

**CODE OF PRACTICE FOR THE PREVENTION AND CONTROL OF SALMONELLA
IN BREEDING FLOCKS AND HATCHERIES**

Contents

	Page
Preface	4
Introduction	4
Part A	6
Preventing Introduction	6
1. FARM	6
1.1 Location	6
1.2 Holdings	6
1.3 Buildings	6
2. LIVESTOCK	6
2.1 Poultry	6
2.2 Domestic Livestock	7
2.3 Wild and Feral Animals	7
3. FEED AND WATER	7
3.1 Poultry Feedingstuffs	7
3.2 Water Supply	8
4. PERSONNEL	8
4.1 Farm Staff	8
4.2 Visitors	9
5. SUPPLIES	9
5.1 Litter	9
5.2 Equipment	9
5.3 Egg Trays and Trolleys	10
5.4 Drugs, Vaccines and Other Medicines	10
Daily Routine of Hygiene and Husbandry	10
6. PERSONNEL AND STOCKS	10
6.1 Farm Staff and Visitors	10
6.2 Litter	10
6.3 Eggs	11
6.4 Birds	11
7. CONTROL OF PEST INFESTATIONS	11
8. EGG ROOM	11
9. CHANGING ROOM	11
10. TOILETS AND BREAK-ROOMS	11
11. EQUIPMENT STORE	12
12. EGGS TO HATCHERY	12
13. DISPOSAL OF FARM WASTE	12
End of Cycle Routines	12
14. EMPTY FARM CLEANING	12
15. FORWARD PLANNING	12
16. DEPLETION	13
17. CLEANING	13
18. DEAD STOCK BIN OR BUILDING	14
19. FEED BINS	14

20. DISINFECTION	14
21. REPAIRS AND MAINTENANCE	14
22. WATER SUPPLY	15
23. ASSEMBLY OF EQUIPMENT	15
24. EQUIPMENT CHECK	15
25. FUMIGATION	15
26. VEHICLES	15
27. FINAL CHECK	15
28. RESTOCKING	16
Part B	17
Salmonella Entering A Hatchery	17
1. HATCHING EGGS – RISK ASSESSMENT OF BREEDER FLOCK	17
2. EGGS	17
3. VEHICLES AND DRIVERS	17
4. PERSONNEL	18
5. PEST INFESTATIONS	18
Salmonella Within A Hatchery	18
6. MANAGEMENT	19
7. HYGIENE PROGRAMME	19
8. STRUCTURE	20
9. VENTILATION	20
10. WORK AREAS	20
11. WASTE DISPOSAL	21
12. CONTROL OF PESTS	21
Design Of A New Hatchery	21
Transfer Of Salmonella From A Hatchery To Breeder Farms	21
13. MANAGEMENT	21
14. EQUIPMENT	21
15. VEHICLES AND DRIVERS	22
Annexe A Consideration Of Nesting Wild Birds	23
Annexe B Visitors' Book	24
Annexe C Salmonella Status Of Supply Flocks	25
Notes	26

CODE OF PRACTICE FOR THE PREVENTION AND CONTROL OF SALMONELLA IN BREEDING FLOCKS AND HATCHERIES

Preface

This voluntary Code of Practice is issued by the Department for Environment, Food and Rural Affairs, Scottish Executive Environment and Rural Affairs Department and the National Assembly for Wales. It has been drawn up in consultation with the British Egg Industry Council, the British Poultry Meat Federation, the British Veterinary Association, the National Farmers Union and the Farmers Union of Wales.

Introduction

Although salmonella organisms are widespread and their complete elimination from the environment is unlikely to be achieved, considerable progress has been made in reducing the main risks of contamination in breeding flocks and hatcheries. This has come about in part because of the Government's package of measures to control salmonella in poultry, together with the poultry industry's endeavour to improve the health status and standards on breeding farms and related hatcheries.

The Zoonoses Directive (92/117/EEC) contains provisions for Community-wide controls for salmonella in domestic fowl and the Poultry Breeding Flocks and Hatcheries Order 1993 reflects monitoring requirements of the Directive. Additional monitoring may assist with early identification of infection. Statutory provisions for reporting isolations of salmonella continue under the Zoonoses Order 1989 with appropriate procedures for dealing with infected flocks under the Animal Health Act 1981.

