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Stock Feed Mill Hygiene Guideline.

This document is written to provide feed manufacturers with guidance on how they should be implementing the practices of good hygiene in their feed milling operations. These guidelines can be used to provide direction for management and staff to ensure that consistently good mill hygiene can become an integral part of the sites quality assurance program and meet the FeedSafe® requirements.

Consistently good mill hygiene can:

- Reduce potential fuel loads in the event of fire or explosion.
- Improve both our industry and individual company image to customers, suppliers, visitors and employees.
- Minimise insect, rodent and animal infestation within the mill and surrounding areas.
- Reduce potential ingredient or finished feed contamination.
- Minimise waste.
- Reduce the potential OH+S risks including accidents or illness.
- Improve productivity and increase profit.

FeedSafe® insists that feed manufacturers have to meet a number of requirements as included within the Audit Checklist. The below table refers to FeedSafe® Checklist v13.

The key to ensuring good hygiene practice is:

1. Top Management setting a culture of "Feed Safety".
2. Resourcing the equipment and personnel required to achieve hygiene standards.

GMP Condition	Audit Direction Advice
SITE	
2.1.3 Are roadways maintained in good condition, dust and mud being minimised?	*Controls need to be in place to prevent contamination of feed with dust or mud. Site hygiene needs to include plans to upgrade areas immediately leading into intake and out loading areas to prevent mud and dust cross contamination.*
STORAGE	
2.3.4 Are storage silos, bins, tanks and sheds adequately designed, cleaned and maintained so that finished product quality is not compromised?	*Refer to the SFMCA document Feed Mill Hygiene Guide and FeedSafe Mill Hygiene Training Module.*
VENTILATION	
2.4.1 Are ventilation or dust extraction units adequate to prevent accumulation within mill buildings of steam, dust and other airborne contaminants?	*Assessed through site walk through and demonstration of no accumulation of dust or condensation on mill walls, bins and equipment.*
WASTE MANAGEMENT	
2.5.1 Is waste and contaminated material controlled and regularly removed from the site?	

2.5.2 Are waste containers clearly identified and maintained to ensure waste material is contained and not incorrectly used? Where bulk or bag material is held for waste disposal, is it adequately labelled to ensure it is not incorrectly used?	
CLEANING	
2.7.1 Is there a written mill cleaning procedure and schedule?	
2.7.2 Are the buildings, grounds and machinery cleaned regularly?	*Seen through the site being in a clean and tidy condition. Need to verify based on mill cleaning records that this is an ongoing standard not just prior to audit.*
2.7.3 Is there a system to verify the adequacy of the mill hygiene program?	*Need for documented evidence that the mill is cleaned regularly and that the mill has staff assigned to cleaning. Refer to the SFMCA document Feed Mill Hygiene Guide and FeedSafe Mill Hygiene Training Module, this includes a section on verifying hygiene.*
PEST CONTROL	
2.8.1 Does the site have a written pest control management program?	*Need to produce documented evidence that there are regular pest control management steps in place for pests of concern (eg. rodents, birds, insects).*
2.8.2 Are storage areas clean and tidy and have steps been taken to minimise vermin and bird presence?	*Refer to the SFMCA document Feed Mill Hygiene Guide and FeedSafe Mill Hygiene Training Module.*
TRANSPORT	
9.2.1 Are delivery vehicles kept in clean, well maintained and roadworthy condition, and designed such that feeds can be kept dry and protected from contamination during transport and delivery?	

The following checklist questions provide more specific instruction relating to feed mill cleaning and how to help maintain good mill hygiene.

Management responsibility - Setting site culture of Feed Safety	- Does senior management set mill hygiene as a key performance indicator? - Is that "clean culture" genuinely committed to by all levels of management? - Provision of cleaning resources: equipment, planning, services, reporting time and staffing. - Do staffing levels allow for effective cleaning during normal operations? - Is there adequate cleaning equipment provided to make the task of cleaning effective, relatively easy and less time consuming? - Is there adequate provision of waste disposal services for the regular removal of site waste? - Is there a preventative maintenance schedule or program that adequately inspects and addresses issues like leaking conveyors or plant and equipment? - Is there a procedure for reporting to management or maintenance staff leaking conveyors or plant and equipment that is contributing to poor hygiene? - Does that system allow for effective rectification of issues raised? - Are hygiene standards part of performance reviews for key positions?

