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Guidelines Preventing Contamination with Restricted Feed Ingredients

The following document contains guidelines for preventing the contamination of feed with restricted feed ingredients. The format uses the same nomenclature as the Code of Good Manufacturing Practice for the Feed Milling Industry (Code) developed by the Stock feed Manufacturers' Council of Australia and approved by the Australia's Animal Health Committee. The Code contains statements relating to the care and attention needed to prevent contamination of feed with "*Restricted Feed Ingredients*". These statements are *italicised* for convenience and **additional comments are highlighted in bold**.

Users of this document need to be aware that the numbering system in use follows that from the Code of Good Manufacturing Practice. Relevant sections of the Code are referred to and this results in gaps in the numbering of these guidelines.

CODE OF GMP INTRODUCTION

The Code of Good Manufacturing Practice is a guideline for the manufacture of stock feed that is true to label and suitable for its intended purpose. By following this Code of GMP potential sources of error or contamination in the manufacture of the product can be minimised. Contamination, as used in this document, refers to the presence in a stock feed product of any foreign material or ingredient, whether by accident or error, that would compromise the health or performance of the livestock for which the feed is intended, the health of human consumers of feed products derived from such livestock, or the trade in animal products and animal feed. *This includes the contamination or unintended mixing of one finished stock feed product with another.*

The Code does not deal with common or statute law requirements such as those relating to stock feed standards and labelling provisions, veterinary preparations, occupational health and safety, dangerous goods, poisons, weights and measures, waste disposal and pollution, and environmental protection. These must be met by the stock feed compounder. However some apparent duplication of legislative requirements may occur in the Code where it is felt that a point needs to be emphasised or explained more clearly. *One such example is in relation to the ruminant feed ban under which the feeding of restricted animal material (RAM) is prohibited.*

RAM is defined as tissue, blood or feathers derived from the carcass of an animal, including any substance produced from or containing any such tissue blood or feathers (but not including tallow, gelatin, milk or milk products). RAM includes any rendered animal meal including but not limited to meat and bone meal, fish meal or poultry offal meal.

It is intended that the Code be used as a benchmark against which existing production facilities and practices may be judged. Those clauses in the Code which are considered essential are indicated using the word "must". In other clauses, where the word "should" is used, implementation need not be immediate but should be aimed for and preferably be a part of the company plan. Thus, the Code indicates, using "must", the points which are to be attended to first in a progressive upgrading program.

1. HAZARD RISK ASSESSMENT

- 1.1 A site hazard risk assessment plan for feed safety must be undertaken and regularly reviewed. The plan must take account of risks to human and animal health and trade in livestock products and stock feed.
- 1.2 The hazard risk assessment plan must utilise HACCP principles, these being:
- list all potential hazards associated with each step, conduct a hazard analysis and consider measures to control hazards
 - determine critical control points (CCP)
 - establish critical limits for each CCP
 - establish a monitoring system for each CCP
 - establish corrective action plans for deviations that may occur at CCPs
 - establish verification procedures
 - establish record keeping and documentation.

Storage or use of RAM on site's which also manufacture ruminant feeds is a risk which must be included with the sites hazard risk assessment. HACCP principles must be used, looking at critical control points in minimising the risk of cross transference of RAM into ruminant feeds. The risk assessment must include all critical control points from raw material receival (including inwards transport vehicles) through to delivery onto farm.

2. PREMISES AND MILL BUILDINGS

- 2.5 Adequate facilities must be provided to hold raw materials in a manner which prevents mixing or cross-contamination except as required by product formulations. Where mills manufacture ruminant feeds and use RAM separate receiving hoppers should be used for products containing RAM. Procedures adopted to address this RAM risk must be documented and verified through inspection, sampling and testing.

Where separate intake receival systems are not available, then detailed review of procedures including sequencing of raw material delivery, cleaning and flushing after delivery of RAM is needed.

Procedures should include a mandatory inspection of the pit, surrounds and the conveyors to ensure they are cleaned of all material before the next non-restricted feed raw material is received.

Some milling equipment such as drag conveyors are designed to be self-cleaning, whilst other equipment such as screw conveyors are not self-cleaning. Where intake and conveyors do not always self-clean, these areas should be re-engineered and repaired at the earliest opportunity.

For mills where there are not separate receival systems, the following is recommended for raw material intake flushing following the receival of RAM:

- For self-cleaning systems, a minimum 500kg of non-restricted materials.
- For non-self-cleaning systems, a minimum 5 minutes of running with non-restricted materials or the time it takes for the flushing material to reach the furthest possible destination point.

It is recommended, that the process to flush the intake system has been verified to confirm that no residual RAM is carried into the following feed. Verification of the flushing system is based upon physical inspection, sampling and testing and should be completed at least every 6 months.

