

EUROPEAN POULTRYMEAT INDUSTRY GUIDE [EPIG]

Guide of Good Hygiene Practice for the
Prevention and Control of Microbiological
Infections focussed on Salmonella control of
Chickens reared for meat

- on farms,
- during catching, loading and transport and
 - at slaughterhouses

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PREFACE

This document has been developed jointly by a.v.e.c. and COPA-COGECA. a.v.e.c. is the association of poultry processors and poultry trade in the EU and COPA-COGECA are the Committee of Professional Agricultural Organisations in the European Union and the General Confederation of Agricultural Co-operatives in the European Union.

This document provides a voluntary Guide of practice for poultry farmers keeping chickens for meat production, the operators involved in catching and transport of chickens and slaughterhouse operators.

It is aimed at providing guidance and assisting them in implementing hygiene measures in order to manage the microbiological quality of the live poultry and the poultry meat. Particular emphasis has been put on preventing the introduction, spread and persistence of Salmonella in chickens reared for meat production and in poultry meat.

This guide may be used as such or as a starting point to develop national or regional guides which might be more detailed but should not be in contradiction with this Community guide.

It is recommended to discuss the Guide with your veterinary surgeon and all operators involved in the production chain to consider how it may be best implemented taking into account the local specific conditions.

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INTRODUCTION

Protecting poultry flocks from micro-organism contamination is an extremely important component of commercial poultry production. The introduction of a highly pathogenic, contagious disease organism into poultry flocks could result in serious economic consequences for the whole society. Developing and practicing daily biosecurity procedures as best management practices on poultry farms will reduce the possibility of introducing zoonotic microbiological infections like Salmonella and Campylobacter as well as infectious diseases such as Avian Influenza and Exotic Newcastle. Poultry farmers and operators of slaughterhouses should understand the importance and be familiar with the specifics of the biosecurity protocols and work closely to implement those programs to accomplish a consistent and compatible policy.

The effectiveness of a biosecurity program can be optimized if all poultry producers utilize best management practices.

Salmonella organisms are widespread in the environment and each link in the food chain has a part to play in reducing the risk of human infections caused by Salmonella. These bacteria normally do not cause clinical disease in poultry. Salmonella are intestinal bacteria that can be transmitted by all animals, including humans and the possibility of vertical transmission of infection exists.

There are approximately 2,500 different Serotypes of Salmonella. Currently only about 200 Salmonella serotypes are associated with food-borne infections in humans in the EU. The vertical transmission from breeding flocks to commercial flocks of two of the most significant serotypes, *Salmonella enteritidis* and *Salmonella typhimurium* has been substantially reduced through strict biosecurity including vaccination.

Horizontal transmission, that is introduction of infection from the environment, including feed, hatchery equipment, staff movements and contaminated farm equipment, however, remains a key route for infection.

If Salmonella is present in chickens reared for meat it increases the risk that the poultry meat produced from these chickens will be contaminated with these bacteria. It is important to reduce this potential risk at all steps in the production chain from stable to table.

Salmonella are widespread and their complete elimination from the environment in all but the primary breeder sector (i.e. at the level of grand parent or pedigree) is unlikely to be economically feasible and possible.

Good management and biosecurity can reduce the risk of introduction and persistence of infection to minimal levels, particularly since improved Salmonella control in the breeder sector and in feed production has greatly reduced the risk from these sources, although contaminated feed is still the main route of introduction of new Salmonella infections onto a farm, along with resident hatchery contamination. The effective Salmonella control program may have beneficial effects on Campylobacter control, as some elements of the epidemiology and biological qualities of Campylobacter are similar to those of salmonella bacteria.

Flock owners and slaughterhouse operators are strongly encouraged to include this Guide as part of their standard management practice. This Guide has been drawn up taking into account the fact that most chickens reared for meat are produced in controlled environment housing systems. The measures outlined in the Guide should form the cornerstone of Salmonella control and, if rigorously applied, they may substantially

contribute to preventing and controlling other infections or diseases in flocks of chickens reared for meat production.

The guide does not cover specific measures for free range chicken. Nevertheless, many of the basic principles are applicable and should be followed as far as possible. Part of the Guide may be applied to free range or small scale rearing systems.

A ON THE FARM

I. Biosecurity measures¹

I.1. General

I.1.1 Farm Location

New build poultry farms should ideally be located isolated² from other livestock enterprises and possible sources of contamination including sewage treatment plants and landfill sites.

I.1.2 The Poultry site³

A site plan should be available.

Good biosecurity is extremely important to prevent the introduction of a wide range of micro-organisms into poultry farms.

Site design and management practices should be planned to facilitate this.

The perimeter of the site should be clearly identified and, if possible, fenced. Access to the site should be allowed only through specified entry points that are clearly indicated and limited as much as possible to professionals who are familiar with biosecurity measures. There should be a bell or other means of attracting attention and visitors should not be allowed to enter the site unaccompanied.