Allocation of capital funding	- Do budgets include funds to correct design and equipment faults contributing to poor hygiene outcomes? - Does the capital works budget include funding ventilation/dust extraction units to prevent in mill buildings of steam, dust and other airborne contaminants?
Employee duties	- Have cleaning responsibilities been clearly defined in employee work instructions? What about job descriptions? - Is there a clear understanding of what standards of hygiene are acceptable? - Have employees been trained/instructed in what is required regarding mill cleaning and hygiene? - Is the SFMCA FeedSaf® Basic Training module in Feed Mill Hygiene used as a training tool?
Hygiene verification	- Are frequent internal site inspections conducted to confirm hygiene standards are being maintained? - Is it the manager's responsibility to walk the site and ensure hygiene problems are corrected?
Employee responsibility	- Is there acceptance of a cleaning and hygiene culture? - Do employees make cleaning a part of their daily work function? Is clean-up completed as and when it happens, not left for others? - Are employees required to report equipment faults resulting in spillage and poor hygiene outcomes? - Are equipment faults promptly corrected to reduce impact on mill hygiene?
General Site	- Is the site maintained removing long grass, overhanging trees? Are items like empty pallets kept tidily in a separate area? - Are redundant plant and equipment stored away from processing facilities to ensure they do not harbour pests or cause workplace safety concerns? - Is there a program for general cleaning that will clean and remove accumulated dust and cobwebs within buildings on a regular basis? - Does an appropriately trained person spray the walls to minimise cobweb and insect infestation? - Are building gutters, downpipes and drains maintained to prevent storm water entry? - Are building floors adequately maintained to allow ease of cleaning? - Are site waste bins and containers clearly labelled and regularly emptied?
Grain and meal bulk intake and storage	- Are bulk delivery vehicles controlled and managed to prevent material spillage while on site? - Is the intake area designed to prevent or minimise dust blowing into the mill or surrounding areas? - Is the intake pit surrounds and roadway leading to the pit sealed to minimise mud and dirt being carried onto the pit? - Is the intake pit and surrounds swept to remove any residual grain or meal following each differing type of delivery? - Are bulk storage silos, bins and storage sheds regularly inspected to ensure rainwater cannot enter? - Are liquids such as fats and molasses securely stored and leakage onto surrounding mill areas is prevented?
Bagged material receival and storage	- Prior to storage are bags inspected for broken or leaking bags? - Are broken or leaking bags repaired or product rebagged prior to placing in storage? - Is there a procedure for notifying management of poorly packaged product that "often" leaks? Is this acted on by management? - Are stored bagged products regularly inspected for broken or leaking bags with prompt clean-up? - Is stock rotation in practice using "first in first out" procedures?

Milling operations and equipment	- Are there documented regular inspections of all transfer equipment to ensure conveyors, elevators, blowers, diverters, turn heads, etc. are not leaking? - Is there control of grain milling, mixing and pelleting equipment to ensure dust is controlled and not released into the general mill area? - Is there prompt maintenance to repair leaking transfer and milling equipment? Is there regular documented scheduled maintenance of all dust collectors, by an appropriately trained person? - Is there effective control of the steam generation system from supply to its use within the pellet press to prevent condensation accumulation within the mill? - Is spilt feed promptly (within hour) cleaned-up?
Mixing and Batching	- Are there regular inspections of all mixers and are decisions made and actions taken relating to frequency of mixer internal cleaning? (Internal cleaning mixers must only be undertaken with due regard and consideration to all OH+S requirements of that task including confined space and lock out tag out.) - Are there increased cleaning attention given to equipment where liquid addition takes place, especially fats, oils and molasses?
Finished Feed	- Are there regular inspections of all transfer equipment to ensure conveyors, elevators, blowers, diverters, turn heads, etc. are not leaking? - Is there prompt maintenance to repair leaking transfer, packaging and storage equipment? Is spilt feed promptly (within hour) cleaned-up?

Validating and Verifying Mill Hygiene

Validation = "Obtaining evidence that the control measures will be effective" (ISO 22000:2005). This means proving that the system you have designed will control the hazard and perform as required.

Verification = "Confirmation, through the provision of objective evidence that specified requirements have been fulfilled" (ISO 22000:2005). This means reviewing that procedures have been implemented and followed as designed.

The annual FeedSafe® audit provides an external third party viewing of the site and hygiene. This is one day each year, however there must be more regular verification that mill hygiene is maintained throughout the year. The following are suggested methods of validating and verifying the adequacy of mill hygiene that mills should consider satisfying the FeedSafe® requirement "Is there a system to verify the adequacy of the mill hygiene program?" and also "Have cross-contamination measures been validated (eg. flushing, sequencing) to ensure effective?"

The method of validating and verifying feed mill hygiene needs to be included within the sites QA program and recognised by mill staff. The results of should be presented to mill staff to provide both positive and negative feedback.

<u>Validation</u>

Laboratory Testing

Microbial sampling and testing to validate the adequacy of mill hygiene programs. Within Europe this is a compulsory requirement for feed mills, in Australia this is a tool being used more commonly. This testing is most applicable for mills manufacturing feeds where salmonella and other microbial presence is more critical. The method using laboratory testing is explained more fully in Appendix 1 of these guidelines.

