipment, and materials. Handling exposes mink to a much broader array of risks – the contamination and microbial pathogens encountered by these people, equipment, materials, and other animals. The pelting process poses a risk for shedding microbial pathogens, and thus care must be taken to ensure breeding animals are not exposed.

## 2.3 Isolation Procedures – Stay Clean

Separating activities by time, carefully planning the procedures, having designated equipment and areas, along with effective biosecurity procedures, are critical to ensuring that isolation procedures are effective.

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### 2.3.1 Target Outcome

**Each premises has a sufficient number of pens to physically isolate new mink arrivals from the main herd, and has isolation procedures to minimize the transmission of microbial pathogens.**

Many mink diseases can be introduced by the introduction of new animals. Isolation areas are critical to ensuring the health of the mink herd. The isolation period provides an opportunity to determine animal health by observing mink for clinical signs of illness, conducting tests, and administering treatments if warranted. Monitoring the herd from which the animals were acquired during this isolation period provides additional information on potential health risks to which the new mink may have been exposed. Upon completion of the isolation period, the newly purchased animals may enter the main herd when they meet the established herd health criteria.

#### **Animal Health Management Key Points: Animal Introduction, Movements, and Removal**

##### **BUY CLEAN and STAY CLEAN**

- a. Ensure new mink are healthy by sourcing from reputable suppliers that apply and document sound medical and biosecurity practices in their herds.
- b. Reduce the opportunity for disease introduction by limiting the frequency of mink introductions and movements.
- c. Maximize downtime on the site and between mink groups.
- d. Practise strict biosecurity when handling, catching, and moving mink.
- e. Ensure all sites have a sufficient number of pens to isolate new mink.
- f. Apply isolation procedures for all new mink arrivals, whether newly purchased or moved between producer-owned farms.



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# Monitoring and Maintaining Animal Health and Disease Response

**Knowing the disease status of the herd** is critical to recognizing whether an important disease condition is present on the farm and in initiating a prompt and effective response. Early diagnosis and disease surveillance help to contain the microbial pathogen in the event of an infectious or reportable animal disease (Reportable disease).

## 2.4 Animal Health Monitoring and Maintenance

### 2.4.1 Target Outcome

**Individuals who monitor animal health are knowledgeable in mink health, in recognizing disease symptoms, and in response protocols.**

Essential for effective disease monitoring and response protocols is having the knowledge and experience in identifying ill health in mink, including changes in appearance, behaviour, and activity. Staff members are not expected to diagnose the disease – this is the responsibility of the herd veterinarian and veterinary diagnostic laboratories. Staff, however, should know when something is wrong and what response protocols to follow.

### 2.4.2 Target Outcome

**Daily procedures for animal health monitoring are followed and records of vaccination, illness, treatments, and mortalities are maintained.**

Many factors may negatively affect animal health. These include, but are not limited to, infectious diseases, genetic diseases, management practices, and climatic conditions. To protect mink health and welfare, early detection of infectious disease is critical in preventing the spread of microbial pathogens. It allows for an appropriate response, reduces the extent and severity of a disease outbreak, and minimizes contamination of the premises.

Daily animal health monitoring provides the ability to promptly identify, investigate, and resolve health and management problems. Animal health records provide more accurate data than relying on memory and enhance the ability to identify disease trends, review previous health issues, and determine the success/failure of treatments and herd health programs.

### 2.4.3 Target Outcome

**Animal health monitoring increases following the addition of new mink, illness in the herd, or industry disease alerts.**

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The frequency of animal health monitoring must be increased when there is a heightened risk of disease transmission.

#### 2.4.4 Target Outcome

**The detection of ill health in the herd results in an appropriate response.**

Appropriate responses to evidence of disease may include animal isolation until the resolution of illness and infectivity, treatment, culling, euthanasia, or other interventions occur.

#### 2.4.5 Target Outcome

**Each farm establishes and implements a herd health program, in consultation with a veterinarian.**

Determining the cause of disease facilitates control and treatment plans, increasing their effectiveness and reducing expenses.