Visitor parking should be located adjacent to the specified site entrance, away from poultry buildings or manure storage. There should ideally be a clean hard standing for parking.

On-farm roadways should have a hard surface, which can be cleaned effectively.

The poultry site should not house any other poultry, including ornamental or domestic fowl.

I.1.3 The buildings

Buildings should be constructed of durable material that can easily and effectively be cleansed and disinfected. The buildings should be maintained to prevent access by wild birds and vermin.

The exterior surroundings immediately around the poultry houses should be kept clear of vegetation and the area and surrounding vegetation should be kept clean and tidy to discourage vermin and wild birds.

Buildings should have a minimal number of entry points and these should be kept closed and locked to prevent unauthorised entry.

There should be the provision to wash or sanitize hands⁴ and to change into overalls and boots prior to entering and after leaving the poultry house. The boots should not be used for areas outside the house. To maximise biosecurity measures it is advisable to have at least a footdipping⁵ and/or an anteroom⁶ system, these measures however, differ from country to country.

Ancillary buildings such as storage rooms, rest rooms, toilets etc. should be constructed and maintained to a similar standard of the poultry houses.

I.1.4 Biosecurity procedures at house entrance

Staff and visitors are a major biosecurity risk to stock on the site. The biggest risk is the transfer of infected material into the house on footwear, hands or moveable equipment. To reduce this risk it is advised that preferably a barrier biosecurity system or at least a footdip barrier is implemented on entry to all poultry houses.

An alternative biosecurity system is the use of footbaths with approved disinfectants⁴. If footbaths are used then all visitors should thoroughly dip their footwear in the bath before entering the house. Disinfectants should be used at the correct dilution rates and should be changed and replenished on a regular basis according to the manufacturers' instructions.

Boots must be kept clean for footbaths to be effective and a suitable disinfectant at an effective concentration used and replenished frequently to avoid contamination, dilution or evaporation/deterioration of active ingredients.

1.1.5 Equipment

Equipment used on site should be constructed of a durable material and capable of being cleansed and disinfected. Any shared equipment should be thoroughly cleansed and disinfected before and after being moved between poultry sites.

1.2 Litter supply and disposal

A variety of litter types may be used to bed the poultry but it should be obtained from a reliable source and be free from contamination by livestock, wild birds and rodents. Litter can be treated with acids and antibacterial products to reduce the risk of bacterial contamination.

Litter should be transported on vehicles, which have been cleaned and disinfected prior to the loading of the litter.

Litter stored in the open on pallets or in bulk should at all times be covered with clean water/bird/vermin-proof protection. Damaged bales should not be used. Old litter must be removed from the site promptly between rounds and be disposed of appropriately.

1.3 Vermin, feral animal and insect control

All buildings should be proofed against entry by wild birds, feral animals and little beetles. (See 4.1). Their presence in the vicinity should be discouraged by general tidiness, clearing vegetation and other perching places. Feed spillages should be cleaned up promptly. Rodent habitats should be eliminated by maintaining the premises in a tidy state. A planned programme of baiting and/or trapping in and around the buildings and around the site perimeter should be undertaken.

A properly trained operative with knowledge of pesticides and their placement should undertake Pest control. An accurate pest control plan should be established for the unit and full records kept of the pesticide usage in accordance with national legislation.

The pest control programme should be intensified if there are any signs of rodent activity and the effectiveness of any action carefully monitored and amended as necessary.

Proofing and control measures should be reviewed regularly to assess their effectiveness

1.4 Domestic animals on site

Pets and other animals, including livestock, must be kept away from poultry houses and service buildings.

The entry of dogs, cats and other livestock to poultry buildings (including feed or equipment stores) should be prevented at all times.

1.5 Feed and water supply

Finished feed or ingredients for home mixing should be obtained from a mill or supplier who operates in accordance with the legal requirements and relevant codes of practice in particular for the control of Salmonella and who will make available the results of Salmonella monitoring.

The responsible veterinary surgeon for the flock may assist with interpretation of these results.

Finished feed should ideally be delivered in vehicles that are dedicated to that purpose and that are not back loaded raw ingredients, other feeds or materials.

Where feed lorries are used for back loading raw ingredients then vehicles should be effectively cleaned and disinfected before finished feed is carried. There should be a documented hygiene programme for all vehicles. If possible the feed should be delivered directly from the feed producer to the farmer.

Add-mix whole grain cereals should be either acid treated with a proprietary product, heat-treated or treated according to prescriptions provided by your authorities. If the farmer uses his own grain and can control the risk of Salmonella national authorities do not always require acid or heat treatment. When unloading the feed, a dust collection bag belonging specifically to the farm should be used. The feed supplier may also supply a new dust collection bag for every delivery.

Samples of each delivery of feed should be collected according to the chapter on Monitoring, Sampling and Testing and retained for at least one week after slaughter.

On farm feed should be stored in closed bulk storage bins or hoppers or sealed bags. Storage areas and slave hoppers etc. should be kept free of birds and rodents.

