



**International Feed Industry
Federation**

Biosecurity Guidance for Feed Mills



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Abbreviations and acronyms

AFIA	American Feed Industry Association	HEPA	High-efficiency particulate absorbing (filter)
ANAC	Animal Nutrition Association of Canada	IFIF	International Feed Industry Federation
FAO	Food and Agriculture Organization of the United Nations	SFMCA	Stock Feed Manufacturers' Council of Australia
FEFAC	European Feed Manufacturers' Federation	SOP	Standard operating procedure
GMP	Good manufacturing practices	WHO	World Health Organization

Glossary

Additives	Any intentionally added ingredient not normally consumed as feed by itself, whether or not it has nutritional value, which affects the characteristics of feed or animal products. micro- organisms, enzymes, acidity regulators, trace elements, vitamins and other products fall within the scope of this definition depending on the purpose of use and method of administration (FAO, WHO, 2008a).
Animal By-products	Products of animal origin that are not for consumption but are destined for industrial use (e.g., hides and skins, fur, wool, hair, feathers, hooves, bones, fertiliser).
Animal products	Meat, meat products and other products of animal origin (e.g., eggs, milk) for human consumption or for use in animal feed.
Biosecurity	A strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) that analyse and manage risks in the sectors of food safety, animal life and health, and plant life and health, including associated environmental risk.' (FAO 2007)
Clean	To remove materials by any method.
Contaminant	Any substance not intentionally added to food or feed for food producing animals, which is present in such food or feed as a result of the production (including operations carried out in crop husbandry, animal husbandry and veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or feed, or as a result of environmental contamination. The term does not include insect fragments, rodent hairs and other extraneous matter (FAO, WHO, 2019a).
Contamination	the introduction or occurrence of a contaminant in feed or food or the feed or food environment.
Control Zone	A declared area in which the conditions applying are of lesser intensity than those in a restricted area (the limits of a control area and the conditions applying to it can be varied during an outbreak according to need).

Declared Area	A defined tract of land that is subjected to pathogenic agent control restrictions under emergency animal pathogenic agent legislation. Types of declared areas include restricted area, control area, infected premises, dangerous contact premises and suspect premises.
Decontamination	Includes all stages of cleaning and disinfection. It is rare that 100% decontamination can be attained or proved in field situations.
Disinfection	The application, after thorough cleaning, of procedures intended to destroy the infectious or parasitic agents of animal pathogenic agents, including zoonoses; applies to premises, vehicles and different objects that may have been directly or indirectly contaminated.
Disinfectant	A chemical used to destroy or inactivate pathogenic agents on inert surfaces.
Feed	Any single or multiple materials, whether processed, semi-processed or raw, which is intended to be fed directly to food producing animals (FAO, WHO, 2008a).
Feed Mill	Includes the receipt, storage, and production areas, as well as the staff amenities and offices. Adjoining roads and laneways, hard stand areas and maintenance areas also form the feed mill.
Feral Animal	A domesticated animal in a wild state, especially after escape from captivity.
First Expiry – First Out	This is a program where those goods with the earliest expiry date are used first to ensure product does not degrade.
Good Manufacturing Practices	A series of procedures in a branch or sector in which the standard of conduct is laid down (often with respect to hygiene and safety).
Ingredients	A component part or constituent of any combination or mixture making up a feed, whether or not it has a nutritional value in the animal's diet, including feed additives. Ingredients are of plant, animal or aquatic origin, or other organic or inorganic substances (FAO, WHO, 2008a).
Inputs	Any product or good that is put in, taken in, or operated on by any process or system.
Manufactured Feed	Any feed which has undergone a manufacturing, treatment or mixing process.
Pathogenic Agent	An infectious microorganism such as bacterium, virus, protozoan, prion, viroid, or fungus that can cause disease.
Pest/Pest Animal	Animals or insects that can cause damage to crops, food supplies and also transmit diseases.
Property	The property is the land on which the feed mill is located and may include other land used for purposes other than feed milling. In some instances, the boundary of the feed mill and the boundary of the property may be the same.

Response Action Plan	A plan of actions to covers the period between the time an emergency animal disease is first suspected by the mill, and the time of confirmation or clearance of the pathogenic agent or pest.
Traceability/product tracing	the ability to follow the movement of a food through specified stage(s) of production, processing and distribution. (FAO, WHO, 2019a).

About this guidance

This biosecurity guidance outlines best management practice that should be followed wherever possible and practicable to achieve the following objectives:

- protect feed mill operations against the entry of pathogenic agents and subsequent spread to animal operations.
- minimise the incidence and spread of microorganisms of public health significance.
- minimise the incidence and spread of microorganisms and pests that may impact national or international trade.

This guidance details measures which aim to meet the above-mentioned objectives. These measures cover areas of risk common to all feed mills and consider appropriate measures to minimise these risks. By implementing these measures, feed mill operators benefit by reducing the risk of pathogenic agents and pests in the feed mill. They also mitigate the risk of transmitting pathogenic agents to and between farms, customers, and producers. A prerequisite of a successful biosecurity system along the animal feed chain is that they should be aligned with national legislation and practices.

The approach taken is to treat the feed mill as a system that has inputs and outputs and several procedures which are used to turn the inputs into outputs. There are also several activities that should be undertaken to ensure the system is in order and operating to a standard that meets stakeholder requirements, such as government regulations or feed safety programs. These standards set the minimum requirements for a feed mill, however there may be additional practices required by customers that will need to be negotiated between the parties as to extra or higher standards being applied.

Disclaimer: This guidance document does not constitute legal advice. You are advised to consult your regulatory or legal advisors in developing specific policies or in responding to specific problems. Please also note that laws vary significantly in different countries, so make sure to consult with applicable legislation.