The risks of salmonella infecting a flock include the introduction of the organism from outside the holding and the persistence of the organism on the holding following a previous incident. Incubation encourages the growth of salmonella and thus the process of hatching can allow significant dissemination of bacteria.

Appropriate action, including a comprehensive hygiene programme, is a desirable objective to safeguard the disease security of all poultry breeding flocks and to control the contamination of their progeny. This Code sets out suitable voluntary guidelines to safeguard disease security which we hope that producers will follow closely.

Part A of this Code of Practice relates to the prevention of risk of salmonella on breeder rearing and laying farms. It aims to prevent an initial introduction of salmonella, to safeguard the status of the flock, and to eliminate any organisms following flock depopulation.

Part B of the Code relates to hatcheries and sets out standards aimed at preventing salmonella entering the hatchery, controlling salmonella within and leaving the hatchery.

While these measures seek to control **Salmonella enteritidis** and **Salmonella typhimurium** they apply equally to other serotypes and are applicable to breeding flocks and hatcheries of domestic fowl, turkeys, ducks and geese.

The broad terms in this Code should be converted into local operating procedures at each breeding farm and hatchery.

Part A THE PREVENTION AND CONTROL OF SALMONELLA IN BREEDING FLOCKS

Preventing Introduction

1. FARM

1.1 Location

- a.** The farm should be located away from other poultry holdings, where circumstances permit. It should be constructed or adapted so as to be suitable for all operations to be carried out.
- b.** Any poultry litter should be spread away from any poultry site.

1.2 Holdings

- a.** The perimeter of the farm should be identified, preferably be fenced and gated securely, with parking facilities away from the buildings.
- b.** Good management is dependent on a clean and tidy site. Rodent control is enhanced by the control of vegetation, including in and around ditches, with effective general management.

1.3 Buildings

- a.** Livestock buildings should be sound in structure and repair to confine the birds and provide proofing against rodents and wild birds.
- b.** Where possible surfaces should be smooth, hard and impervious. Concrete floors are desirable for sound construction and effective disinfection.
- c.** Ancillary rooms (egg store, changing room, break room, toilets, equipment and other stores) should be of a similar standard to that set for livestock buildings.
- d.** Where an alternative management system is employed, for example using free-range conditions, every effort should be made to achieve the standards set out in this Code.

2. LIVESTOCK

2.1 Poultry

- a.** It is advisable to keep birds of only one age on an “all-in”, “all-out” farm, to obtain them from a single source and to contain them inside the buildings.

- b.** Unique genetic material should be kept in more than one building and on more than one holding.
- c.** Ideally, parent breeding flocks should not be kept on the same holding as grandparent or elite breeding flocks.

2.2 Domestic Livestock

The entry of pet, farm or other livestock to poultry buildings should be forbidden, as should their presence on the holding.

2.3 Wild and Feral Animals

- a.** Effective measures should be taken to ensure poultry buildings and buildings used to store eggs are not infested by vertebrate or invertebrate pests.
- b.** Effective measures should be taken to ensure poultry buildings in which poultry are kept permanently throughout their rearing or laying periods are not accessible to any other birds at any time. Their entry should be discouraged by proofing the building, although due consideration must be given to nesting birds. (See Annexe A.)
- c.** Buildings should be pest proof and rodent habitat destroyed by a clean and tidy farm approach. Rodents should be controlled by baiting and trapping to a planned programme inside and outside the livestock buildings and other buildings with particular attention to any slatted areas.
- d.** Wild birds can be discouraged by bird-proofing buildings and by cleaning up feed spillages immediately.

3. FEED AND WATER

3.1 Poultry Feedingstuffs

- a.** Feed should be supplied from a feed mill that is operating according to the relevant Salmonella Codes of Practice¹, which excludes raw materials presenting a high risk of contamination with salmonella and is able to make available results of monitoring under the Codes. Medicated feedingstuffs should only be obtained from mills registered with the Royal Pharmaceutical Society of Great Britain and which comply with the Feedingstuffs Manufacturers Code of Practice under the Medicines Act 1968.