Any feed spillages should be promptly cleaned up to discourage vermin and wild birds. Spillages and residues from feed augers and slave hoppers etc. should not be stored and reused for the following flock.

Drinking water should preferably be from the municipal controlled supply. If from another source, it should be tested bacteriologically prior to use and regularly retested (min 1/year). It is preferable to add a water sanitizer or use water treatment to non-municipal water (or there should be a possibility to start water treatment if needed e.g. chlorination, UV-treatment).

The delivery system, including any header tank, should be enclosed and hygienically managed to prevent contamination.

1.6 Disposal of dead and culled birds

Flocks should be checked on a daily basis and any dead birds and culled birds should be removed and placed in a locked leak proof and pest proof container to prevent vermin and/or feral animal access.

Carcasses⁷ should be disposed of through a licensed route in accordance with EU Regulation (EC) 1174/2002 and national legislation.

The storage facility and storage rooms for dead birds should be thoroughly cleaned and disinfected prior to introducing new birds.

Hands must also be washed and sanitised after dead bird handling. It is preferable to use disposable plastic gloves.

1.7 Day old stock

Breeding flocks and hatcheries supplying day old stock are required to comply with the relevant legislation on the monitoring of their supply flocks for salmonella.

Day old chicks should be transported in clean vehicles, boxes and/or crates.

2. Management

2.1.1 Management of the site

The whole site should be managed on an all-in all-out basis where possible. All units within a clearly defined bio-secure area must operate a period free of all livestock between flock cycles. Multi age sites are permissible provided there is a break period free from stock for each of the defined bio-secure areas.

2.1.2 Staff and visitors

Clean site-dedicated protective clothing and footwear must be supplied for all personnel. All clothing must be washed or discarded between flocks.

Visitors to poultry sites should be limited. Visitors including meter readers, fuel and feed delivery drivers and service personnel should be supplied with protective clothing and footwear on arrival, which must be retained on-site after use. However, visitors who do not enter the living area of the chickens are not expected to wear protective clothing and footwear.

The bio-security procedures at house entrance as described in paragraph 1.1.4 should be followed.

Hand-washing facilities and toilets must be available on-site and must consist of a basin with soap or adequate disinfectant.

All personnel and visitors must have the provision to wash or sanitize hands prior to entering poultry houses and after leaving poultry houses.

Visitors to the site should sign a visitors' book (date, arrival and departure time, name, company name, purpose and date of last contact with poultry should be recorded).

2.1.3 Vehicles

Vehicle visits to the poultry site should be minimised.

Provision to spray disinfection of the wheels of vehicles at the point of entry to the site is also advisable.

2.1.4 Work routines and training

Staff should have defined work routines which take account of biosecurity and hygiene considerations.

Staff should be trained in the importance of contagious diseases, zoonoses and the correct hygiene, including personal hygiene, and biosecurity protocols for minimising infection on the farm.

3. Monitoring Sampling and Testing

Monitoring of the Salmonella Status of the Flock.

Knowledge of the Salmonella status of flocks provides a check on the effectiveness of the bio-security measures and helps with decision making on disinfection at depopulation and will assist in the decisions on the organisation of slaughter. Planning of the timing of slaughter of salmonella positive flocks will minimise cross contamination within the slaughter plant and reduce the level of salmonella contaminated poultry meat entering the food chain. Although there is no statutory requirement to monitor the Campylobacter status, it is recommended to implement monitoring regimes for Campylobacter as well. At this stage the European Poultrymeat Industry Guide cannot advise a specific monitoring regime valid for the whole Community of chickens reared for meat, it is advisable to implement monitoring regimes for Campylobacter as well so that farm practices associated with negative flocks can be identified.

Positive results should be discussed with your veterinary surgeon. Procedures should be reviewed and appropriate action taken in the case of contaminated houses.

The details of the monitoring regime to be used should be discussed with the operator of the processing plant, who has the utmost interest in a low Salmonellae and Campylobacter prevalence. Monitoring regimes will also comply with legal provisions (note that from 1/1/2009 on, the Community provisions in Regulation (EC) No 646/2007 will apply).

The following is provided as a guide.

Dissemination of the results of testing results to all partners in the food chain will increase awareness and facilitate a better control of Salmonella (and Campylobacter).

3.1. Sampling and testing *Salmonellae*

3.1.1. Sampling for Salmonella testing

The following paragraphs describe the sampling and testing. The indication 'mandatory' refers to European regulation. The indication 'voluntary' or 'recommended' means that there is no European regulation. But one should not forget that there might be national legal requirements.

3.1.1.1. Sampling of day old chicks: voluntary

All breeder flocks have to be tested in a fortnight interval according to EU regulations 2160/03 and 1003/05 (2001). *S. enteritidis* and *S. typhimurium* positive breeder flocks have to be destroyed. Member States (MS) must have control programs in place to reduce the prevalence of *S. enteritidis*, *typhimurium*, *hadar*, *infantis* and *virchow* pos. breeder flocks to less than 1% (by the end of 2009). Some MS do not allow chicks hatched from flocks positive

from these 5 types. So the vertical transmission of these top five Salmonella serovars is becoming less likely.