Comments and suggestions are welcome. You can contact IFIF at info@ifif.org.

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Introduction

Biosecurity is defined as:

'a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) that analyse and manage risks in the sectors of food safety, animal life and health, and plant life and health, including associated environmental risk.' (FAO 2007).

It is acknowledged that the effectiveness of a biosecurity system in the animal supply chain requires that every person involved should take all reasonable steps to ensure they do not introduce or spread a pathogenic agent. In several countries, the government has legislated that every person has a responsibility for biosecurity. This includes restricting movements of and containing a pathogenic agent or restricting movements of animals, plants, soil and equipment that could carry a pathogenic agent. This obligation or duty also applies to feed mill employees and contractors. Senior management (or feed mill managers) should demonstrate their commitment to biosecurity by providing sufficient resources to enable employees to practice good biosecurity protocols.

This guidance document has been produced as a tool to assist feed mills in translating biosecurity practices into operating procedures and work instructions. Feed manufacturing and delivery is a fundamental part of the production chain and having good biosecurity practices in this area will help to reduce the risk of pathogenic agent spread.

Feed mill hygiene is essential not only for feed quality and safety, but also for biosecurity. Biosecurity in the feed mill refers to the measures put in place to protect animals against exposure to pathogenic agents via the manufacture and delivery of feed. It also aims to limit the spread of these pathogenic agents within the animal and, in the case of zoonotic pathogenic agents, human populations. Infectious pathogenic agents, whether they cause clinical (obvious) or subclinical (hidden) disease, significantly reduce the productivity, profitability, and long-term financial viability of animal production.

A series of steps could be taken to help maximize biosecurity in feed mills (Stewart et al 2019):

1. **Assess biological hazard risk:** Feed manufacturing facilities should take a proactive approach to understanding biological hazards for their own operations and the security of their customers. The biosecurity procedures employed by a specific feed mill may not be the same as other feed mills depending on the customers they serve (species specific) and the optimum mitigation strategies that are implemented.
2. **Define protocols to minimise entry of hazard into the feed mill:** The most important part of a feed mill biosecurity plan is to minimise hazards from entering the feed mill. Identifying and eliminating high risk ingredients and suppliers, minimising entry via people and equipment, covering all open points of entry when not being used, and other strategies can be used to minimise hazard entry into the feed mill.
3. **Utilise mitigation strategies to minimise risk:** Not all hazards can be prevented from entering the feed mill and consequently mitigation strategies should be considered. The best option is to identify the mitigation strategies that are effective against the specific hazards of concern and consider a combination of point-in-time mitigants as well as those that have residual effectiveness for continued protection through the remainder of the feed supply chain. Some mitigation strategies have multiple benefits. As an example, dust collection not only creates a safer and better environment for the workers but can also eliminate a major point of contamination. Mitigation strategies, in particular those based on chemical treatment of feed, should be performed in full compliance with national legal requirements of the country of destination.
4. **Decontaminate the feed mill:** While it is extremely difficult to completely accomplish, a feed mill decontamination strategy should be developed and should include a combination of physical cleaning, chemical cleaning, disinfection and, if applicable, the use of high heat as the final step. Chemical cleaning and disinfection should be performed in full compliance with national legal requirements.

Transmission of pathogenic agents

Pathogenic agents can be spread in many ways including via:

Animals

- wild birds
- rodents e.g., rats and mice
- feral animals including predators
- domestic animals including livestock, poultry and pets
- insects
- products that include ingredients of animal origin e.g., processed meats, meat and bone meal

People (via hands, boots, clothing, or hair)

- feed mill and farm personnel
- family members living on site
- customers – producers who collect, transport and utilise feed
- truck drivers
- contractors, maintenance personnel and service personnel
- visitors and neighbours

Vehicles and equipment

- utilities, front-end loaders, trucks
- veterinary equipment
- spray packs
- tools

Air

- as an aerosol e.g., dust, bacteria, viruses, moulds

Feed and water supply

- feces from avian or other pest animal species
- raw materials used to produce feed e.g., prohibited materials
- post-production contamination or spoilage during transport and storage
- bacteria and mould in poor quality ingredients or damaged feed
- pollutants and infectious micro-organisms

Good Manufacturing Practices (GMP) and Feed Safety

Many of the practices detailed in this manual may already be covered, in part or in whole, within the [FAO/IFIF Manual Good Practices for the Feed Sector](#) (FAO and IFIF. 2020) as part of feed mill's current feed safety programs.

