

# **PRACTICAL GUIDELINES FOR THE MONITORING OF SALMONELLA IN THE PRODUCTION OF ANIMAL FEED**

**By AFMA Salmonella sub-committee, March 2009**

## **Critical control points**

The critical control points for each manufacturing plant should be determined and documented. A schedule for the sampling or swabbing to monitor for the presence of salmonella species should be drawn up (see the attached swabbing schedule).

The following areas should be considered as critical control points.

- Raw material transport vehicles
- Raw material intake area
- Raw material conveyors in the plant
- Raw material silo's and bins
- Mixer
- Pelleter
- Crumbler
- Cooler
- Out-loading bins
- Finished feed transport vehicles
- Samples of 'high risk' raw materials should also be included.

The critical control points should be determined based on the conveyers, silo's and bins which contain or carry the high protein raw materials. These raw materials are considered as 'salmonella critical' raw materials.

## **Sampling guidelines**

The following basic guidelines can be used to determine the number of samples that need to be taken to monitor a feed production plant for salmonella at each critical control point

Tonnes of feed produced per year	Number of samples per critical control point
Less than 6 000	1 every 3 months
6 000 – 1 0000	2 every 3 months
More than 12 000	1 every month

The guidelines are more specific if the feed that is being manufactured is to be fed to grand-parent stock, parent stock or commercial animals. The reason is that the risk associated with the different poultry operations is not the same.

Target Species	Minimum sampling frequency
Grand-parent stock	1 sample per 125 tonnes produced
Parent stock	1 sample per 600 tonnes produced
Commercial broiler breeders	1 sample per 600 tonnes produced
Commercial broilers	1 sample per month
Commercial layer breeders	1 sample per 600 tonnes produced
Commercial layers	1 sample per month

Based on these guidelines, a swabbing and sampling schedule should be drawn up for the plant.

### **Swabbing procedures**

The procedure that should be followed when taking salmonella swabs or samples is detailed in the attached 'Salmonella Swabbing Procedure'.

### **Analysis and Results**

All samples submitted to the laboratory must be analysed to determine if they are positive or negative for the presence of a salmonella species.

All samples that are found to be positive should then be serotyped to determine exactly which type of Salmonella is present.

Where a positive result is obtained then the following actions should be taken:

#### 1. Raw Materials

- Re-sampling at the critical control points and analysis.
- Serotype any positive samples.
- Additional investigation may be required.
- Inform the raw material supplier of the result.
- Evaluate the raw material suppliers Salmonella Control Programme.
- Implement the necessary cleaning and disinfection programme.

#### 2. Finished Feeds

- Sample all 'salmonella-critical' raw materials at the critical control points and analyse.

- Re-sample at the critical control points in the manufacturing and logistic areas and analyse.
- Serotype any positive samples.
- Additional investigation may be required.
- Implement the necessary cleaning and disinfection programme.

Keep a record of all analytical results and determine trends and frequency of the occurrence of positive results. Use this information to assist with the formulation or improvement of your cleaning and disinfection programme.

### Analysis Costs (November 2008)

Deltamune	Detection (Individual samples)	R81.90/sample
	Detection (5 pooled samples)	R53.10/5 pooled samples
	Bacterial typing	R368.40/sample
Onderstepoort	Detection (< 20 samples)	R83.22/sample
	Detection (> 20 samples)	R58.14/sample
	Bacterial typing	R193.80/sample

### Exercise

Assumptions:	<u>Deltamune</u>	<u>Onderstepoort</u>
Monthly feed production (Tonnes)	2000	2 000
Number of critical control points	15	15
Number of samples per month	15	15
Number of positive samples per month	2	2
Monthly analysis cost	R1965.30	R1635.90
Analysis cost per tonne of feed	R0.98	R0.82

The relative cost of managing this risk is much lower than the possible cost of a single claim by a customer. This analytical data may also be useful in defending a claim.