The testing of day old chicks upon arrival on the farm is not foreseen in the relevant EU legislation and therefore should not be required on a routine basis.

In case the veterinary surgeon suggests cross check of the Salmonella status of the delivered chicks, sampling should be done in an aseptic manner using protective clothes including disposable plastic gloves on the chicken lorry. Sample contamination by residual Salmonella in dust can easily occur if sampling takes place in a poorly disinfected chicken house.

Large multiple samples of chick delivery box liners, representing all supply flocks, or wish swabs with a Zeva wish and away towel plus all chicks found dead on arrival or culled on delivery can be tested. Samples of the same type can be pooled for testing where necessary.

3.1.1.2. Sampling of broilers: mandatory

The following chapters are describing sampling and testing according to the EU regulations but national legislation may go beyond this and should be observed.

3.1.1.2.1. Sampling period

Sampling of broilers is mandatory and covered by EU legislation.

Birds must be sampled within three weeks of slaughter.

It is preferable that the sampling is undertaken as close as possible to the slaughter date so that the plant can plan and slaughter positive flocks appropriately.

3.1.1.2.2. Sampling procedure

Minimum two pairs of absorptive boot swabs per flock have to be used, i.e. four absorptive boot swabs per house. The surface of the absorptive boot swabs have to be moistened beforehand with suitable diluents. It is advisable that the lab delivers the absorptive boot swabs.

The farm manager should place the absorptive boot swabs over his footwear and ensure that he walks at least 100 steps – to include the whole length of the house and all sub-divisions. The sampling should be carried out before replenishing bedding. After sampling the boot socks should be transferred carefully into a sterile container. Adhering faecal material should be present on the boot swabs, which should be visibly soiled. Samples should be dispatched properly to the laboratory with as little delay as possible and not be subjected to hot conditions before testing.

3.1.1.3 Sampling at thinning and depopulation: voluntary

When thinning or depopulation is performed on a Salmonella free broiler flock, special care should be taken to avoid infection by contaminated catching equipment, crates and containers. See also chapter “Hygiene at slaughterhouse level”. The chicken farmer may wish to swab the transport lorry, the crates and/or the containers, which come into contact with his flock. To be prepared the farmer should contact the veterinary surgeon or the laboratory in advance. If this is done large fabric swabs should be used to swab multiple surfaces.

3.1.1.4. Sampling after cleaning and disinfection: highly recommended after a S. positive flock

In the case of a positive flock previously on the site, the site should be thoroughly cleaned and disinfected with subsequent sampling. The samples should be taken after the building has dried properly.

To be tested for Salmonella samples can be taken for example from

- floor swabs and sweepings;
- gaps and slits in the floor of the house;
- litter manure trapped in holes and cracks in dwarf walls;
- fittings (i.e. beams, pipes, header tank platforms, air extractors);
- bases of wooden support posts and partitions;
- wall mounted fan boxes and mobile stir fans;
- slave feed hoppers and reservoirs;
- brooder and other feed and water pans and systems;
- floors and fittings in ante-rooms;
- rodents, litter beetles and other arthropods if present.

The most important places are feeding systems, drinker systems, floors, air inlets, air outlets if roof mounted or reversed at end of crop, low level gaps and ledges in walls and partitions. Samples should be taken with large fabric swabs, ideally directly into pre-enrichment media which is cultured on the day of collection. At least 10 separate sites per sample category should be swabbed. Where necessary samples can be pooled for economy but the best results are obtained with a large number of individual samples.

3.1.1.5. Sampling of feed: voluntary.

The feed supplier has to have in place, implemented and maintained a permanent procedure or procedures based on the HACCP principles including a Salmonella control procedure according to EU regulation.

The testing of feed upon arrival on the farm or by the farmer is not foreseen in the relevant EU legislation and therefore should not be required on a routine basis, but samples can be taken and stored in a bio-secure way to test later if there is a problem. If the farmer uses his own grain he is expected to manage the Salmonella risk. Testing should include add mix.

In case the broiler grower wants to cross check the Salmonella status of the delivered feed, the sampling should be done with a sterile sampling spear, glove or inverted bag from several separate places out of the dome of the feed lorry in the presence of both parties involved (feed supplier and broiler grower). The sample size should be minimum 400 g. Residual dust in the base of the feed lorry after emptying is the best sample but this is not always accessible.

3.1.2. Dispatch of samples

Samples have to be packed and to be send by courier to the analyzing laboratory so that they will arrive within 25 hours after sampling in the lab.

4. Cleaning and disinfection

Cleaning and disinfection after emptying the poultry house and/or site.

It is important to follow the instructions of the manufacturer on the label when using cleaning, sanitizing or disinfecting substances or products and to use suitable products at an effective concentration. In specific situations – e.g. when Salmonella has been found, it might be advisable to consult an expert or veterinarian. Do not neglect vermin and insect control during the period the site and /or house are empty and ensure adequate control of vermin, insects and other arthropods.