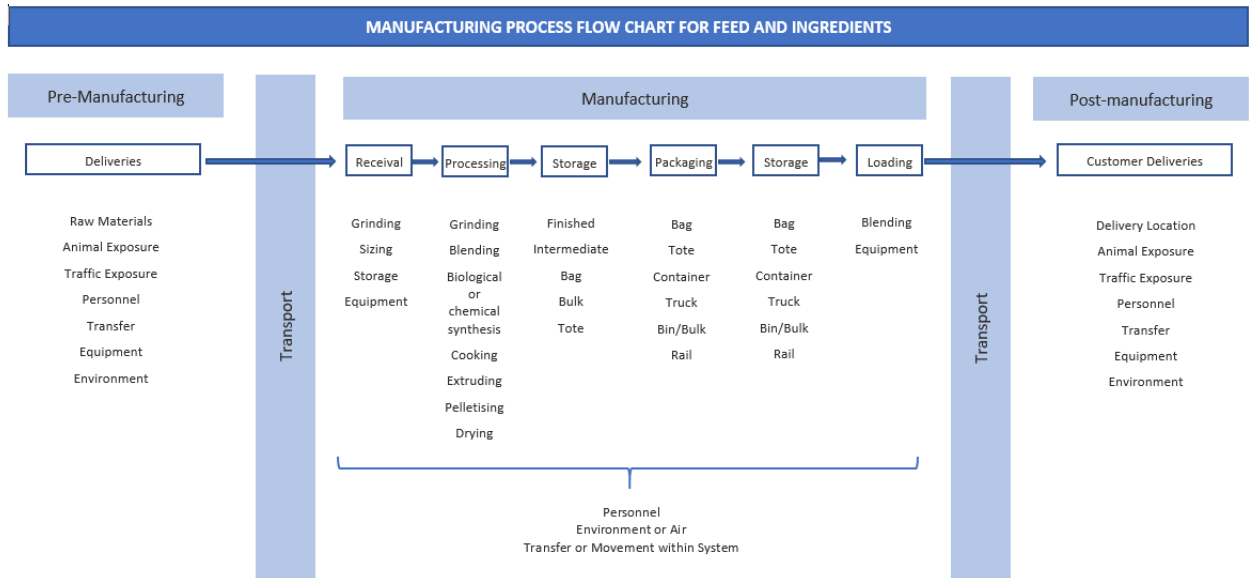
Management practices employed will vary from site to site. It is important then, that a risk assessment be conducted for each enterprise to establish the level of risk that exists in each phase of operations at that site and to identify and implement control measures appropriate to these risks.

When undertaking the risk assessment to determine the feed mill-specific biosecurity measures, it is important to consider all factors that may impact on sound biosecurity arrangements. These factors include:

- size of the operation
- location and layout of the property and feed mill
- cleaning tools or implements
- sources of water supply
- feed ingredients and additives (domestic and international supply)
- species the produced compound feed is intended for

- pathogenic agent status of the region in which the feed mill is located and the region from which products are sourced
- proximity of the feed mill to animal production sites and the type of wildlife present around the mill
- customer/supplier interactions (pick-ups, service, trades, industry personnel, contractors, deliveries of animal and feed, etc.)
- customer requirements
- any other operational management considerations

Points of exposure for a feed mill (AFIA, 2019)



Levels of biosecurity

Routine biosecurity procedures

These procedures should be implemented and followed daily. They give a high degree of assurance that pathogenic agents and pests will not be carried into the feed mill and will reduce the risk of transmission between production runs. These should be seen as the minimum requirements for industry.

Action plan for suspected or detected pathogens

Each owner/manager should develop an *Action Plan for Suspected or Detected Pathogenic Agents* which establishes and documents clear guidelines regarding the circumstances when a report needs to be raised alerting relevant authorities to a suspected emergency animal disease event (e.g., an unusual appearance of suspicious products, contaminants or pathogenic agents (e.g., *Salmonella*) in feed inputs, reports of clinical signs of disease in target animals) and who should be informed. If an emergency animal disease is suspected, movements on and off the feed mill and the property should be ceased where possible and special precautions should be taken. Appendix 1 provides an example proforma for such a document.

High risk biosecurity procedures

In the event of an outbreak of an emergency animal disease (exotic or serious endemic pathogenic agent), high risk biosecurity procedures will often be implemented under the guidance of the relevant government authority. Additional biosecurity measures should be in place:

- Deliver to infected farms last.
- Use vehicle wash down facilities if available before and after entering the farm.
- Wear additional biosecurity PPE.

The nature and extent of the emergency should be communicated to the relevant authority, for prompt action, to minimize the potential for adverse public health events.

Routine biosecurity procedures

Manage Inputs

The most effective component of a feed mill biosecurity plan is the prevention of entry of hazards.

1. Potable water

Objective: To ensure that water used in the feed mill is of a suitable quality to minimize feed and equipment contamination.

- 1.1 The use of a suitable water supply is important for good biosecurity. The water for use in feed processing should be potable (WHO Guidelines for Drinking-water Quality, 2017) and free from physical, chemical and biological contaminants. In general, water with a high level of organic matter or micro-organisms is unsuitable. It may be necessary to seek expert advice to ensure a safe water supply.
- 1.2 Seek expert advice on water treatment options if water testing shows the available water to be of unsuitable quality.
- 1.3 If water treatment systems are used, the system should be regularly monitored and tested to ensure effectiveness.
- 1.4 The treated water supply should be kept in a closed system from the point of treatment to the point of use.

2. Purchase of feed inputs

Objective: To manage the introduction and movement of grains, roughages, additives and feed ingredients in a way that minimises the risk of introducing or spreading pathogenic agents and pests.

- 2.1 Develop a supplier approval program that includes specific requirements for the ingredients being purchased. This may also include verification of ingredient-supplier protocols and on-site manufacturing facility reviews and assessments. Communicating your safety expectations to your ingredient supplier is an important step in minimizing the entry of a biological hazard.
- 2.2 Purchase feed inputs from preferred and approved suppliers that maintain an effective quality assurance program which includes a biosecurity component.
- 2.3 Feed ingredients should be sourced through an approved supplier that meets the feed mill's biosecurity and feed safety standards.
- 2.4 Ensure feed commodities meet the countries legislation regarding chemical residues and contaminants and fit the requirements for the purpose of feeding animals.
- 2.5 Undertake a risk assessment of all products being purchased. The following questions will support the assessment:
 - a. Where does it come from?
 - b. Are there animal pathogenic agents or pests of concern in the region the product is sourced from?
 - c. What production methods were used e.g., broadacre using mechanical harvesting or small household, organic or synthetic fertilizers?
 - d. Is it bagged in clean new or recycled bags?
 - e. If bulk product, what was carried in the truck in the loads prior to this delivery?
 - f. What biosecurity protocols are implemented by 3rd party/supplier trucking companies (i.e. spraying tires, dedicated in/out from high-risk premises such as renderers)?
 - g. How long since the product was manufactured?