Veterinarians receive extensive training in many disciplines, including, but not limited to, disease identification, the appropriate methods of sample collection, and submission to a veterinary diagnostic laboratory.

Vaccines are available to protect mink against some important diseases, though they do not provide complete protection to the herd. Some vaccines are capable of preventing clinical disease, whereas others reduce the severity or extent of a disease, but none provide full herd protection against a disease outbreak.

Vaccination of ill or compromised animals can reduce the efficacy of the response to vaccination.

Depending on the animal health status, vaccinated animals require at least three weeks to develop protective immunity. Vaccinating new mink just prior to their addition to the herd is ineffective. Mink farmers should carefully review their vaccination policies with their veterinarian to optimize protection for the herd.

#### 2.4.6 Target Outcome

**Escaped and released farmed mink and wild mink that are captured are not permitted entry into the farm site.**

Mink that have either escaped or been released from the farm site can be directly exposed to microbial pathogens through contact with wild mink, mink from other farms and wildlife, and/or indirectly exposed through contact with a contaminated environment. These mink, if caught, should not be brought back onto the farm due to the risk of transmitting microbial pathogens to the remaining herd.

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Wild mink that are inadvertently caught and returned to a mink farm pose a similar health risk. They should be dispatched according to applicable federal, provincial, and municipal government regulations.

When there is a substantial escape or release of mink from a farm, capture and re-entry to the herd may be considered. The herd health status will be compromised, and a plan will be needed to establish the health of the mink, returning the farm to a biosecure status.

## 2.5 Animal Health Response

### 2.5.1 Target Outcome

**The recognition of unusual clinical signs, clinical signs consistent with serious infectious diseases, and/or high mortality rates trigger a response that includes farm lockdown and seeking a diagnosis.**

To mitigate the risk of transmitting disease pathogens from a potentially infected premises to other mink farms in the area, immediately implement a farm lockdown. The elements of a farm lockdown include

- preventing entry to the farm of all non-essential personnel;
- notifying industry members, neighbours, organizations, and authorities about the issue;
- instituting enhanced biosecurity measures for feed and other necessary input deliveries;
- restricting the movement of people, animals, equipment, vehicles, and other materials off the farm; and
- seeking a diagnosis.

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## **Animal Health Management Key Points: Animal Health Monitoring and Response**

- a. Know the clinical signs of poor health in mink and the appropriate disease response measures.
- b. Monitor animal health, and maintain records at least daily.
- c. Maintain a daily mortality log, and perform regular monitoring of all mink.
- d. Increase animal health monitoring during periods of increased disease risk.
- e. Obtain the advice of veterinarians on implementing a herd health program.
- f. Do not allow escaped mink to re-enter the farm premises.
- g. Implement enhanced biosecurity to prevent the spread of a disease when unusual clinical signs or high mortality is observed.
- h. Lockdown the premises by restricting deliveries, shipments, and the movements of animals, equipment, vehicles and people; and by notifying industry suppliers and neighbours.



## Section 3: Operational Management

# Mortality, Manure, Garbage, and Waste Management

## 3.1 Mortality Management

Producers should assume all dead mink are contaminated with microbial pathogens and require handling in a manner that ensures disease pathogens are not spread to other mink on the premises or to other farms.

The proper handling of dead mink is an important biosecurity principle; recommended practices include

- providing appropriately designed storage and disposal facilities for dead mink to ensure physical isolation from the herd and to prevent access by scavengers and pests;
- following an accepted method of dead mink disposal; and
- following a SOP for the daily collection, handling, and recording of dead mink found on the farm.

Most infectious pathogens survive for considerable amounts of time in the carcasses of dead mink. Bacterial, fungal, and some parasitic agents will actually replicate and increase in numbers. Rodents, flies, and other scavengers with access to these carcasses can spread disease pathogens across the farm, to neighbouring farms and to wildlife.