4.1. Stage 1: removal of equipment and dry cleaning

The removal of all gross organic soiling is essential because litter, faeces and refuse may contain high levels of contamination and therefore may be a major source of infection.

Organic material may make disinfectants ineffective.

- When a beetle problem has been identified, band spray immediately after depopulation, before the house cools with insecticide. Spray around the edges of the house a strip 1 metre wide on the lower walls and meeting the litter surface. Include dividing walls or posts.
Refer to label for dilution rates suitable for General Bacteria including Salmonella – not just viruses or general application.
- Remove any residual feed from the feeder system and silo.
- Remove equipment if needed
- Remove all litter from the house.
- Load litter ensuring that all outside areas such as concrete pads by doors and silos are cleared of old litter⁸, dust etc. Cover loads before transporting from the site. If possible transport old litter as far as feasible from the site or any other poultry farm.
- Blow or wash down empty feed bins and disinfect after positive flocks.

4.2. Stage 2: Water and feed

4.2.1 Drinking water system

An intercrop⁹ cleaning program for the water system should be in place. All the water systems could be contaminated, especially header tanks where dust and debris can accumulate. Sanitizing will clean the system and eliminate unwanted bacterial or fungal growth.

- Drain the header tank and check that it is free from debris. Clean as required.
- Fill the tank with that volume of water required to fill the entire drinking system and add disinfectant to achieve the dilution indicated.
- Allow disinfectant solution to fill the drinking system. Follow the instructions of the manufacturer.
- Drain the system and fill with fresh water.

4.2.2 Feeding system

If the previous flock has been Salmonella positive then the whole site including feeding systems also for home mixing, silos and bins should be cleansed and disinfected.

4.3. Stage 3: cleaning and sanitizing buildings and equipment

4.3.1. Pre-soak, if required

- 4.3.1.1 Soak all surfaces thoroughly with a detergent sanitizer solution applied at low pressure with a fan jet. Leave for 20-30 minutes or follow the instruction of the manufacturer then wash all surfaces with water.
- 4.3.1.2 Externally, spray air inlets, deposits from around fan boxes and the loading area if available. Also ensure that all dirty areas such as concrete aprons¹⁰ around houses and bulk bin pads are washed clean.

4.3.2. Wash

Wash all surfaces with a pressure washer with the approved detergent sanitizer solution. Ensure coverage of air inlets, fan boxes, partitions, feeders and drinkers and all other equipment, including any removed from the house ensuring that they are all visibly clean. Use a soak tank if available for removable equipment. Include any ancillary building such as service room in this cleaning procedure. A knowledgeable responsible person should check the standard of cleaning before the cleaning team leaves the site and missed areas should be re-cleaned where necessary.

4.4. Stage 4: maintenance and repair

Check after cleaning the floor, walls and equipment and repair holes and cracks and other defects.

4.5. Stage 5: disinfection

The level of disease organisms present after cleaning is high enough to offer a serious disease challenge to a new flock.

It is possible to have the premises disinfected by an external professional company, including the interior of feed pipes of pan feeder systems, in case of (recurrent) Salmonella or other infections.

- Feeders and drinkers should remain empty until disinfection is completed.
- Observe the manufacturers' instructions and recommendations. Except that it is essential to use products and dilutions suitable for General Bacteria including Salmonella – not just viruses or general application. Using approved disinfectant proven to be effective against viruses, bacteria, yeasts and moulds is essential.
- Disinfect all removable equipment and replace in cleaned house, then disinfect the cleaned house according to manufacturers recommendations.
- Apply solution evenly to all washed surfaces to achieve thorough wetting.
- Spray into the apex of the roof and work down the walls to the floors.
- On completion of disinfection, close all doors and place foot dips at entrances.
- When an insect problem has been identified, spray after disinfection the floors and walls evenly with insecticide.
- Vermin and insect control: ensure adequate control of vermin, flies and other arthropods.

4.6. Stage 6: Fogging

The house may be fogged to control disease organisms introduced to the house during the setting up procedure and to disinfect inaccessible areas of the house.

4.7. Stage 7: sampling and testing

See Chapter A paragraph 3.1.1.4.

B CATCHING, LOADING AND TRANSPORT OF LIVE ANIMALS

1. Depopulation: instructions for hygiene during catching and loading

The role of biosecurity during catching and loading is paramount. Therefore effort should be made to ensure that no cross-contamination can take place during these activities. In order to reach this goal the following measures should be taken.