¹ Code of Practice for the Control of Salmonella in the Production of Final Feed for Livestock in Premises Producing Over 10,000 Tonnes Per Annum (PB 2200)
Code of Practice for the Control of Salmonella in the Production of Final Feed for Livestock in Premises Producing Under 10,000 Tonnes Per Annum (PB 2201)
Code of Practice for the Control of Salmonella During the Storage, Handling and Transport of Raw Materials Intended for Incorporation into Animal Feedingstuffs (PB 2202)

- b.** Heat or other effective anti-salmonella treatment should be used in manufacture. Confirmation should be sought by the purchaser of the poultry feedingstuff that the operating temperature is sufficient to control salmonella.
- c.** Breeder feed should be delivered in dedicated vehicles, used only for that purpose, which are not backloaded with raw materials or other feeds.
- d.** The driver of a vehicle used to deliver breeder feed should, like other visitors, have clean boots, overalls and vehicles which can be disinfected. The driver should not enter the livestock buildings.
- e.** A sample of all feed deliveries should be retained on the holding for 12 weeks and then removed. All such samples must be removed when the buildings are emptied.
- f.** Feed spillages are to be avoided and any spills should be cleaned up immediately.

3.2 Water Supply

- a.** There should be an enclosed delivery system for water into livestock buildings, which protects it from contamination.
- b.** The water supply should be from a mains or other chlorinated source.

4. PERSONNEL

4.1 Farm Staff

- a.** The farm manager should review the position of existing staff and encourage them to meet the following standard.
- b.** New staff should not keep or have any contact with poultry, or any other avian species.
- c.** Entry to a poultry building should only be by those wearing disposable overall clothing, or overall clothing which is capable of being laundered and boots which are capable of being cleansed and disinfected.
- d.** On leaving a poultry building the person should immediately cleanse and disinfect boots and wash hands.
- e.** Farm staff should be encouraged to understand and practice hygiene and security standards set out in this Code and have the authority to cause others to do likewise.
- f.** The standards for farm staff are applicable, equally, to all relief staff and casual staff.
- g.** Working in contact with other livestock should be avoided.

4.2 Visitors

- a.** This category includes managers, sample collectors, electricians and other maintenance personnel, veterinarians, delivery and collection staff, authorised officials and others.
- b.** Visits to the holding should be for essential purposes only and any others are to be discouraged. Entry to livestock pens should be restricted to those with essential duties.
- c.** Visitors should park away from the buildings, preferably outside the holding (except where this is not possible because of the nature of their duty, eg gas deliveries).
- d.** All visitors should sign a Visitors' Book, situated in the farm office, which should record certain information (see Annexe B).
- e.** No visitor should enter a poultry building unless wearing disposable overall clothing, or overall clothing which is capable of being laundered and boots which are capable of being cleansed and disinfected.
- f.** On leaving a poultry building all visitors should immediately cleanse and disinfect their boots and wash their hands.
- g.** Ideally, disposable overall clothing and boots should be provided by and retained on the farm.

5. SUPPLIES

A procedure to audit all supplies is recommended to establish the suppliers' standard of hygiene.

5.1 Litter

- a.** A source which is reliable in respect of absence of contamination by livestock, birds and rodents should be selected.
- b.** The standard set for feed should be applied where cereal husks, such as oat or buckwheat, are used as litter or nesting material.

5.2 Equipment

- a.** All equipment and vehicles used for catching or transporting poultry are high risk items. Cleansing and disinfection, with a Defra approved disinfectant, is a high priority before and after each occasion on which these items are used. Ideally, point-of-lay breeders should be moved in equipment and vehicles dedicated to that purpose and not used by other types of poultry.
- b.** Sharing of equipment should be avoided.

c. Any equipment for installation should be assessed and may need to be disinfected before delivery and again on receipt at the farm.

5.3 Egg Trays and Trolleys

a. It should be agreed with the hatchery that trays and trolleys will be received clean and disinfected. They should then be kept in an enclosed storage area.

b. Fibre keys trays should be new and have been stored by the supplier where they will not have risked contamination. On the livestock holding they should be held in a clean, dry environment.

5.4 Drugs, Vaccines and Other Medicines

Items should be delivered in unopened packaging. Part-used containers should not be used, nor should any medicinal products be transferred between farms.

Daily Routine Of Hygiene And Husbandry

The standard of this routine will have an important influence on control of salmonella. Each farm should have its own Manual of Working Instructions, which contains a checklist of routine hygiene and husbandry tasks, for use by staff.

6. PERSONNEL AND STOCKS

6.1 Farm Staff and Visitors

a. Footbaths should be provided and maintained outside each building and used every time that building is entered or left. The footbath should contain a Defra approved disinfectant, made up according to the manufacturers' instruction, which is replenished daily and renewed as necessary, in any event, at least once every seven days.

b. Hands should be washed on entering buildings, after dead bird collection, between clean and floor egg collection and between buildings.

c. Hands should be washed before and after meals and after visits to the toilet.