### 3.1.1 Target Outcome

**When dead mink are stored temporarily prior to disposal, storage should be in a dedicated storage facility and in a manner that prevents unintended access and the transmission of microbial pathogens.**

The temporary storage and final disposal of dead mink must comply with federal, provincial, and municipal government regulations. The process to dispose of dead mink includes prompt collection, removal to a contained temporary storage if used, and final disposal by an approved method such as composting, deadstock collection/rendering, incineration, burial, or by another approved method.

The temporary storage facility should be located away from the mink production areas (i.e. sheds, feed kitchen, and pelting areas) and should be designed to prevent pests and scavengers from gaining access to the dead mink.

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### 3.1.2 Target Outcome

**Daily procedures are established and implemented for the collection and removal of dead mink from the production area.**

Dedicate specific equipment to high-risk activities, including dead-mink collection, storage, and disposal. When this is not feasible, clean and disinfect equipment prior to use for other tasks.

### 3.1.3 Target Outcome

**Dead mink are disposed of in a manner that minimizes the transmission of microbial pathogens and in accordance with applicable government regulations.**

The disposal of dead mink must comply with federal, provincial, and municipal government regulations.

## 3.2 Manure Management

Manure is a source of pathogens and must be properly handled, stored, and disposed of to minimize pathogen transmission. Some microbial pathogens can remain infectious in the environment for years.

### 3.2.1 Target Outcome

**Manure is handled, stored, and disposed of in a manner that minimizes the transmission of microbial pathogens.**

Locate manure storage and disposal away from the production area or off-site. Any equipment – for example, tractors, wagons, shovels, and wheelbarrows – used in this process should either be dedicated equipment or be cleaned and disinfected before their use for other tasks. Immediately clean up manure spills during handling and removal and, when necessary, clean and disinfect tools, equipment, and the area to prevent the spread of microbial pathogens.

## 3.3 Garbage and Waste Management

### 3.3.1 Target Outcome

**Garbage is handled, stored, and disposed of on each premises in a manner that minimizes the transmission of microbial pathogens.**

Contain and store garbage in sealed containers prior to disposal to prevent pest access and possible microbial pathogen spread.

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### 3.3.2 Target Outcome

**Pelting and processing waste is handled, stored, and disposed of in a manner that minimizes the transmission of microbial pathogens.**

The pelting process generates a considerable amount of waste that the farm must handle and dispose of. This waste includes the mink carcass after the pelt is removed, fat from the pelt, and sawdust or similar material that is used during this process, and other packaging and handling garbage. The disposal of pelting and processing waste must comply with federal, provincial, and municipal government regulations; examples of approved methods may include composting, rendering, incineration, or burial.

#### **Operational Management Key Points: Mortalities, Manure, Garbage, and Waste**

- a. Properly handle, store, and dispose of mortalities, garbage, and pelting waste to effectively reduce the risk of transmitting microbial pathogens on and off the premises.
- b. Comply with federal, provincial, and municipal government regulations regarding mortality, carcass and manure storage, and disposal.
- c. Establish a mortality collection and disposal system on each premises.
- d. Promptly collect dead mink in leak-proof containers for subsequent removal to a temporary storage area or disposal location.
- e. Ensure mortality, garbage, and pelting waste storage and disposal areas are designed to prevent scavenging by wildlife or pets.
- f. Ensure mortality, garbage, and pelting waste storage prevents exposure of mink and other animals to microbial pathogens.
- g. Ensure staff wear appropriate biosecurity clothing and follow biosecurity protocols during the pelting process and when handling manure, mortalities, and garbage.
- h. Collect, store, and dispose of manure, garbage, and pelting waste in a biosecure manner.

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## 3.4 Water Management

### 3.4.1 Target Outcome

**Water, to meet the physiologic needs of mink (drinking and misting), is tested at least annually and treated as necessary to ensure it meets water quality standards for livestock consumption.**

Water quality is affected by many things including pH, mineral content and contaminants such as microbial pathogens and chemicals and may cause illness in mink. Surface water – such as in ponds, creeks, and rivers – used for drinking and/or misting should be treated so that it meets water quality standards for livestock consumption.