- 1.0. Catching or unloading activities will either be performed by a fully authorised and licensed company or by farm-personnel.
- 1.1. Suitable, clean protective clothing must be worn at the commencement of catching at each farm. Foot dips or barrier systems should be used where provided and approved disinfectants must be used and in accordance with manufacturers' recommendations. Footwear must be properly cleaned and sanitized between sites.
(Further details 1.1.4).
- 1.2. Personnel involved in the actual catching and loading should use the facilities of personal hygiene (sanitize hands) prior to the catching or unloading activities. If gloves are used they should be cleaned and disinfected before arriving at the farm.
- 1.3. All vehicles, transport crates and other equipment used for catching and loading must be properly cleaned and disinfected before arriving at the site.
- 1.4. The loading area for the loading of birds for transport to the processing plant must be clean, tidy and hygienically managed.
- 1.5. Dirty and clean equipment must be kept separated to avoid cross contamination.
- 1.6. The equipment used for catching and loading should be properly cleaned and disinfected before leaving the farm premises.
- 1.7. Catching and unloading personnel should be correctly trained and informed in such a manner that they understand the importance of personal hygiene and are aware of the means by which infection can be spread on hands, clothing and equipment. A record of education must be kept. A nominated member of the catching team must be made responsible for the catching or unloading operation.
- 1.8. Where possible a catching team or company should plan its activities in such a way that flocks of which tests have shown an infection with Salmonella are caught at the end of the working shift in order to reduce cross-contamination between flocks.
- 1.9. Sampling and monitoring - sampling of the catching equipment.

The efficacy of cleaning and disinfection and hygiene measures of catching staff and equipment can be controlled by sampling and testing.

2. Transport of live animals: instructions for hygiene during transport.

- 2.0. All poultry should be transported by authorised or licensed transporters in vehicles and transport crates or containers that have been well cleaned and disinfected before catching or loading.
- 2.1. Animal transport to slaughterhouse should be done in a direct way without call at other poultry sites.
- 2.2. Truck drivers should be correctly trained and/or informed in such a manner that they understand the importance of personal hygiene and are aware of

the means by which infection can be spread on hands, clothing and equipment.

- 2.3. Sampling and monitoring of transport means: see Chapter C 'At the Slaughterhouse'.

C. AT THE SLAUGHTERHOUSE

The slaughterhouse should carry out all measures to avoid cross contamination between flocks during the slaughter process. The process flow should reduce the risk of contamination of meat with faeces. The following measures are important:

I. Hygiene

- I.1. Cleaned equipment must be kept separated from dirty equipment and areas.
- I.2. Slaughter equipment especially stunning equipment, killer blade, scalding tanks, pluckers must be visual and microbiological clean at the start of the production.
- I.3. Slaughter equipment especially the equipment mentioned at point b must be cleaned and disinfected at the end of each day. For an efficient cleaning the following points are important.
 - A detailed cleaning plan has to be implemented for the whole equipment.
 - All dirt has to be removed first.
 - The equipment has to be foamed and rinsed.
 - After foaming and rinsing the equipment has to be disinfected
 - The recommended concentrations and times for detergents and disinfectant have to be followed.
- I.4. Vehicles and transport crates must be cleaned and disinfected directly after unloading before going to the next broiler farm and before leaving the slaughterhouse.
- I.5. Detergents and disinfectants have to be approved⁴ and used at a concentration which is effective for Salmonella before going to the next broiler farm and before leaving the slaughterhouse.
- I.6. Detergents and disinfectants have to be approved⁴ by the food safety authority
- I.7. Cleaning effectiveness should be checked by daily visual inspection before onset of slaughter
 - Hygiene monitoring through weekly contact plates for the microbiological status including swabs for Salmonella testing
- I.8. If the visual checks show an unsatisfactory status the related areas have to be cleaned once again before onset of slaughter
- I.9. If the hygiene monitoring shows bad microbiological values cleaning staff have to be informed. The cleaning procedure has to be analysed. Possible corrective actions are:
 - Checks of pre cleaning and improvement (no dirt before disinfection)
 - Checks of the cleaning procedure (times and concentration of detergents and disinfectants)
 - Checks whether the detergents and disinfectants are the right substances for the cleaning.
 - Structural changes in building and equipment to allow easy cleaning.
 - Training of cleaning staff.

2. Management

- 2.1. A permanent procedure or procedures based on the HACCP principles (Hazard Analysis of Critical Control Points) has to be in place, implemented

and maintained to minimize the risk of cross contamination during the slaughter process.

- 2.2. The seven HACCP steps have to be in place:
 - Determination of hazards, which can be avoided, eliminated or reduced to an acceptable quantity.
 - Determination of critical control points
 - Determination of limits
 - Implementation of monitoring procedures to control the critical points
 - Determination of corrective actions in case of critical control points are out of limits.
 - Determination of verification procedures
 - Documentation
- 2.3. The hazard analysis should include the following steps:
 - Lairage (storage condition of live birds)
 - Handling of live birds
 - Stunning
 - Scalding and scalding temperature (Scald tanks should be operated at as high a temperature as possible, although it is acknowledged that this may be limited by the effect on the appearance of the carcasses, and the scald water should be kept as clean as possible.
 - Plucking
 - Evisceration
 - Hygiene standards
- 2.4. Limits for the determined control points can be:
 - Visual dirt on equipment
 - Bad microbiological results
 - Contamination of a flock slaughtered after a positive flock (on the next day)
- 2.5. The slaughterhouse management should organize that the determined control points are monitored on a regular basis according to HACCP principles:
 - by visual control
 - by swabs taking samples (contact plates) for microbiological control
 - by swabs for salmonella testing
 - by neck skin samples
- 2.6. Salmonella positive flocks (irrespective of what serotype) should be slaughtered at the end of the day and after the Salmonella negative flocks.