6.2 Litter

a. Nest litter should be managed to provide dry material, to avoid faecal contamination of egg surfaces and changed at least once weekly.

b. Daily removal of faecal material from nests and collecting machinery will reduce contamination of egg surfaces and is to be encouraged.

6.3 Eggs

- a.** Eggs should be collected from the flock at least twice a day or, in the case of a flock consisting of ducks or geese, at least once a day.
- b.** All broken, leaking, dirty and dented eggs are to be collected in separate containers from other eggs and not to be incubated.

6.4 Birds

- a.** Any sick or damaged birds should be culled as soon as they are identified.
- b.** Dead birds should be collected promptly and placed in waterproof, leak proof containers, ready for disposal.

7. CONTROL OF PEST INFESTATIONS

A regular check should be made of the proofing and control procedures to exclude infestations from livestock and ancillary buildings. A pest control book should be kept to record this action.

8. EGG ROOM

- a.** All eggs intended for incubation should be sanitised on the day of lay. All eggs should be stored in clean, dust-free rooms to which poultry are not permitted access and which are to be used exclusively as egg stores. The egg room should have a controlled environment.
- b.** All equipment, including trolleys and trays, should be stored inside the building.
- c.** All trays and trolleys (including wheels) should have a disinfectant spray at the time of receipt.

9. CHANGING ROOM

- a.** This room should be clean and tidy, and kept clean on a regular programme.
- b.** Clean and disinfected boots and overalls should be kept separate from used and/or dirty farm overalls and boots, and from non-farm clothing.

10. TOILETS AND BREAK-ROOMS

- a.** Toilet facilities and break rooms should be provided, kept clean and tidy, and cleaned on a regular programme.
- b.** There should be a supply of hot and cold water and bactericidal hand wash facilities.

11. EQUIPMENT STORE

A clean and tidy store of equipment and tools should be maintained free of obsolescent equipment and rubbish. Used equipment should be cleaned and disinfected before storage.

12. EGGS TO HATCHERY

- a.** The hatchery vehicle procedures are described in Part B of this Code.
- b.** On arrival the driver should have clean protective clothing, use the footbaths provided and not enter any livestock buildings.
- c.** Hatching eggs should be handled separately from those not intended for incubation.
- d.** Eggs for disposal should be discarded safely by a described farm arrangement.
- e.** Eggs should be collected regularly with, where possible, procedures for identification and segregation which will allow tracing of their movement between the farm and hatchery.

13. DISPOSAL OF FARM WASTE

- a.** Dead birds, culls and sexing errors should be incinerated or placed in a sealed pest-proof container at the edge of the holding for collection.
- b.** Other waste should be incinerated or placed at the edge of the holding for collection and daily removal from the holding.

End Of Cycle Routines

14. EMPTY FARM CLEANING

- a.** Complete and effective cleaning and disinfection is crucial to prevent any carry-over of salmonella organisms to the new flock. After a poultry building has been depopulated of poultry all manure should be removed from it and the building should be cleaned and disinfected with an approved disinfectant.
- b.** If the depleting flock is known or suspected to be salmonella positive, it is important to plan sufficient time to achieve effective terminal disinfection. Experience has shown that this is demanding and could take around eight weeks.
- c.** A step-by-step programme which is specified in detail below should be complemented by a local working procedure and followed with care.

15. FORWARD PLANNING

- a.** The timing of depletion and restocking is usually known and should allow the maximum possible empty time. A manager should be nominated to plan and oversee the changeover.
- b.** The approach to the total farm depletion and clean out and disinfection programme should be the same regardless of whether the flock is considered positive or negative for salmonella. In the case of positive flocks, buildings may be subject to additional specific cleaning and disinfection requirements of Defra.
- c.** Planning will include booking contract workers in advance and arranging for minimal feed and other supplies to remain after depletion.
- d.** Items needing maintenance, repair or replacement once the farm is empty should be listed and ordered.
- e.** Jobs which can be started before depletion, should be listed and started. Rodent control should be part of the normal routine, however if infestation has built up there will be a need for special attention to rodent control at depletion to prevent the rodents dispersing from buildings into the surrounding environment.

16. DEPLETION

This should mean the total removal of all birds, including males and birds in cull pens.