### 3.4.2 Target Outcome

**Where feasible, closed water sources and closed drinking/delivery systems are used to supply water to meet the physiologic needs of the mink.**

Water systems, such as a municipal water supply, are routinely tested, treated, and under pressure, preventing contamination from entering the system. Closed delivery and drinking systems provide added assurances of water quality. Deep drilled wells can offer added protection from surface contamination.

### 3.4.3 Target Outcome

**Water lines, nipples, and cups are regularly maintained and sanitized.**

Biofilm and scale contribute to poor water quality by

- interfering with water flow;
- reducing consumption because of reduced palatability;
- decreasing the effectiveness of antibiotics and medications added through the drinking system; and
- harbouring microbial pathogens, resulting in elevated levels/counts of bacteria, and other pathogens in water.



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## Operational Management Key Points: Water

Drinking water for mink should be free of contamination and meet water quality standards for livestock consumption:

- a. Use drilled well or municipal water supplies, closed drinking systems, and nipple drinkers where feasible.
- b. Treat surface water if used to supply water for drinking and/or misting.
- c. Test water quality at least annually.
- d. Treat the incoming water, and clean and disinfect the water system, if required.

### 3.5 Feed Management

Feed quality for mink should be maintained at the best possible standards to provide proper nutrient levels and to minimize microbial load. Managing the time, temperature, handling and storage of feed ingredients, and final feed product is a critical component of maintaining a healthy herd.

Mink feeds have the greatest variability of any livestock feed in terms of the variety of ingredients, nutrient content, and bacterial quality. Mink farmers may not know how feed or individual feed ingredients were obtained or handled prior to arrival at the farm.

Feed and feed ingredients may become contaminated by biological, physical, and chemical contaminants at their source during manufacturing, transport, storage, and feeding.

Feed that includes poultry and livestock offal are inherently contaminated with many types of bacteria and often a variety of viruses. Bacterial and toxin contamination of mink feeds, such as *Salmonella* and botulism, continues to be a concern and is often a result of contamination of source feed ingredient materials and their exposure to temperatures that promote bacterial growth.

#### 3.5.1 Target Outcome

**Feed is of the highest nutritional quality available, which supports the health and development of mink.**

The goal is to ensure that feed contains appropriate nutrient levels for mink with negligible biological, chemical, and physical contaminants.

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### 3.5.2 Target Outcome

**Feed ingredients and feed are treated/processed to maintain quality and safety when necessary.**

Raw animal products and by-products, if improperly handled, are susceptible to contamination and rapid bacterial growth.

Adding acids to feeds and using ensiled ingredients are examples of how feed can be treated to minimize bacterial growth.

Animal proteins and fats, even when held at low temperatures, can degrade. This process can negatively impact food quality and the health of mink. Some microbial pathogens can continue to grow at low temperatures. The storage and turnover of some raw product feed ingredients is time-sensitive.

### 3.5.3 Target Outcome

**Feed and feed ingredients are stored at temperatures that maintain quality, safety, and that minimize the growth of microbial pathogens.**

Delivered feed or feed ingredients that are not being used for the current day's feed production must be cooled and/or frozen as soon as possible to reduce potential bacterial/pathogen growth. Once mixed, stored feed should be kept cool to reduce pathogen growth until shipped or fed. If not being frozen for future delivery, wet feed should be fed out within 48 hours of mixing due to the rapid growth of pathogens when the temperature cannot be controlled. During warmer weather, all feed not stored under refrigeration should be used daily as pathogens multiply more quickly at higher ambient temperatures.

Unconsumed feed should be removed from the pens. In warm weather, unconsumed feed should be removed daily.

To prevent the potential spread of disease pathogens on-farm, the practice of re-feeding unconsumed feed is discouraged, as it can quickly spread disease to other mink. Collect unconsumed or waste feed, and temporarily store in sealed containers until disposed of in accordance with federal, provincial, and municipal government regulations. This may include processes such as composting, burial, or rendering.