3. Monitoring and surveillance

- 3.1. Sampling and testing of the transport equipment
 - 3.1.1. Lorries, curtains and transport crates should be sampled on a regular basis for salmonella. Special attention should be paid to skids of the transport crates, to the curtains and to the floor of the lorry.
- 3.2. Sampling and testing of the slaughterhouse lines
 - 3.2.1. Transport belts (carousel before hanging the birds into the line), stunning devices, scald tanks, rubber fingers, various CCP's (Critical Control Points) on the evisceration lines.
- 3.3. The slaughterhouse should take neck skin samples according to EU regulation 2073/2005.
- 3.4. The intensity of monitoring and sampling for Salmonella in the slaughterhouse depends on the level of positive flocks slaughtered and on the percentage of positive neck skin samples.

- 3.4.1. In general the lower the number of S. pos. broiler flocks slaughtered (< 3 %), the more intensive cleaning and disinfection on the slaughterhouse level must be. In this case it can be expected that special cleaning and disinfection actions including microbiological monitoring are undertaken after the slaughter of **any** Salmonella positive flock.
- 3.4.2. This special attention to a very intensive cleaning and disinfection procedure including microbiological monitoring becomes of utmost importance for the transport lorries, crates and containers, if the farm practises thinning.
- 3.4.3. If the number of pos. supplier flocks is high (< 10 %), the emphasis of Salmonella control activity must lay first hand on reduction of positive broiler farms. In this case it cannot be expected that the processing plant does a microbiological monitoring after every S. positive flock.
- 3.4.4. A very intensive and careful cleaning and disinfection on the slaughterhouse level can be expected under these circumstances at the end of **every** processing day.
- 3.4.5 If the number of S. positive broiler flocks is intermediate (between 3 and 10 %), logistic slaughter including very efficient cleaning and disinfection procedures at the end of the every slaughter day, (a) positive flock(s) is processed, becomes of utmost importance.
- 3.4.6. Instead of a microbiological monitoring every day, neck skin samples from a neg. flock (50 samples pooled by 10) slaughtered first on the **next** day should be taken and monitored for salmonella. This will indirectly demonstrate the effectiveness of cleaning and disinfection.

D RECORD KEEPING, DATA TRANSFER AND COMMUNICATION

I. Records

Operators responsible for broiler farms will record and retain information on the measures applied to control and prevent infection, and specifically the measures intended to control and prevent the presence of zoonotic Salmonella and Campylobacter.

Specifically, the records listed below will be kept:

- Numbers of poultry per flock/house received
- Daily mortality of poultry per flock/house
- Records of visits
- Records of veterinary treatments and prescriptions (use of veterinary medicinal products, vaccination)
- Certifications or records of the origin of the stock
- Results of the testing for Salmonella spp
- Certifications or records of the origin of the feed /raw materials
- Results of the testing of the feed/raw materials
- Records of the maintenance of the system for water sanitization (chlorination)
- Results of controls of quality, based in the defined protocol
- Records of the accomplishment of the disinfection protocol.
- Records of the accomplishment of the protocol for insect control.
- Records of the accomplishment of the protocol for rodent control.
- Record of the date and number of poultry delivered to the slaughterhouse.

For the conservation and maintenance of these records, the operator can be assessed by the veterinary advisor.

2. Record Keeping


- All records required by this guide must be kept for 3 years at least.
- The storage conditions must prevent any deterioration or damage to the records.
- The records must be sorted and filed for complete and easy information and be legible.

3. External Communication

- External communication among the different members of the feed and food chain is an essential tool in the production of safe food and food products:-
- Therefore, the users of this Guide are encouraged to communicate and share with both suppliers and customers the results of the testing and monitoring undertaken.
- Poultry meat producers must endeavour to ensure that all food safety hazards are not only identified, evaluated and controlled but also communicated to other members of the food chain so that they can be managed to minimise the impact to human and animal health.