17. CLEANING

- a.** Any dead birds should be collected up and bagged for early incineration or collection. All movable equipment should be taken from the buildings to a hard standing for cleaning or stacked in a cleaned part of the building. Rubbish in the buildings should be discarded.
- b.** Ancillary rooms require similar appropriate treatment.
- c.** All surplus feed and used items should be removed from the site.
- d.** Buildings should be treated for insects as soon as birds have been removed. Whilst the usual rodent controls should have prevented infestation, intensive baiting for rodents should be carried out in the livestock areas, so that any present are not dispersed by the cleaning operation.
- e.** A spray-rinse should be used to control dust, then all litter including nest litter should be removed. Any litter which must be stored should be away from poultry buildings and other livestock. The hygienic disposal of litter is important and should include sheeting the loads for a road journey.
- f.** Floors should be swept clean of remaining litter and any material under slats or in pits should be pumped out or removed.

- g.** All items of equipment no longer required for use should be removed from both inside and outside buildings.
- h.** Cleaning equipment (brushes, shovels, barrows, etc) should be placed outside the building, preferably on a hard standing ready for cleaning and disinfection.
- i.** Checks should be made that the programme has been operated correctly to this point.

18. DEAD STOCK BIN OR BUILDING

This should be cleaned and disinfected.

19. FEED BINS

Cleaning (dry or wet), and disinfection should include all augers and vent pipes.

20. DISINFECTION

- a.** The whole building will require cleaning and disinfection. A detergent action should be used to remove visible dirt before using an appropriate Defra approved disinfectant. This includes not only livestock pens, but also passages, egg store, egg handling room, feed store, break-rooms, other ancillary rooms, outside doors and outside concrete.
- b.** Fans and ducting (inside and out), air inlets, drains, slats and pits, which may be inaccessible, should be cleaned and disinfected and not overlooked.
- c.** Footbaths should be clean and replaced.
- d.** The physical conditions of cleaning and disinfection may interfere with control measures for rodents. However baiting should continue throughout this phase, whenever practical. The loose equipment now outside the building should be disinfected.
- e.** Farm protective clothing (gloves, aprons etc), should be cleaned and disinfected and overalls for farm staff and visitors should be laundered.
- f.** A microbiological programme should be established to assess that the required standards have been achieved. This should include tests for salmonella and total viable counts of bacteria. A re-disinfection may be necessary to reach the desired objective which is a salmonella negative test result and satisfactory total viable counts of bacteria.

21. REPAIRS AND MAINTENANCE

- a.** All repairs and maintenance identified should be carried out by staff with clean overalls, boots, tools and equipment.

- b.** Holes which give access to rodents should be sealed, this includes drain holes which can be reopened at the end of the next flock. Floor cracks should be sealed with cement or tar.
- c.** All woodwork associated with bird pens should be treated with a wood preserving substance. The egg room, egg store and ancillary rooms should be painted where appropriate.

22. WATER SUPPLY

The header tanks and drinking lines should be checked and cleaned, then disinfected. The tank lid should seal the tank properly and be replaced securely.

23. ASSEMBLY OF EQUIPMENT

Equipment should be reassembled, with recleaning and disinfection of any item which has been overlooked or inadequately cleaned.

24. EQUIPMENT CHECK

All equipment should be checked for correct functioning, except drinkers which should remain empty. All maintenance should be completed before fumigation.

25. FUMIGATION

- a.** Fumigant can make rodent bait unpalatable, even after the chemicals have dispersed from the atmosphere. Thus, all rodent bait and traps should be left in place until fumigation is imminent, removed at that stage and be replaced on completion of the process.
- b.** The buildings, ancillary rooms and all small cleaning tools, gloves and other staff protective clothing should be fumigated, with due regard to health and safety considerations. Wet fogging is a preferred method, at a building temperature of $>20^{\circ}\text{C}$. The building should be sealed after fumigation.

26. VEHICLES

- a.** Any vehicle used in cleaning should be washed and cleaned after the cleaning procedure.
- b.** When the farm has been cleaned and fumigated especial care should be taken to clean any other vehicles used on the farm, including private motor cars, particularly the inside floors and the boot.

27. FINAL CHECK

- a.** A final check of the whole farm should be made to ensure that nothing has been missed. This should include a check that the mains drains are flowing freely.
- b.** Grass around the perimeter areas should be cut and weeds controlled.