3. Receiving of feed ingredients

Objective: To manage the receiving of feed ingredients in a manner that minimises the risk of contamination of feed whilst being received.

- 3.1 Delivery vehicles carrying feed ingredients should provide a signed declaration of cleanliness before loading and identity of the previous load(s). Any vehicle carrying feed ingredients should not have carried products, in the previous load(s), that may contaminate the feed (e.g., chicken litter, municipal waste, animal-based fertilizers, or any material whose use as feed is prohibited).
- 3.2 Delivery vehicles should have mud, dust, dirt and manure removed from the underbelly (including wheel arches, mud flaps, tailgate) before entering the premises or drive-over covers put in place before unloading into grain pits. Delivery vehicles that pose a risk should not be admitted into the feed mill area.
- 3.3 On site visual checks are to be conducted to verify the cleanliness of vehicles entering the site. The frequency of checks should be in accordance with individual company risk ratings.
- 3.4 Feed spills should be cleaned up as soon as practicable. Spilt and spoiling feed attracts pests and vermin to the feed mill.
- 3.5 Minimizing the contamination of feed when unloading in drive-over pits is important in controlling pathogenic agents (e.g., use funnels, socks, etc.).
- 3.6 All feed ingredients should be inspected as part of the receiving process.
- 3.7 A risk-based monitoring program should be established at delivery with a focus on those feed ingredients that present the highest risk in relation to a specific pathogenic agent (e.g., Salmonella).
- 3.8 Product delivered in reused bags is of a higher risk than the same product in new bags. Product should not be accepted if in reused bags from regions (domestic or international) with known pathogenic agent risks.
- 3.9 Traceability of ingredients is an essential element of a functional biosecurity plan; maintaining records that document information such as the date of receiving, time, lot number, allows for a quick response if a pest or pathogenic agent is suspected. It also allows for product recall.

4. Manage the movement of personnel

Objective: To minimise the risk of introduction and spread of pathogenic agent or contaminants by feed mill personnel

- 4.1 Feed mill personnel should wear laundered clean clothes each day at the commencement of their work. The clothes should not have been in contact with animals before starting work. Personnel should change clothes after decontamination of machinery and equipment.
Some businesses do not allow the ownership of certain species at home as this could be a source of pathogenic agents. If this is the case, a Personal Declaration has been included at Appendix 2.
- 4.2 Feed mill personnel should not take protective clothing and footwear that are worn in the feed mill outside the feed mill unless cleaned prior to re-entering the feed mill. They should only be worn in the feed mill area and removed prior to exiting. This approach is required as the protective clothing and footwear are the most likely method of pathogenic agents being spread by personnel.
- 4.3 Feed mill personnel should be aware of areas where there is higher risk of contamination. If it can be avoided, employees working at receiving raw materials, should not be loading trucks with finished product.
- 4.4 Hands should be washed and disinfected on entering and leaving the feed mill.

- 4.5 Food should be consumed in designated areas to minimise the potential of feed being contaminated and attracting pests/vermin.

5. Manage the movement of visitors, contractors, suppliers and other service personnel

Objective: To minimise the risk of introduction and spread of pathogenic agent or contaminants by contractors, suppliers, service personnel and visitors.

- 5.1 Ensure visitors comply with essential biosecurity practices for the site as there is the potential for the introduction and transmission of pathogenic agents by visitors.
- 5.2 Wherever possible, control the access of visitors/suppliers to the designated feed mill area. Signage will play an important part in ensuring procedures and risks are reinforced to visitors.
- 5.3 Ensure that all visitors entering the feed mill are directed to a designated meeting place away from the main production/receiving/loading areas, preferably the office, before access is allowed to the main feed mill area.
- 5.4 Maintain a register of visitors and vehicles (including contractors) to the feed mill (Appendix 3) which could include a record of:
- date
 - time in
 - name(s)
 - company
 - contact number
 - motor vehicle registration number
 - signature
 - biosecurity risk assessment
 - date/time of last contact with farmed animals
 - time out
- 5.5 Assess all visitors (including contractors and auditors) entering the feed mill for their biosecurity risk prior to being granted access to the feed mill complex and surrounds. The risk assessment should consider the potential for visitors to have been previously exposed to a pathogenic agent and the subsequent potential for them to introduce a pathogenic agent into the feed mill (Appendix 4).
- 5.6 Those visitors allowed to enter the feed mill should follow the same hygiene procedures as employees.

6. Manage the movement and use of equipment

Objective: To minimise the introduction of pathogenic agents and contaminants into the feed mill through the movement of equipment.

- 6.1 Employees and contractors can use their own tools and personal equipment (e.g., laptops, cameras, or phones), noting the equipment should be cleaned, ensuring it is free of organic matter.
- 6.2 Educate feed mill employees of the potential for introduction and transmission of pathogenic agents by borrowed/hired or second-hand equipment.
- 6.3 Wherever possible, the same equipment should not be used for handling feed and waste. If equipment is to be used for multiple purposes, then it should be washed and disinfected between uses to ensure that waste does not contaminate feed commodities.
- 6.4 If any equipment is taken into the production area(s), it needs to be assessed as to its risk and washed and disinfected prior to entry and exit as required.

