

# AT-10

Ver 1.2

## Salmonella Control





## DOCUMENT HISTORY

Version and date of approval	Reason for revision	Revision scope	Ultimate date for application
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1.0 09/08/2012	Approval of version 2 of the Auto-control Guide 'Animal feed G-001'	Entire document	09/11/2012
1.1 23/08/2013	Article 4 Regulation (EC) No 767/2009 instead of RD 08/02/1999	Point 1	22/11/2013
1.2 21/10/2016	New lay-out	Entire document	21/10/2016

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# AT-10 : Salmonella Control

## 1. Introduction

Salmonella are micro-organisms, that may naturally be present in the intestinal system of animals and humans, as well as in the environment.

It has been demonstrated that the presence of Salmonella in animal feed may eventually lead to its presence in the food producing animals. The animal feed is definitely not the main source of contamination of these animals.

Other sources have been identified, such as e.g. transmission from animal to animal, transport means, contact with wild animals, or the environment.

Salmonella are divided into serotypes, all potentially pathogenic to humans. Currently, a small number has been identified as pathogenic to humans and animals, e.g. *Salmonella enteritidis* or *Salmonella typhimurium*.

It is important to note that certain serotypes « benefit » from the international trade of feed in order to « travel » and thus enter the European Union.

The potential presence of Salmonella in feed is not a very common problem, but this type of hazard must always be evaluated within the HACCP-analysis inherent to the company, and should always be taken into consideration because of its potentially very serious consequences.

Mostly, Salmonella infections remain subclinical in animals, although some species may show clinical symptoms ranging from a mild diarrhea to death.

Some species are more sensitive than others.

In comparison, poultry is considered to be more sensitive to Salmonella than pigs and cattle.

The legal framework relating to Salmonella is limited:

- Only feed that is sound, genuine and unadulterated, fit for its purpose and of merchantable quality may be placed on the market and used". Article 4 Regulation (EC) No 767/2009;
- Respect of the specific standards, by producers of feed materials of animal origin (Regulation (EU) No 142/2011 – Annex X) or feed for pet animals based on animal by-products (VO (EU) No 142/2011 – Annex XIII) (Legal standard: absence in 25g);
- Respect of the specific microbiological criteria, by operators of the animal feed sector (Regulation) EC No 183/2005 – Art 5) (Note: The microbiological criteria have not yet been defined at European, but are being prepared).

In Belgium there is a notification limit for Salmonella. Namely the absence of Salmonella in 25g or ml of feed (regardless of their origin, whether animal or plant). This notification limit is also included in document 'AT-03: Table of standards, action thresholds and notification limits'.

Upon identification of Salmonella, regardless the serotype, the notification requirement to the FASFC, is applicable (see document 'AT-02: Notification Requirement').

- If it concerns a product entering the company;
- If it concerns a product already placed on the market.

Notification is not applicable if a product has not yet been placed on the market, and therefore remaining under the control of the company.

At company level, measures should be taken in order to prevent the apparition of Salmonella in feed, thereby reducing a potential transmission to animals and humans through this feed.

The First of these measures relate to the general hygiene of the company. The cleaning and maintenance operations will contribute to ensure a good hygienic level.

The company may wish to apply other control measures, which are briefly covered in this document. This document is specifically intended for companies applying such measures.

## 2. Salmonella Control measures

### 2.1. Methods applicable to raw material (or feed materials) of animal origin, and to 'pet food'.

The producer of this animal feed must refer to the following documents:

- 'AT-11: Animal by-products';
- 'AT-12: Production of feed for pet animals'.

### 2.2. Methods applicable to the other animal feed.

#### 2.2.1. Acidification

Through a sufficient decrease of the pH, Salmonella are (almost) completely inhibited or killed. The following table indicates the maximum final pH, required in order to obtain a good Salmonella control.

Type of treatment	Maximum final pH
Lactic fermentation (or other types of fermentation)	4.5
Addition of organic acids	4
Addition of inorganic acids	3.5

Fermentations can lead to acidification. Therefore the fermented product will have a naturally low pH.

When a treatment is intended at being preventive or "curative", the acidification may be obtained by the addition of authorized additives, from the category of technological additives (preservatives). The conditions for use, contained in the operating instruction and in the authorization of the additive, should be scrupulously followed.

#### 2.2.2. Thermal treatment

Salmonella are heat-sensitive and are killed by thermal treatment.

When the thermal treatment aims at the elimination of salmonella, one can assume that after an exposure at 85°C during 1 minute they will be eliminated.

When this temperature and/or duration cannot be obtained in practice, the effectiveness as regards the treatment should be verified regularly, by means of sampling and analysis.

It is important to note that a transition to such temperatures may have a negative impact on the nutritional value of the animal feed (e.g. vitamins).

#### 2.2.3. Alternative methods

Methods, other than the acidification or thermal treatment can be used. It may, e.g. relate to the post-treatment of feed with an additive, with radiation, with a microwave technique or with a technical aid material.

Before any treatment with a non-acidification additive (see 2.2.1), one must verify whether it is actually authorized in animal feed. The prescriptions contained in the authorization (target animals, minimum and/or maximum levels etc.) must be respected. The radiation and microwave techniques are little developed in animal feed.

A good functioning of the alternative methods should be demonstrated experimentally.

### **3. Salmonella contamination during processing**

During the production process there may be a number of critical points, for which there is an increased danger of Salmonella contamination.

Each company should evaluate the specific points of attention applicable to their company. The HACCP plan must reveal those points, during the production process, constituting a danger in terms of Salmonella contamination (see 'AT-04: Practical realization of the HACCP plan').

The company shall ensure, in as far as possible, to also take the immediate surroundings of the installations into account, and not to limit themselves to the machines.

### **4. Salmonella monitoring**

The company must identify the animal feed, considered to be critical at 'Salmonella' level (i.e. presenting a risk of Salmonella contamination).

Depending on the results of the hazard analysis, i.e. when the hazard « Salmonella » has been highlighted as a « point of attention » or as a « CCP », the company will put in place, a monitoring plan, in conformity with document 'AT-05: Monitoring'.

The microbiological analyses, aimed at detecting Salmonella, allow:

- To check the effectiveness of a treatment; and/or
- To ensure that the feed (treated or not), placed on the market, provides a maximum security as regards the absence of Salmonella.

When a positive result as regards 'Salmonella' has been established, then the animal feed producer or trader in animal feed, should take the following measures:

- Salmonella must be typified (serotype); An investigation should take place in order to identify the possible cause of contamination;
- Adequate measures should be taken in order to eliminate the cause (e.g. thorough cleaning of the installations, or treatment of the product).

In case of a determination, as regards the receipt of an ingredient or of a feed: notify the supplier and require actions on his part.

In cases such as provided in point 1 of this document, the Belgian company must communicate the positive results to the PCE of the FASFC (see 'AT-02: Notification requirement').

### **5. Inventory of results**

The analysis results, in terms of Salmonella, must be kept available for consultation by the controlling bodies.