28. RESTOCKING

- a.** Equipment used for catching or transporting poultry should be dedicated to the purpose and should be cleaned and disinfected with a Defra approved disinfectant before each occasion on which it is used.

- b.** The delivery of feed and birds should be arranged and following the delivery of the birds, it will help to reduce rodent access if cement is placed around the bottom of doors used for delivery of birds.

- c.** Each building should be baited to continue rodent control, even if there is a delay before restocking. Adequate bait points must be sited within the building, whilst preventing the poultry obtaining access to them. Suitable positions, which offer harbourage to rodents, should be baited and include corridors, under slats and in areas where feed is dispensed.

Part B THE PREVENTION AND CONTROL OF SALMONELLA IN HATCHERIES

Salmonella Entering A Hatchery

Salmonella may be introduced into a hatchery in a variety of ways, these are considered below, together with the relevant controls.

1. HATCHING EGGS – RISK ASSESSMENT OF BREEDER FLOCK

a. The breeder flock supplying the eggs will have been tested for salmonella in accordance with the Poultry Breeding Flocks and Hatcheries Order 1993. Thus, an assessment of the salmonella risk from incoming hatching eggs can be made and updated regularly. Data from any additional on-farm serological or bacteriological tests may help with risk assessment. The effectiveness of this process will depend on prompt and close co-operation between those concerned. A suggested record form is printed in Annexe C for display at the hatchery.

b. Hatching eggs should be identifiable according to risk and segregated into:

“high risk”: flocks with confirmed infection whose eggs are moved under licence, flocks under investigation, treated with antibiotic to control salmonella, purchased eggs, dirty nest eggs and floor eggs;

“low risk”: no known salmonella isolates in current or previous flock, seronegative flocks.

2. EGGS

a. Every effort should be made to minimise faecal contamination of shells at the breeder farm. The selection of eggs for hatching from only those graded as “clean” is recommended.

b. Surplus hatching eggs, from low risk flocks, may be destined for human consumption. These should be packed, stored and kept separate from those designed for hatching. Hatching eggs from infected flocks must be handled in accordance with Defra instructions.

c. Hatching eggs should be collected from breeding farms regularly.

d. All eggs should be sanitised before incubation, ideally by fogging or sanitization on the day of lay and where possible, fumigation in transit from breeder farm (exhaust air on arrival at hatchery before unloading) and fogging before setting at hatchery.

3. VEHICLES AND DRIVERS

a. The movement of vehicles and their drivers between hatcheries and farms is a high risk procedure which can spread salmonella and requires careful control by local procedures. Ideally this means dedication to either breeder farm/hatchery or hatchery/chick delivery.

- b.** All vehicles used for transporting equipment, eggs or chicks should be cleaned and disinfected with a Defra approved disinfectant before each occasion on which they are used.
- c.** Protective clothing, particularly disposable gloves for delivery of chicks, should be provided and its use encouraged actively. Drivers should wash their hands after delivering chicks and before returning to the hatchery.

4. PERSONNEL

- a.** New staff should not keep or have contact with any poultry or other avian species. The hatchery manager should review the position of existing staff and encourage them to comply with this standard.
- b.** All visitors, except those who are considered essential, should be discouraged from entering the hatchery; drivers should be regarded as visitors and sign the Visitors' Book.
- c.** Protective clothing, including waterproof footwear, should be provided by the hatchery for use by visitors and staff.
- d.** Foot dips containing Defra approved disinfectant should be installed on entry to the hatchery, maintained effectively and used by all entrants to the hatchery.
- e.** Laundry procedures for protective clothing should be specified and facilities provided by the hatchery. Any other removal of protective clothing from the hatchery should be prohibited.
- f.** The overalls used for either egg transfer or chick take-off work areas should be separate from those used in other work. Colour coding may be useful to achieve this.
- g.** Hand wash and foot dip facilities should be provided and used between work areas, with hand wash between flocks of differing risk in the same work area.
- h.** Adequate facilities are needed for personal hygiene.
- i.** A programme of staff training should be provided on salmonella control in the hatchery, as covered in this Code.

5. PEST INFESTATIONS

Rodents, wild birds and flies should be considered as means by which salmonella may enter a hatchery. Thus appropriate prevention and control procedures are required. The hatchery should be designed and maintained to prevent the entry of pests.