7. Manage the movement and use of vehicles

Objective: To minimise the risk of site contamination due to the movement of vehicles

- 7.1 Educate feed mill employees of the potential for introduction and transmission of pathogenic agents by visiting vehicles and machinery.
- 7.2 The entry of non-feed mill vehicles, machinery, and equipment into areas of the feed mill beyond the specified delivery areas should be limited.
- 7.3 There should be a designated parking area for vehicles not entering the production area.
- 7.4 All visitors should park their vehicles outside the production area unless it is essential that the vehicle be taken on site, e.g., maintenance contractors. All vehicles (this can include wheelchairs, etc) and machinery entering the feed mill area should be directed to specified locations and delivery areas within the feed mill.
- 7.5 If any vehicle is taken into the production area(s), it should undergo a risk assessment, prior to entry as determined by the production manager.
- 7.6 Trucks containing animals, animal products, or vehicles loaded or contaminated by other organic commodities that aren't destined for use at the feed mill should not be admitted into the feed mill area.
- 7.7 Consider a designated wash area for disinfection or fumigation of wheels/vehicles before entry into the parking area where relevant.

Manage Production Practices

8. Storage of ingredients

Objective: To minimise the risk of contamination of feed ingredients whilst being stored prior to use.

- 8.1 Store ingredients and additives in a manner that reduces contamination by animals (e.g., vermin, insects, wildlife, feral and domestic animals), other feed types, dust, condensation, waste, and other sources of contamination.
- 8.2 Feed spills should be cleaned up as soon as practicable. Spilled and spoiling feed attracts pests and vermin to the feed mill.
- 8.3 The integrity of the feed ingredients should be maintained during storage, with adequate procedures in place to minimise cross contamination. Products subject to restrictions in relation to pathogenic agents should be stored in accordance with government regulations.
- 8.4 Label feed ingredients clearly and correctly, separate according to the intended use and store according to the manufacturer's instructions.
- 8.5 Store feed ingredients in a dry and raised off the ground to avoid growth of mold (e.g., store ingredients on pallets off the floor).
- 8.6 First-in-first-out and "first-expiry-first-out" programming should be used to ensure ingredients don't get bypassed in the feed mill.

9. Manage pests and vermin

Objective: To minimise the potential for introducing infectious and pathogenic agents by pests and vermin through their presence in the production and storage areas.

- 9.1 Implement and maintain a pest and vermin control program. This should include protocols to ensure the bait stations are numbered, secure and tamperproof with a map kept of the stations' locations.
- 9.2 Bait stations should be checked in accordance with the pest management plan and fresh baits set as required.
- 9.3 Records should be kept of each inspection and pest activity noted (see Appendix 5). Employees/managers should review historical activity reports as part of a trend analysis of pest and vermin activity. Adjustments to the pest and vermin control program should be made based on this analysis.
- 9.4 Bait stations should be placed away from areas where contamination of feed products can result.
- 9.5 Toxic baits should not be permitted in the production, receival or load out areas. Only approved, fit for purpose baits are permitted to be used. Grain/pellets or powder baits should not be used due to high potential for contamination of other product.
- 9.6 Where shooting is undertaken, non-toxic ammunition should be used.
- 9.7 Wherever there is a significant risk from pests, access points should be proofed against their entry. Doors should be kept closed whenever possible and should be close-fitting and proofed against pests when closed. Ensure doors, screens and windows are in good repair and close securely and are kept closed when not in use.
- 9.8 Buildings should be kept in good repair and condition to minimise pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access should be kept sealed wherever possible. Where sealing is not possible, measures such as wire mesh screens should be in place to reduce the possibility of pest entry.

10. Manage feral animals and wildlife

Objective: To minimise the risk of site and feed ingredient contamination by managing feral animals and wildlife.

- 10.1 Educate feed mill employees of the potential for introduction and transmission of pests and pathogenic agents by feral animals and wildlife.
- 10.2 Where possible, the potential for introduction and transmission of pathogenic agent and pests, feral animals and/or wildlife should be minimised through control mechanisms (i.e., bird deterrent spikes on roofs and ledges, physical barriers around the feed mills).

11. Site standards

Objective: To minimise potential sources of contamination onto the site through people, pests, raw materials, vehicles and equipment.

- 11.1 The site should be secure with all access points controlled. This will assist in minimizing exposure of the feed mill to wildlife, feral animals and vermin.
- 11.2 Roadways should be maintained regularly to minimise any puddles, mud and dust.
- 11.3 The hardstand in both the receiving and load out areas should be clean and free of rubbish, mud, dust, feed, grain or animal matter (including bird and rodent faeces) to minimise possible contamination of raw materials and finished feed.
- 11.4 To avoid cross contamination, traffic flow for incoming (receiving) and outgoing (load out) traffic should be separate.

- 11.5 Maintenance operations should not present any hazard to the integrity of production. As much as possible, maintenance should be conducted between production runs. All hardware should be removed in the clean-up.
- 11.6 Site should be maintained in a clean and hygienic condition with cleaning procedures and schedules in place. Line surveys should be conducted regularly as verification that feed mill hygiene practices are working.
- 11.7 Cleaning and/or flushing of all equipment should be conducted regularly, as per site hygiene procedures and risk levels.
- 11.8 Grass on and around the feed mill site should be kept cut; long grass attracts rodents and favors the survival of viruses, fungi, moulds and bacteria.
- 11.9 Waste and scrap materials, old pallets, or other materials which can encourage, and harbour rodents should be removed from the proximity of the building(s).
- 11.10 Waste bins should be kept covered and emptied frequently.
- 11.11 Dikes/ditches should be monitored for pooling and water and a program to remove standing water implemented.

12. Feed manufacturing process

Objective: To minimise the risk of feed contamination during the manufacturing process.