The flushing material used must be segregated following flushing and only used in feeds containing RAM according to the rework conditions listed below (see 9.6).



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There should be a documented raw material intake procedure and records of material intake handling should be maintained.

Batching bins should be checked to confirm they discharge as designed, they should not leak. Raw material bins used for RAMs when emptied should be inspected and cleaned prior to filling with other raw materials.

Discharge from dust collectors needs to be disposed of in a manner to ensure any RAM collected within the dust does not re-enter the feed line contaminating ruminant feeds.

It is recommended, that the volume of material used to flush the intake system has been verified to confirm that no residual RAM remains. Verification of the flushing system is based upon physical inspection, sampling and testing and should be completed at least every 6 months.”

3. PERSONNEL

3.4 Training must be appropriate for the complexity of the manufacturing process and the tasks assigned. Personnel must be trained to understand the importance of the processes for which they are responsible in terms of their impact on all aspects of product safety, quality and environment. *Training should ensure an understanding of any significant legislative requirements relative to the staff member’s assigned tasks (e.g. the ruminant feed ban for the prevention of BSE).*

A good idea is to formally review this Guidelines document with appropriate staff, especially including procedures developed to meet current regulations. Remember to keep a copy of your training record for audit purposes and to ensure this on-going training is included in your program for new employees and where existing staff responsibilities change.

5. RAW MATERIALS - SOURCING/PURCHASING

5.4 A manufacturer who purchases supplies of packaged RAM that are not labelled with the ruminant feed warning statement must either include this statement on the packages prior to storing at the storage facilities or reject the product and return it to the supplier.

It is illegal to sell RAM which is not appropriately labelled. This should be a condition of your purchase and goods not correctly labelled should be rejected and returned to your supplier. Any RAM products received which are missing RAM labels cannot enter storage unless they are relabelled.

6. RAW MATERIALS – RECEIVALS

6.3.2 Appropriate tests should be applied to all raw materials on receipt to detect any obvious biological, chemical or physical contamination risks and any other product quality risks.

Non-RAM raw materials need to be assessed to confirm they have not been contaminated with RAM. Additionally there is a risk that bulk trucks used to transport bulk raw materials may contain carry-over materials.



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A good idea is to have your suppliers conduct truck inspections before loading and refuse to load vehicles which are not clean. This is especially the case where vehicles are used both for the transport of RAMs, other meals and/or grains. You might consider formally adding such a requirement to your purchase and cartage contracts.

When RAMs are received add a requirement to ensure that the vehicle is completely empty before completing the receipt procedure.

6.3.4 All packaged raw materials, premixes and medications must be clearly labelled by the supplier with product name, weight, date of manufacture and/or expiry date, batch number *and, when applicable, the mandatory ruminant feed warning statement required under the ruminant feed ban* and is received in sound condition e.g. no broken bags or leaking containers.

Your receipt procedures should include checking that the appropriate warning is in place on all packages and provision made to record that such an inspection occurred.

7. RAW MATERIALS – STORAGE

7.1 All storage areas should be designed and maintained to prevent damage to, contamination, *un-intended mixing*, or spoilage of ingredients and packaging materials.

7.6 *Where mills manufacture ruminant feeds and have raw materials containing RAM on site, these raw materials must be stored in designated bins or areas to ensure cross contamination of ruminant feeds with RAM does not occur.*

When reviewing this aspect a careful check should be conducted and a record of the review maintained in your quality records for audit if/when required.

Where improvements to material separation are noted these should be scheduled without undue delay.

9. FORMULATION AND MANUFACTURING INSTRUCTIONS

9.2 For each formula the following information must be included:

- the name and unique identity code of the product
- an indication as to the animal type for which the product is intended to be fed
- the precise quantity of each raw material and, where appropriate, the location of the bin or bags of that raw material
- *if the formula contains RAM, and the mill also manufactures ruminant feeds, a statement must be included to the effect that the product contains RAM and must not be used for ruminant feeding.*

Wording such as “Contains RAM and must not be used for ruminant feeding” is recommended. The critical aspect is in ensuring production staff recognise feeds which do and do not contain RAM and production scheduling responds accordingly.