<u>Verification</u>

Option 1 Use external staff

Appropriate where there is either an offsite head office or other sites where people that are not permanently located on the site can complete random site visits to verify mill hygiene. This can be included as part of the internal audit where the person looks at:

- Physical appearance including presence of dust, mud, feed spillage, waste Viewing cleaning records
- Viewing hygiene training records
- Viewing maintenance records and their relevance to addressing mill hygiene problems

Option 2 Use customers
This can be a benefit to both the mill and major customers in getting them involved in working with the mill. They can be co-opted to take part in on-going mill walks to verify the sites hygiene and records as above. Obviously, the pressure is on the mill to ensure hygiene is under control and the benefit is in strengthening the mill customer relationship. In many mills larger customers already expect and demand regular mill visits. This can be seen as a proactive step where the mill encourages this type of activity.

Option 3 Photography
Use of digital cameras can easily provide documented and dated evidence of mill hygiene work. This also provides a photographic template of what is the minimum standard for different parts of the mill.

Summary
The physical appearance of the milling site reflects on both individual manufacturers as well as the industry more generally. Poor hygiene can often be viewed from outside the mill perimeter and companies need to be aware of what their customers, competitors and the general public see when viewing the mill from outside. Added to this are site visits from customers, suppliers, work safety inspectors, council inspectors, or any number of other people.

FeedSafe® accredited manufacturing sites are required to comply with the FeedSafe® Code of GMP and are expected to maintain a higher standard than non-accredited mills and farmers mixing their own feeds.

Poor mill cleaning and poor hygiene can be seen by visitors to the site including customers and service providers as well as passers-by. This is not acceptable for a FeedSafe® Accredited Mill.

FeedSafe® accredited mills must be setting the highest possible standards in terms of mill hygiene.

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Appendix One

MICRO TESTING IN FEED MILLS – USE TO VALIDATE MILL HYGIENE
The following has been adapted from the EU testing procedures.

Feed testing for total Enterobacteriaceae contamination can be used as a marker for the general microbiological quality of the feed. The family of *Enterobacteriaceae* encompasses several genera, including the Salmonella species, Escherichia species, Shigella species and Yersinia species. Feed contaminated with Enterobacteriaceae, in particular Salmonella species, can potentially lead to a subsequent contamination of the animal carcasses and human food-borne infections. The total Enterobacteriaceae contamination of feed samples is expressed as colony forming units or cfu/gram sample.

Suggested sampling:
Sample Type: Dust is sampled as it represents a larger batch of feed i.e. it comes from multiple batches rather than a single feed batch. Scrapings are also sampled as this will come from equipment that has accumulated feed over time.
Sampling size: Minimum: 100g of scrapings or 50g pooled dust
Sample points (Pre-heat area): There are numerous potential sampling points. These need to be defined and can include the following.

- Raw material intakes, unloading pit, intake auger pits.
- Intake conveyors and elevators (bucket-elevators).
- Basements.
- Aspiration systems, sieves.
- Mixer.
- Raw material silos, ingredient bins.
- Transport vehicles.
- Raw materials.

Samples points (Post-heat area):

- Coolers, crumblers.
- Sieves.
- Out loading elevators and conveyors.
- Basements.
- Finished product silos and bins.
- Loading area, bagging area, out loading gantry.
- Transport vehicles.
- Finished product.

Analyses: Enterobacteriaceae counts, and any other microbes of concern, such as Salmonella testing.
Frequency of testing: The sampling and testing program needs to define the frequency of testing. Data collected over time can identify trends. It is recommended that 6 monthly tests are performed as a starting base, with an increase or decrease based on:

- Trends analysed.
- Out Of Specification results.
- Changes in ingredients or processes.

Microbiological Criteria Guide										
Hygiene Standard	**Acceptance**	**Grower Pig**	**Sow**	**Piglet**	**Poultry Breeder**	**Broiler**	**Layer**	**Beef**	**Dairy**	**Ingredients**
Coliform (cfu/g)	**Good**	**<100**	**<100**	**<100**	**<50**	**<100**	**<100**	**<100**	**<100**	**<1,000**
	Acceptable	**<1,000**	**<1,000**	**<1,000**	**100**	**<1,000**	**>1,000**	**>1,000**	**>1,000**	**<5,000**
	Poor	**>2,000**	**>2,000**	**>2,000**	**>100**	**>1,000**	**>1,000**	**>5,000**	**>5,000**	**>10,000**

Data provided courtesy of Kemin Australia.

For other contaminants refer to EU Feed Safety Limits as per https://www.gmpplus.org/feed-certification-scheme/scheme-documents/fsa-requirements/ts15.

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