- 12.1 Feed movement should flow in one direction to minimise the risk of contamination. If due to the design of the feed mill and surrounds this is not possible then risk mitigation steps should be assessed, recorded and, if possible, implemented.
- 12.2 Procedures to minimise the cross contamination of feed mixes should be in place. This may include sequencing, regular cleaning, dedication of lines and flushing schedules. Records should be kept.
- 12.3 Different pieces of equipment in feed manufacturing will require different levels and frequency of cleaning. A cleaning schedule should identify equipment and the cleaning requirements and frequency. Compliance with the schedule, including verification of the cleaning effectiveness should be monitored. The required frequency will vary with the feed being produced and the ingredients being used. Mitigation strategies that may be possible in some feed mill systems may not work in others because of differences in facility design and equipment, manufacturing operations, and other associated risk factors.
- 12.4 Where appropriate and/or required by national law, certain feed safety control procedures (e.g., *Salmonella*) should be followed as per individual site protocols. This may include:
- Higher manufacturing temperature for certain feeds.
 - Use of substances that reduces contamination or minimise recontamination.
 - The post-pelleting cooling area should have especially high cleanliness standards. This phase of production presents the highest risk of feed contamination.
 - Where air is used for conveying or cooling, there should be a regular evaluation of the risk of this air becoming a fomite for pathogenic agents. Any precautions to minimise contamination should be taken (e.g., filters, HEPA).
- 12.5 Ensure legislation regarding the feeding of prohibited material to certain species is adhered to. This includes any material that may contain or may have been in contact with prohibited feed materials of animal origin, including the flushings. Ensure labelling requirements are met.
- 12.6 Limiting and controlling dust created during manufacture should be a priority, as it can serve as a vector for pest and pathogenic agent transmission as well as for general hygiene purposes.

- 12.7 Assess the reuse of grain cleaner and dust collection materials, including those from the unloading process. It has been well established that dust and other screened particles can act as a carrier for pests and pathogenic agents. Attention should be paid to the method of dust removal.
- 12.8 Cleaning of the interior and exterior of equipment is required regularly.
- 12.9 Tests for total bacteria or any other indicator pathogens of feed ingredients, finished feed products and environmental plant surveys to ascertain systems are effective.

Training, planning and recording

13. Training

Objective: To ensure awareness and training of all feed mill employees in all relevant biosecurity requirements.

- 13.1 All personnel involved in the manufacture, storage and handling of feed and feed ingredients should be adequately trained and aware of their role and responsibility in ensuring adequate biosecurity. Biosecurity training should be provided to all staff annually and to new staff when on-boarding. Conduct regular employee refresher trainings or as need arises (e.g., following a breach of biosecurity protocol).
- 13.2 Ensure that all employees involved in the daily monitoring and handling of feed (e.g., feed receipt) are aware of the importance of the early detection of contamination (pest, pathogenic agent, chemical) and know what to do if they suspect raw materials, intermediate, or final product has been contaminated. Standard operating procedures are to be developed and put into practice.
- 13.3 All employees involved in the usage and application of disinfectants and herbicides should be competent to do so. Maintain the necessary safety data sheets for all products being used.
- 13.4 All feed mill staff, including delivery drivers, should be inducted and trained in biosecurity practices. Records of training are to be kept.
- 13.5 Periodic assessments of the effectiveness of training and instruction programs should be made, as well as routine supervision and checks to ensure that procedures are being carried out effectively.

14. Planning, documenting and record keeping

Objective: To assist in the early detection of feed contamination and the response to any biosecurity breach.

- 14.1 A sketch or map of the layout of the property should be created and kept up to date. Locations such as the production area, sheds, paddocks, access roads and gates should be included.
- 14.2 Maintain records and documentation in line with other sections of this manual. Record retention times should minimally meet regional legislative requirements.
- 14.3 Each site should have an Emergency Pathogenic Agent Control Action Plan and make available a copy of the plan for all staff.
- 14.4 Receipt of product should be accompanied by commercial documentation. Product should not be unloaded until appropriate documentation is received.
- 14.5 Documentation, including batch processing records, verifying that product has been treated in accordance with established procedures should be kept.
- 14.6 All products being received will have specified sampling procedures and receipt testing in place. The results should be recorded and kept for an appropriate period.

14.7 A traceability system should be put in place for tracking ingredients (one step back) and feed movement (one step forward).

Manage Outgoing Products

15. Scheduling deliveries

Objective: To minimise the spread of pests and pathogenic agents as a result of feed deliveries.

15.1 The order of deliveries should be carefully considered to minimise contamination. Some factors to consider include:

- Schedule deliveries to breeders first
- Schedule deliveries based on age of livestock (youngest to oldest)
- Schedule deliveries based on risk profile (low risk profile to high risk profile)

15.2 Establish and maintain a disease status log for livestock production locations where feed is delivered. This informs a hierarchy of delivery based on disease status or delivery routes to be avoided.

15.3 Communication between feed mills, external contractors, and clients regarding any known pathogenic agent outbreaks is paramount when scheduling delivery routes.

15.4 During times of high-risk feed delivery, such as during a pathogenic agent outbreak, truck routes should be altered to avoid control zones and amended as required to avoid any known areas of pathogenic agent. Where possible avoid driving past clean farms after delivering to a known 'infected' farm. Well-defined procedures will need to be followed and deliveries may be under government control.

15.5 Movement restrictions may prohibit entry of vehicles onto sites or into regions where pathogenic agent outbreaks have been confirmed or are under investigation by government authorities. Deliveries should be approved by the responsible government in these circumstances.

16. Feed delivery

Objective: To minimise the spread of pests and pathogenic agent as a result of feed deliveries.