### 3.5.4 Target Outcome

**Feed ingredient and feed storage areas are designed, and procedures are implemented, to minimize disease introduction and spread. Feed preparation and storage areas, feed mixing, grinding and handling equipment are well maintained and personnel adhere to strict sanitation protocols to prevent contamination of feed ingredients and feed.**

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Contamination of feed ingredient and feed with microbial pathogens is a serious threat to the health of mink. Pathogens can spread through contact of clean feed with previously contaminated feed-handling equipment and storage containers, or by personnel who handle feed and do not observe strict hygiene procedures.

In the event of an emergency disease situation, feed delivery companies should initiate emergency/heightened biosecurity protocols.

### 3.5.5 Target Outcome

**On-farm feed kitchens, feed-ingredient delivery and storage areas, and the feed storage and shipping area are designed and managed as a controlled zone (i.e. RAZ or CAZ) to minimize the transmission of microbial pathogens and feed contamination.**

On-farm feed kitchens, especially those supplying feed to multiple mink farms, pose a significant risk for the transmission of microbial pathogens and the chemical, biological, and physical contamination of feeds. The site where the feed kitchen is located is at high risk for potentially introducing microbial pathogens, which may be transmitted to the farm on contaminated clothing, equipment, and vehicles. In turn, microbial pathogens may be transmitted to other mink farms that receive contaminated feed products.

In addition, due to the nature of raw feed ingredients and their bacterial load, there is a potential of microbial pathogen contamination through the delivery, handling, and storage of feed ingredients, and the feed manufacturing process.

A properly designed feed kitchen significantly mitigates these risks; however, procedures must be relied upon to ensure feed quality when the location and design compromise biosecurity. Designating the feed kitchen as a RAZ and controlling its access (to select areas) by people, equipment, and vehicles limits potential pathogen introduction or spread. Following proper sanitation procedures reduces any potential introduction or spread of pathogens from this area.

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## Operational Management Key Points: Feed

Supplying mink with quality feed is the goal of every mink producer. Procedures are in place for feed kitchens and feed delivery personnel to minimize the risk of pathogen transmission between farms.

- a. Good manufacturing practices are in place in all feed and feed ingredient storage and processing areas.
- b. The feed production area is considered a RAZ, and all biosecurity precautions entering and leaving a RAZ are followed.
- c. Feed ingredient and feed storage facilities are well-maintained and functional.
- d. Proper feed ingredient and feed-handling practices are in place, which include maintaining and sanitizing feed equipment.
- e. Proper timing of handling, storage, processing, and feeding of feed ingredients and mixed feed will reduce potential pathogen growth.
- f. A program to monitor the bacterial levels of feed ingredients and finished feed is in place in all feed production areas.
- g. Biosecurity procedures are developed for feed delivery to feed kitchens, which include flexible scheduling, use of personal protective equipment and truck sanitation, in the event of an infectious disease event.

## 3.6 Bedding

### 3.6.1 Target Outcome

**Bedding material is obtained and stored in a manner that minimizes contamination by microbial pathogens and chemical contaminants.**

Source bedding from reputable suppliers. Ensure that the bedding is clean, dry, and free of contaminants, including terpenes and other resins present in some coniferous tree wood. Store bedding in a manner that prevents contamination, ensuring that it remains clean and dry. Require pest control in bedding storage areas to prevent contamination with feces from rodents, raccoons, feral cats, and other wildlife.

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### 3.6.2 Target Outcome

**Bedding material in nest boxes is properly maintained; it is changed between cycles, after illness, and when soiled.**

Soiled or contaminated bedding will support the growth of pathogens and attract pests, resulting in the exposure of all mink, but especially kits, to high levels of pathogens.

#### Operational Management Key Points: Bedding

- a. Purchase bedding that is free from contaminants.
- b. Store bedding to ensure that it is kept clean and dry.
- c. Keep the bedding storage facility doors closed.
- d. Include the bedding storage facility in the farm pest-control program.
- e. Handle clean bedding material in a biosecure manner.
- f. Provide a healthy environment for mink by monitoring bedding condition, and adding or changing bedding routinely, or as required.
- g. Remove old or soiled bedding material from the production area to the waste storage area.