9.4 Good manufacturing practice must recognise and address the *potential for contamination of feeds with incompatible feed ingredients or medications* resulting from the order in which feeds are manufactured. This must



be done with an adequate understanding of the operational limits of the mill's equipment and the particular quality and safety risks that apply to a particular ingredient/medication in a particular feed. *Strategies adopted to address this may include flushing, sequencing and cleaning. The procedures adopted to address these risks must be documented and verified through inspection, sampling and testing*

9.5 *Precautions must be taken to ensure carry-over from previous mixing of feeds does not contaminate subsequent feed mixes.*

Scheduling and manufacturing procedures should include the following:

- Plan your production so that all feeds containing RAM are manufactured together.
- Follow manufacture of feeds containing RAM with non-ruminant feeds.
- Implement an appropriate inspection after manufacture of feeds containing RAM to ensure that all feed is cleaned from mixers, surge bins, coolers and conveyors before commencing the next batch.

Alternatively flushing with a non-RAM raw material can also be used but requires this material to be separated and then only re-used in non-ruminant feeds (refer to 9.6 below). Production of a non-ruminant feed which does not contain any RAM can be used as a means of flushing the production system.

When using batch sequencing and flushing, define the quantity of flush required to clear residual feed from the production line. This will vary from mill to mill due to differences in mixer size and number of elevators and conveyors. Some batching and mixing equipment such as mixers with "bombay doors" are self-emptying/cleaning whilst other equipment such as vertical mixers are not self-cleaning. The amount of material required to flush the manufacturing line will vary dependent upon the equipment in use. The following is provided as a minimum standard guide for feed manufacturers:

It is recommended that the minimum flushing volume should be:

- 5% of the mixer volume in a fully self-cleaning systems
- 25% of the mixer volume in a non-self-cleaning system.

The scheduling, flushing and manufacturing procedures used to prevent cross transference must have been verified through physical inspection, sampling and testing. RAM testing needs to be completed using rapid assay analysis test kits, with sampling of finished product at the point of out-loading to verify the adequacy of the flushing procedures. Testing for medication cross transference should be completed using either micro-tracers or medication assays.

Verification testing should be completed at least every 6 months to re-confirm the suitability of flushing procedures. Completion of verification work must be documented and retained.

Where positive RAM test results are found following flushing, corrective actions must be taken to ensure negative results are obtained. Corrective actions may include, but are not limited to, modification to sequencing and flushing procedures, equipment changes and use of RAM ingredients.

Sequencing, flushing and manufacturing procedures must include transfer of feed through production lines to finished product bulk bins and bagged feeds.

9.6 Care must be taken to avoid the generation of reworks. *Reworks consist of product that has been previously erroneously formulated or mixed.* However, where reworks and returns are generated they must be carefully handled and documented. *Returns are formulated feeds that have been produced, left the control of the feed mill, and returned to the feed mill.* Key practices to be followed are set out below.



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9.6.1 Products that cannot be identified must not be used in further manufacture of stock feed and must be disposed of as waste. Raw materials or finished product that has been downgraded to waste and is awaiting disposal must be clearly identified and segregated from good stock to prevent its accidental use.

9.6.2 Reworks and returns must be labelled appropriately and should be segregated from raw materials and finished products.

9.6.3 *Reworks and returns must be identified as containing or not containing RAM. If uncertainty exists regarding RAM status, the feed must be assumed to contain RAM. Reworks or returned feed either containing RAM or assumed to contain RAM must only be reprocessed into non ruminant feeds.*

9.6.4 Such reworks and returns must only be approved for release and reformulation by an authorised person. Reformulation must be strictly in accordance with written instructions.

9.6.5 Full details of returns and of the reformulation of reworks and returns must be documented.

Finished product carry-over from finished product conveyors or out loading bins should be treated in the same way, but remember to adhere to the rules above and maintain an appropriate record.

Documentation of reworks and returns must identify whether the feed contains RAM and if so, procedures adopted to ensure it is only remixed into non ruminant feeds.

10. PRODUCTION

10.7 Out loading and packaging systems, including all fixed or mobile silos, bins and tanks, must be *designed and operated to prevent contamination, un-intended mixing* or misidentification of finished product. Key elements of this system are that:

- the bins (silos, tanks etc) must be identified by an appropriate labelling or numbering system
- product stored within a given bin (silo, tank etc) must be identified via documentation and records
- bins (silos, tanks etc) must be designed to be free flowing, readily inspected and cleaned, and should be able to be sealed and secured

An essential procedure is to verify that out loading bins are always emptied completely and inspected accordingly, especially for feeds containing RAM. Any feed remaining and unable to be loaded, should be removed, labelled and then bagged with appropriate labelling or disposed of as waste or rework as above. Remember to keep records.

Where finished product bins containing RAM are in use, bins must be flushed or cleaned to ensure no RAM carryover occurs into ruminant feeds subsequently loaded into these bins.

Segregation of RAM and non-RAM finished product bins should be considered.