ANNEXES

Annex I Reference to legislation, quality schemes and other sources

- [Regulation \(EC\) 2160/2003](#) of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents, as amended.
- [Directive 2003/99/EC](#) of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC
- [Regulation 1003/2005](#) target setting for the reduction of salmonella in breeding stock
- [Regulation \(EC\) No 646/2007](#): target setting for reduction in flocks of broilers
- [Regulation \(EC\) No 1177/2006](#): requirements for use of antimicrobials and vaccines in control programmes for poultry
- [Regulation \(EC\) No 178/2002](#) laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety
- [Implementation Guidance Document OF ARTICLES 11, 12, 16, 17, 18, 19 and 20 of Regulation \(EC\) No 178/2002 on General Food Law](#) [da](#) [de](#) [el](#) [es](#) [fi](#) [fr](#) [it](#) [nl](#) [pt](#) [sv](#) safety
- [Regulation \(EC\) 852/2004](#) on the hygiene of foodstuffs, 29 April 2004
- [Commission Regulation \(EC\) No 2073/2005](#) as amended, which sets down microbiological criteria for foodstuffs (see section on [Microbiological criteria](#))
- [Commission Regulation \(EC\) No 2074/2005](#) which contains a set of implementing measures such as provisions concerning food chain information, recognised testing methods for detecting marine biotoxins, lists of establishments, model health certificates for certain products of animal origin and a derogation for foods with traditional characteristics
- [Guidelines](#)  for the development of Community guides to good practice have been prepared together with the Member States.
- [Guidance document](#) [cs](#) [da](#) [de](#) [el](#) [es](#) [et](#) [fi](#) [fr](#) [hu](#) [it](#) [lt](#) [lv](#) [mt](#) [nl](#) [pl](#) [pt](#) [sk](#) [sl](#) [sv](#) on the implementation of certain provisions of Regulation (EC) No 852/2004 on the hygiene of foodstuffs.
- [Guidance document](#) [cs](#) [da](#) [de](#) [el](#) [es](#) [et](#) [fi](#) [fr](#) [hu](#) [it](#) [lt](#) [lv](#) [mt](#) [nl](#) [pl](#) [pt](#) [sk](#) [sl](#) [sv](#) on the implementation of procedures based on the HACCP principles, and on the facilitation of the implementation of the HACCP principles in certain food businesses.
- [Regulation \(EC\) 853/2004](#) laying down specific hygiene rules for food of animal origin, 29 April 2004
- [Guidance document](#) [cs](#) [da](#) [de](#) [el](#) [es](#) [et](#) [fi](#) [fr](#) [hu](#) [it](#) [lt](#) [lv](#) [mt](#) [nl](#) [pl](#) [pt](#) [sk](#) [sl](#) [sv](#) on the implementation of certain provisions of Regulation (EC) No 853/2004 on the hygiene of food of animal origin.

- Regulation (EC) 854/2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption, 29 April 2004
- Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules
- Directive 2002/99/EC laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption, 16 December 2002
- The Assured Chicken Production Scheme (ACP) standards for poultry (http://www.redtractor.org.uk/download/rt_standards_chicken.pdf)
- IKB Chicken (https://bedrijfsnet.pve.agro.nl/pls/pbs/bntwpve.bnt2_menuutree_bdr.popupwindow?p_cnr_id=30772&p_pfe_id=0)
- QS System (<http://www.q-s.info/Fleisch.97.0.html>)
- Belplume (<http://www.belplume.be>)
- Zoonoses: DEFRA Codes of Practice for the control of Salmonella (<http://www.defra.gov.uk/animalh/diseases/zoonoses/salmonella-cop.htm>)

Annex II Laboratory

I. Licensed laboratories

According to Article 12 of regulation 2160/03 laboratories which perform testing for zoonotic agents in the frame of control programs at farm level have to

- be licensed by the Competent Authority of the MS
- use a quality norm according to EN / ISO 17025:2002
- participate in ring tests performed by the national reference laboratory.

Analyses on food (slaughterhouses) should be done in accordance with Article 5 of Regulation (EC) NO 2073/2005 as amended.

Other labs may not perform tests for *Salmonellae* and *Campylobacter*.

Annex III - Definitions

1. biosecurity measures: are measures set up to implement hygiene standards at all levels of the production in order to manage the animal health including the microbiological condition of the live poultry and the poultry meat. The measures are implemented to prevent the introduction, spread and persistence of Salmonella in chickens reared for meat production and in poultry meat

2. isolated: separated from other houses

3 the poultry site: can be one or more poultry houses. The poultry site is an entity where the same entrance/exit is used for having exit to one or more poultry houses. A unit is a part of a site that can be isolated from other units (a unit can be one or more houses) by intermediate biosecurity measures

4. disinfection, hand washing facilities, chemicals: The chemicals used for disinfecting hands are approved by the competent authority who also can provide a list of the approved disinfectants.

5. footdip barrier: footbaths with approved disinfectants - best when there are 2 one just inside the anteroom and one inside before entering the poultry house. Can be used as only barrier but works best combined with anteroom

6. anteroom: description and place: being designated as “clean” or “part of the house” and the other part being designated “dirty or “outside the house”. These areas are separated by clear demarcation e.g. physical barrier or a line painted on the floor of the house. Separate footwear is at least provided for the clean area. The ante-room must be kept clean and should be disinfected regularly and is used for changing clothes.

7. carcasses: dead animals

8. old litter: is litter that is no longer fit to be used

9. intercrop: between two harvests

10. concrete aprons: the platform- floor often made of concrete outside the poultry house