## 3.7 Premises, Building, Equipment, and Vehicle Sanitation

### 3.7.1 Target Outcome

**Premises, building, equipment, and vehicle sanitation procedures are in place to minimize the introduction, harbouring and transmission of microbial pathogens.**

Sanitation procedures that are applied to all areas of the farm and to vehicles and equipment that come onto, off of, or move around the premises can break the cycle of microbial pathogens. When disease is encountered, proper sanitation procedures allow for farm cleanup, thus protecting mink from disease hazards.

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### 3.7.2 Target Outcome

**Ensure that new buildings and equipment are designed to allow appropriate cleaning and disinfection.**

As important as cost and design, ease of cleaning and disinfection should be considered prior to purchasing equipment and building structures. Sanitation plays an important role in the health of the mink herd and can require significant time and effort.

#### Operational Management Key Points: Premises & Sanitation

- a. Carry out cleaning and disinfection procedures when mink sheds and facilities are empty.
- b. Clean facilities first by removing visible organic material, and then use a cleaning solution to wash or foam/rinse remaining organic material and biofilm.
- c. Select a proper disinfectant for the problem pathogens that the farm has encountered, and use only on facilities that have been properly cleaned.
- d. Follow the manufacturer's recommendations in mixing and applying the disinfectant solution.
- e. Recognize that facility and site design should enhance the drainage of water away from the production area.
- f. Inspect and maintain facilities, fences, gates, doors, and pens to prevent pest entry and mink escapes.

### 3.8 Pest/Pet Control

Pests are a potential source of microbial pathogens for mink. There are methods to control each class of pest.

Cats and other pets can carry and may spread microbial pathogens. If dogs and cats are allowed on-farm, they should be properly vaccinated and monitored for health. Feral cats should not be allowed on mink farms.

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### 3.8.1 Target Outcome

#### **An integrated pest control program is in place to control pests.**

An integrated pest control program is designed to control multiple pests.

#### **Operational Management Key Points: Sanitation and Pest Control**

- a. Pests, dirty equipment, and vehicles can transmit disease and must be managed appropriately by sanitation and pest control programs.
- b. Poorly constructed and maintained buildings can provide access and refuge for pests, resulting in the accumulation of microbial pathogens and pests on-site.
- c. Use humane methods of pest exclusion by focusing first on making mink housing, feed, and bedding areas “pest proof.”
- d. If prevention measures fail, use lethal methods of pest control, in consultation with pest control experts, to ensure the safety of mink, people, pets, and non-target species.
- e. A well-designed and constructed security fence is an important biosecurity measure in excluding many pests.

## 3.9 Biosecurity Program and Training

### 3.9.1 Target Outcome

#### **All people who work on the premises know and understand the rationale and importance of biosecurity and biosecurity protocols.**

It is important for all management and staff to receive biosecurity training and briefing before working with mink, ensuring they understand their own tasks and have general knowledge of all aspects of the process.

People who understand the purpose and importance of a biosecurity measure are more likely to adopt the practice as part of their daily routine. They are also more likely to ensure that visitors and service providers follow on-farm biosecurity practices.



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### 3.9.2 Target Outcome

**All people who work on the premises have reviewed the biosecurity-related instructions as needed, based on their assigned tasks.**

The best way to ensure farm staff – including family members, if applicable – are clear on how to complete their assigned tasks in a biosecure manner is to have written procedures that are reviewed with them and updated when necessary.

A SOP must be easy to read while describing the steps followed to meet an objective; for example, an SOP that details feed and feed ingredient handling and feeding practices. SOPs should be readily available, reviewed regularly, and followed at all times.

In the event of a disease outbreak, provisions for additional or more rigorous biosecurity measures either on the premises or within the region are included.