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11. LABELLING OF BAGGED PRODUCT

11.1 In the case of bagged product, correct packaging and labels must be applied at the time of bagging.

11.2 Labels must meet regulatory requirements.

With respect to the ruminant feed ban for the prevention of BSE, labels on bags of stock feed containing RAM must include the prescribed warning statement and lettering must be of the prescribed size, in accordance with state legislation.

Similar legislation is in force within each State and Territory, the principle labelling conditions for feeds containing RAM are:

The label must contain the following statement:

'This product contains restricted animal material —DO NOT FEED TO CATTLE, SHEEP, GOATS, DEER OR OTHER RUMINANTS.'

The statement must be in:

- (a) a position where it can be clearly seen on the face of the label
and
- (b) if the label is:
 - (i) written or stamped on the outside of a stock feed's container—letters a minimum 10 mm in height; or
 - (ii) fixed to the outside of a stock feed's container—letters minimum 3 mm in height; or
 - (iii) for bulk feeds only a written notice given to a buyer - letters minimum 3 mm in height; and
- (c) dark print on a light background.

Labelling conditions for feeds that do not contain RAM are:

The label must contain the statement:

'This product does not contain restricted animal material'.

12. LABELLING OF PRODUCT SOLD IN BULK

12.1 Bulk product must be labelled to meet all regulatory requirements. *With respect to the ruminant feed ban for prevention of BSE, the product supplied in bulk must be accompanied by documentation with the necessary statement concerning RAM, as prescribed by state legislation, either attached to or incorporated in the invoice or delivery docket, and to be supplied to the buyer before or on delivery.*

If your invoice follows the delivery, then you must include the appropriate warnings on your delivery docket and ensure this is delivered when the feed is unloaded. Information to be supplied for bulk deliveries is the same as that shown above for bagged feeds. The 3mm size of print is required.

13. LOADING, TRANSPORT AND DELIVERY

13.1 Loading, transport and delivery of bulk and packaged feed products must maintain the identity and integrity of each feed product post-production, thereby minimising any post-production unintended mixing or contamination risks.

Delivering bulk feeds containing RAMs on the same load as ruminant feeds should be avoided. Where this is unavoidable you must ensure that there is no possibility of leakage between truck compartments or from discharge valves when unloading. Where bagged feed is delivered adequate barriers (packaging or pallet wrap) should be a standard practice between feeds containing RAM and ruminant feeds.

13.2 Loading

A formal system must be in place to ensure loading of all vehicles used for transport of bulk and packaged feed products with the correct product, without risk of damage, unintended mixing or contamination. Key elements of this system are that:

- out loading storage bins, transport vehicles/trailers, and vehicle/trailer compartments used in loading and transporting a given order of feed to a customer must be clearly identified and documented
- vehicles/trailers must be 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
- *All equipment and vehicles that have been used in the loading or transportation of RAM must be effectively cleaned before loading of feeds not containing RAM. Any feed deemed to be containing RAM cleaned from equipment or vehicles must be disposed of or used only for non-ruminant feeds*
- all equipment and vehicles that have been used in the loading and transport of medicated feeds must be inspected and cleaned where necessary before loading non-medicated feeds.
- *vehicles/trailers must be inspected prior to loading*
- details of contents of prior loads should be provided prior to loading and appropriate action taken e.g. further cleaning
- pallets used for the loading of packaged feed products must be kept in good condition so as not to damage product
- damaged or leaking bags and other packaging should not be loaded for delivery.

Cleaning and inspection requirements should be included in your transport contracts and you should ensure training on these requirements is provided to both employees and/or transport contractors and their employees.

13.4 Delivery

13.4.2 When delivering bulk feed products to a farm, it is essential that *feed products are unloaded into the correct farm storage facilities for feeding to those animals intended, without risk of contamination*. If, due to unacceptable facilities or inadequate instructions, this cannot be assured, the driver must not unload before seeking advice from the appropriate person at the mill.

13.4.3 Feed must not be unloaded into a farm storage facility (e.g. silo, bin) other than as instructed, unless with the permission of the farm owner/manager. Each such instance must be documented. Similarly, *any feed returned to the mill for whatever reason must be documented*.

13.4.4 If any significant spillage occurs during unloading, this must be reported to the appropriate person at the mill and to a representative of the customer, and the *spilt feed disposed of responsibly*.



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Delivery drivers must be trained in duties to ensure the correct feed is delivered to the right animals without risk of RAM contamination of ruminant feeds.

14. INSPECTION, SAMPLING AND TESTING

14.1 Samples may be required by state authorities as part of the audit process for the BSE ruminant feed ban. Access must be provided at suitable points in the manufacturing process for the purpose of taking samples.

Feed mills are required to work with State inspectors in the conduct of ruminant feed ban audits. This includes access to the manufacturing site to allow collection of feed samples.

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