16.1 Drivers should commence each day in clean and appropriate work attire that has not been in contact with animals.

16.2 Drivers should follow individual on-farm biosecurity procedures, including shutting gates and keeping to roadways.

16.3 Drivers should not enter production areas (e.g., sheds or range areas).

16.4 Feed spills should be cleaned up as soon as possible and disposed of on-farm using equipment kept on farm. Records should be maintained, and notification should be made back to the feed mill.

16.5 Where available, wheel wash or vehicle wash down facilities or unload pit protection mats should be used prior to entering the farm or unloading.

16.6 Drivers should follow the direction of on-farm personnel regarding:

- a. the use of biosecurity personal protective equipment (e.g., overalls, boot covers, hair nets, gloves). All used items should be disposed of on-farm prior to leaving.
- b. the use of washing/disinfection equipment for footwear and hands prior to and after unloading feed.
- c. items that cannot be brought on-site.

16.7 In case of any feed returning to the manufacturing facility, quarantining all and assess the potential risks prior to reentry into the feed mill.

17. Delivery truck

Objective: To minimise the spread of pests and pathogenic agent due to feed deliveries.

Note: Given many feed mills and/or customers use freight contractors to move stock. Discussions should be held between the freight contractor and the purchaser of their services as to biosecurity requirements when delivering feed to site.

17.1 Delivery vehicles should be cleaned (simple cleaning or disinfection) according to a defined schedule and/or frequency. Records of method of cleaning (e.g., wash, disinfection) and frequency should be maintained.

17.2 The truck cabin should be kept in a clean and tidy condition and disinfected as required with attention to high-contact surfaces (e.g., steering wheel and pedals). This includes no rubbish, *only approved* passengers, no pets, no dust and no used biosecurity personal protective equipment.

17.3 When appropriate, trucks should use feed mill approved wash down facilities before returning to and entering the feed mill.

18. Storage of finished products

Objective: To minimise the risk of contamination of feed finished products whilst being stored prior to deliveries

18.1 Store finished feed products in a manner that reduces contamination by animal, vermin, insects, wildlife, feral and domestic animals, and other feed types.

18.2 Feed spills should be cleaned up as soon as practicable. Spilled and spoiling feed attracts pests and vermin to the feed mill.

18.3 The integrity of the feed should be maintained during storage, with adequate procedures in place to minimise cross contamination. Products subject to restrictions in relation to pathogenic agents should be stored in accordance with government regulations.

18.4 clearly and correctly label the feed, separate according to feed type and species, and according to the storage instructions provided.

18.5 Store feed in a dry and raised ground to avoid direct contact with the ground and growth of mold.

18.6 First-in-first-out sectioning should be used to ensure feed does not overstay in the feed mill.

19. Waste management

Objective: To minimise the spread of pests and pathogenic agents as a result of improper waste disposal.

19.1 Waste from feed mills should be disposed in a way that does not contaminate the feed, ingredients, or equipment.

19.2 Waste should be collected regularly and not allowed to accumulate in feed processing, handling, and other working areas.

19.3 Waste should be collected and stored in clearly identified closed bins or containers and segregated to eliminate the likelihood of accidental or inadvertent use. Waste disposal areas should be clearly marked, and types of wastes differentiated based on risk profile. Containers used to hold waste should not be used for feed or feed ingredients.

Premise design and facilities for new mills

20. Location

Objective: To select a location for the mill that does not increase the risk of contamination.

- 20.1 Potential sources of environmental contamination should be considered when deciding where to locate new feed mills, as well as the effectiveness of any reasonable measures that might be taken to protect feed.
- 20.2 Feed mills should be located away from environmentally polluted areas and industrial activities, areas subject to flooding, areas prone to infestations of pests or the presence of domestic and wild animals, and areas where waste cannot be removed effectively.

21. Design and layout

Objective: To design a feed mill that allows for discrete operations whilst maintaining high levels of biosecurity.

- 21.1 The design should ensure physical separation of activities that can create contamination.
- 21.2 The receiving and storage areas for incoming raw materials should be separated from the processing area. Likewise, feed storage and shipping areas should be separated from the processing area.
- 21.3 The design and construction of all buildings and facilities should ensure that feed and feed ingredients are protected from all potential hazards.
- 21.4 The layout should allow for adequate space for all operations and the safe storage of equipment and materials.
- 21.5 Buildings and facilities should be designed to allow easy access for cleaning, including access to the inside of relevant equipment.
- 21.6 Construction of premises should deter pests and restrict access by rodents, birds and other pests to a minimum. There should be no unprotected openings, air intakes should be appropriately located, and the roof, walls and foundation should be maintained to prevent leakage.

22. Internal structures and fittings

Objective: To construct a mill that allows for easy cleaning.

- 22.1 The internal structures and fittings (walls, doors, partitions etc) should be made of materials that are easy to clean and do not allow build up.
- 22.2 The floor type should allow for adequate drainage following spillage.

23. Equipment

Objective: To ensure all equipment can be cleaned easily.

- 23.1 All equipment should be made of materials that are easy to disassemble, clean and maintain to avoid feed contamination, cross contamination, and carryover.

24. Hygiene facilities

Objective: To ensure there are adequate facilities to maintain hygienic operations for the people that run the mill.

24.1 Hygiene facilities including means of washing and drying hands should be provided to maintain adequate personal hygiene to avoid feed contamination.

24.2 Ensure constant supply of potable water and availability of soap delivery points.

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Checklist of recommended guidelines/SOPs/protocols

Following is a list of recommended guidelines that the feed mill should develop for their operation. Below are some examples of guidelines, etc for your reference.