Mink producers, who do not employ staff and carry out all activities on the premises themselves, still need to document their procedures. Written records will help to ensure the biosecurity measures are implemented and can serve as a guide to farming procedures when temporary staff are required or if a health problem occurs with the producer or staff.

#### **Operational Management Key Points: Biosecurity Program and Training**

- a. Recognize that management and staff are more likely to implement biosecurity when they understand its importance.
- b. Facilitate the learning and implementation of biosecurity for staff by developing written procedures for common tasks and ensuring the staff understands them.
- c. Provide biosecurity training for farm staff, family, service providers, and visitors.
- d. Keep a record of deviations that occur concerning the farm's biosecurity procedures.





## Appendices

### A: National Farm-Level Mink Biosecurity Standard Glossary

**Access point:** A visually defined entry point(s) through which traffic, such as farm staff, equipment, and delivery trucks will enter the premises, the CAZ, and/or the RAZ.

**Additional biosecurity measures:** A level of biosecurity required for mitigating situations wherein recommended practices cannot be followed (i.e. recommended may be an “all in/all out” system). Where this is impossible, as for a multi-age premises, implement extra biosecurity precautions.

**Biosecurity program:** A set of preventive measures designed to reduce the risk of transmission of microbial pathogens or infectious diseases. Biosecurity programs are intended to minimize the introduction and spread of pathogens or diseases to, or from, farms by implementing on-farm practices for access, animal health, and operational management.

**Carcass:** The remains of mink harvested for pelts. (Refer also to “Dead mink.”)

**Clean:** Free of any visible accumulation of organic matter and debris.

**Controlled access point (CAP):** A visually defined entry point with a restrictive barrier to control entry of traffic, such as farm staff, equipment, and feed trucks that will enter the premises, the controlled access zone (CAZ), and/or the restricted access zone (RAZ). It contains a transition area (TA) where procedures designed to minimize microbial pathogen spread can occur.

**Controlled access zone (CAZ):** The area of land and buildings, constituting the mink production area of the premises that is accessible through a securable controlled access point.

**Dead mink:** Mink that are found dead or are euthanized for a medical condition. (Refer also to “Carcass.”)

**Disinfection:** The application of a physical or chemical process to a surface for the purpose of destroying or inhibiting the activity of disease-causing micro-organisms.

**Disposal (carcasses and dead mink):** The final removal of mink carcasses and dead mink by means approved by the appropriate regulatory authorities; examples of approved methods may include rendering, composting, incineration or burial.

**Downtime:** A period of time when a shed or area within a shed is empty, starting with a shed or area being emptied of mink and ending with the placement of mink into the shed or area. It allows for the natural reduction in numbers of disease-causing micro-organisms within the shed area. The effective period can be reduced by cleaning at the beginning of the period.

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**Feed kitchen:** An on-farm facility that is used for the production of mink feed and that may supply multiple mink producers.

**Feral cats:** cats (*Felis catus* – domestic housecat) that have reverted to living in a wild state.

**Feral mink:** Escaped mink or mink descended from farmed mink that are now living in the wild.

**Gate:** A moveable barrier used to control access to an area such as a fence to close a gap or across a laneway to restrict entry.

**Herd:** A group of mink managed as a distinct population.

**Infection:** Entry and development or multiplication of an infectious agent in the body of mink, humans, or other animals and birds.

**Isolation:** The practice of keeping mink physically separate from other mink – a practice that is usually performed for new, recaptured, or sick mink. The isolation period may be temporary or permanent.

**Lockdown:** Lockdown is established to prevent the escape of a disease from the farm or to limit a disease from entering the farm. In times of disease emergencies or disease outbreaks, a farm may restrict access to the farm premises by closing and locking gates, or by placing barricades to stop vehicles, locking doors to the CAZ and RAZ, and disallowing any visitors to the farm. Only necessary deliveries would be allowed onto the farm, with complete sanitation of delivery vehicles entering and exiting from the farm.

**Microbial pathogens:** Biological agents, such as a bacteria (including *Mycoplasmas*), viruses, fungi or protozoa which have the potential to cause disease.

**Mink:** All farmed mink reared or kept in captivity for breeding, the production of fur, or to supply breeding mink.

**Mink shed:** Any structure that encloses mink for fur-farming purposes.

**On-farm:** Pertaining to activities carried out on the farm.

**Pathogen:** An agent capable of causing disease.

**Pest:** Any insect, animal (excluding companion animals), or bird that may potentially come in contact with farmed mink that is undesirable due to the risks of the transmission of microbial pathogens.

**Premises:** A parcel of land with a continuous property boundary and defined by a legal land description or, in its absence, by geo-referenced coordinates, on which, or on any part of which, farmed mink are raised, kept, assembled, or disposed of. Interchangeable with the terms “farm” or “farm site.”

**Protocols:** Effectively a code of conduct, defined procedure to be followed.

**Reputable breeder and/or suppliers:** The ability to substantiate the characteristics and quality of their production system (i.e. verifiable quality assurance). When purchasing live animals, consider the validation of health status, herd health history, and test results to support health status.

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**Reportable disease:** Animal diseases that are identified under federal or provincial acts and regulations that are controlled or regulated to prevent their spread.

**Restricted access zone (RAZ):** An area inside the CAZ that is used, or intended for use, to house mink, including fenced shed areas or enclosed sheds, and where personnel and equipment access is more restricted than in the CAZ. The RAZ is sometimes referred to as the Production Area or Restricted Area (RA) in other mink production documents and guides.

**Sanitation procedures:** procedures to reduce the number, infectivity, and survivability of microbial pathogens to promote health. This may be achieved by thoroughly cleaning and disinfecting surfaces such as equipment, pens, and boots, or by applying personal hygiene such as handwashing or hand sanitizers.

**Security fence:** A permanent barrier that is used to enclose an area, such as a CAZ or RAZ, to control entry or exit. It is also known as a perimeter fence or guard fence.

**Shed:** Any structure that houses mink.

**Shed area:** Fenced or unfenced area that mink sheds occupy.

**Standard operating procedure (SOP):** Documented procedure based on generally accepted good practices that describe in detail the steps followed to meet an objective; for example, a SOP that details the shed cleaning and disinfection procedure.

**Target outcome:** The goal that all keepers of mink aim for to protect their mink from the introduction and spread of disease.

**Transition area (TA):** An area where biosecurity procedures can occur for movement between the farm-site entry area (parking), CAZ, and RAZ.

**Unconsumed feed:** Leftover feed or feed distributed to mink that remains uneaten during the feeding period and is still of acceptable quality. (Refer also to “Waste feed.”)

**Vector:** Any living carrier that has the potential to transport an infectious agent from an infected individual to a susceptible individual, its food, or immediate surroundings.

**Waste feed:** Feed that must be disposed of; this may include spoiled or contaminated feed or feed that has been contaminated and unconsumed after its distribution to mink. (Refer also to “Unconsumed feed.”)

**Zone:** A defined geographical area with boundaries and implemented biosecurity procedures that create a defined health status.

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## B: National Farm-Level Mink Biosecurity Standard: Advisory and Management Committees

The Standard's development benefited from comment and direction that were provided by the following members of the Advisory and Management Committees:

### **Mink Biosecurity Advisory Committee**

- Dr. Arnost Cepica, Associate Professor, University of Prince Edward Island / Atlantic Veterinary College
- Nancy Daigenault, North American Fur Auctions (NAFA)
- Dr. Gord Finley, Veterinary Animal Health Consultant
- Jeff Gunn, Mink research – Nova Scotia Agricultural College
- Gary Hazlewood, Executive Director - Canadian Mink Breeders Association (CMBA)
- Dr. Bruce Hunter, Professor Emeritus, University of Guelph, Ontario Veterinary College (OVC)
- Paul Mauer, American Legend Cooperative (ALC)
- Tom McLellan, mink producer
- Jeff Mitchell, mink producer
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