1. Action plan for Suspected or Detected Pathogenic Agents (Appendix 1)
2. Feed mill decontamination strategy
3. Waste management protocol
4. Personal quarantine declaration (Appendix 2)
5. Visitor and vehicle register (Appendix 3)
6. Personal hygiene guidance
7. Equipment cleaning and disinfection protocols
8. Visitor risk assessment protocol (Appendix 4)
9. Entry and exit protocols for visitors, employees, delivery trucks.
10. Pest Control Inspection and Activity Record (Appendix 5)
11. Feed and ingredient storage
12. Biosecurity training plan
13. Operations flow guidance

Appendix 1

Action plan for Suspected or Detected Pathogenic Agents

This document details the actions (and responsibilities) that are to be undertaken in the event that a suspected or detected pathogenic agent is at the feed mill.

[A] Important Contact Details

	Name	Contact Number
Property name		
Manager		
Person responsible for the Action Plan		
Government Biosecurity Officer/Veterinarian		

[B] Management Commitment

Management undertakes those unfamiliar signs of pathogenic agent/pests be investigated, and the following actions undertaken, without delay, if an emergency pathogenic agent is suspected.

[C] Action Plan

Develop an action plan allocating responsibilities to relevant personnel.

1. Contact the relevant authority

Responsibility:

2. Follow all instructions as directed by the relevant authority.

Responsibility:

3. Do not dispatch any feed/ingredients from the feed mill until authorised by the relevant authority.

Responsibility:

4. Ensure suspect feed/ingredients are isolated within the feed mill property.

Responsibility:

5. Ensure movement of all feed/ingredients within the property, and surrounds, is restricted.

Responsibility:

6. Delay or halt the delivery of all commodities.

Responsibility:

7. Secure the feed mill property perimeter, limiting access to the affected area and ensuring all vehicles and visitors only enter the farm under controlled conditions.

Responsibility:

8. Do not move personnel and machinery from affected areas unless a person's health is in jeopardy. Do not let these people or machinery leave the property until cleared by officials.

Responsibility:

9. Ensure that any animal, animal products, personnel, equipment, or machinery do not leave the feed mill property until authorised by the relevant authority.

Responsibility:

10. Compile a list of all feed and ingredients (quantities, identification, and location), personnel and machinery movements over the past seven days. Prepare a site plan that details current allocations of ingredients.

Responsibility:

11. Ensure all staff are made aware of the actions being taken and their individual responsibilities to this plan.

Responsibility:

12. Ensure that customers are advised if they are immediately affected by the delay in the supply of product.

Responsibility:

15. If an emergency pathogenic agent/pest is identified, the feed mill will follow the directions from the relevant authority.

Responsibility:

Appendix 2

Personal Quarantine Declaration

I, hereby agree to abide by MY EMPLOYER'S BIOSECURITY rules and standards.

I understand that the following quarantine rules/standards always apply:

1. No avian species are to be kept at my place of residence e.g., no poultry or birds of any type (including ostriches, aviary birds or racing pigeons). If any exemptions to this are approved by the employer, I should shower and change clothes before entering the production area.
2. No pigs are to be kept at my place of residence e.g., domesticated, or feral. If any exemptions to this are approved by the employer, I should shower and change clothes before entering the production area.
3. I will not undertake feral pig hunting/trapping activities and if I do, I will shower and change clothes and decontaminate any vehicles used in this pursuit before entering the production area.
4. No untreated animal manures from other properties are to be used at my place of residence.
5. No member of my household is to work in any area where contact can be made with poultry or pigs (for example, on other properties or at hatcheries, processing plants, by-product plants, laboratories or with pick-up crews), unless all household members shower and change clothes before commencing work, and no work clothes are kept on household premises.
6. I will not visit poultry abattoirs; pig production areas or poultry shows unless approved by my employer and appropriate quarantine measures are taken.
7. Note: that in the event of an emergency animal pathogenic agent outbreak additional quarantine/biosecurity requirements may be enforced and that employees will be notified of any amendments.

Signature: Date:

Residential Address:

.....

.....

This document is an example of what can be included in your organization's declaration. Please modify to suit your needs

Appendix 3

Visitor and Vehicle Register

Date	Time In	Name	Company	Mobile Number	Vehicle Registration	Signature	Risk Assessment Result	Time Out

This document is an example of what can be included in your organization's declaration. Please modify to suit your needs.

Appendix 4

Visitor Risk Assessment Protocol

Date: _____ Visitors Name: _____
Service or Occupation: _____ Contact Number: _____
Time In: _____ Time Out: _____
Reason for Visit: _____

Farm visitors can be classified by the risk they represent: What are you?

	Low-Risk Visitors	Come from urban areas and do not contact livestock. They present almost no risk of introducing disease No need to impose restrictions
	Moderate-Risk Visitors	Are those people that travel from farm-to-farm, but do not directly come in contact with livestock or manure Need to ensure footwear/clothing are clean
	High-Risk Visitors	Are those people that travel from farm-to-farm and work directly with livestock or manure. These people must be the most diligent with their biosecurity practices Need to ensure footwear/clothing is cleaned and disinfected or clean footwear/clothing is provided before access to animals is permitted
Comments:		

Farm Biosecurity Website: <https://www.farmbiosecurity.com.au/toolkit/records/>

This document is an example of what can be included in your organization's declaration. Please modify to suit your needs.

Appendix 5

Pest Control Inspection and Activity Record

RODENT CONTROL RECORD					
Bait Type: <input type="text"/>					
Date	Time	Bait Station Number	Activity Level	Corrective Action	Name or Initials
			<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		
			<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		
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Note: For activity level 0 = no activity. 1 = slight activity. 2 = half baits consumed. 3 = all baits consumed

Farm Biosecurity Website: <https://www.farmbiosecurity.com.au/toolkit/records/>

This document is an example of what can be included in your organization’s declaration. Please modify to suit your needs.