Salmonella Within A Hatchery

6. MANAGEMENT

- a.** The points of principle which deal with control of salmonella within a hatchery are outlined. However a manual of written instructions for the procedures should be developed as a working document at each hatchery.
- b.** Local procedures for dealing with “high risk” flocks need to be specified.
- c.** A hatchery should be located and constructed to be suitable for all operations on the premises. Adaptations of existing hatchery construction and operation should take full account of salmonella control. A plan of the hatchery should be produced and displayed.
- d.** A one-way system for the flow of eggs and chicks should be operated.
- e.** Layer chicks and broiler chicks should be hatched separately from each other. Pedigree, grandparent and parent stock should be hatched separately from each other and from stock intended for the production of eggs for human consumption or meat. Eggs of different species of birds should be hatched separately from each other.
- f.** Eggs, chicks and related equipment should be segregated according to salmonella risk and identified clearly for staff. Procedures involving material from high risk flocks should be dealt with last, or on separate days.
- g.** Work areas (particularly the egg transfer, chick take off area and wash room) and staff responsible for each area should be designated.
- h.** Foci of cross contamination should be identified and a local improvement programme implemented for critical points, particularly egg transfer, hatchers and chick handling, and the washroom.

7. HYGIENE PROGRAMME

- a.** A good programme of general hygiene control in a hatchery has an important beneficial influence on chick quality. Salmonella control is closely related, although visibly clean surfaces may still harbour salmonella and thus require effective terminal disinfection.
- b.** Defra approved disinfectants, with chemicals at correct concentration, should be specified, used and monitored regularly by estimation of total viable counts of bacteria after disinfection.
- c.** The use of vacuum cleaning to deal with chick fluff should be encouraged, provided good exhaust filtration is achieved and the use of washing at excessive pressures should be discouraged. The use of these procedures should keep aerosol production to a minimum.
- d.** Equipment used for cleaning must be cleaned according to a regular programme.

8. STRUCTURE

Cleanable surfaces must be provided and maintained in good repair. They should be smooth, hard and impervious.

9. VENTILATION

a. A separate ventilation system is required for each work area, or airflow in the same direction as the movement of eggs and chicks, thus air flow should be from clean to dirty, with no opening windows.

b. Air inlet and outlet areas should be separate, located at a maximum distance apart and as far from the waste handling area as possible.

c. Incoming air should be filtered, with coarse filtration as a minimum, if the air inlet and outlets are nearby. The air outlet from high risk areas should be located safely or filtered.

10. WORK AREAS

a. Functionally distinct work areas should be identified and separated adequately by air flow or a physical partition. Where this is not practical the flow of eggs, chicks and equipment should be segregated and high risk material dealt with last each day, or on different days.

b. Salmonella control in setters should be by regular fogging or fumigation, effective hygiene programmes and containment of high risk eggs in as few machines as possible. The allocation to flocks of similar salmonella risk to the same setter is desirable.

c. Egg transfer and hatching pose significant opportunities for cross contamination. This should be minimised by separate transfer heads and hatchers for high risk eggs, with an effective hygiene programme after each high risk use.

d. Ensure that hatchers, hatching rooms, take off rooms, sexing rooms, holding rooms and dispatch rooms are cleaned and disinfected between hatches, and that all other rooms are cleaned and disinfected with a Defra approved disinfectant each week.

e. Chick sexing tables and equipment should be cleaned and disinfected between hatches using Defra approved disinfectant.

f. All equipment used for vaccinating birds should be cleaned and disinfected with a Defra approved disinfectant, or otherwise sterilised according to manufacturers' instructions between hatches and supply flocks of differing risk.

g. All equipment should be washed to achieve a high standard of cleaning and disinfection with, ideally, separation of handling for hatchery equipment and breeder farm trolleys and trays.

h. Any dry goods, such as keyes trays, which are stored within the hatchery should be in an enclosed area separate from other work areas.

11. WASTE DISPOSAL

a. A high volume of waste, potentially infected with salmonella, is produced during normal hatchery operation. The difficulty of handling hatchery waste to prevent spread of salmonella should not be underestimated. A regular and careful evaluation of waste handling is advisable, with particular attention to skip hygiene and movements.

b. The method of waste handling (eg compaction, maceration, vacuum exhaust, incineration) must be adequate to meet the volume produced by the hatchery.

c. All hatchery waste should be enclosed in a secure pest-proof area or in an enclosed container (or skip), which is disinfected on arrival and emptied before the capacity is exceeded. Any leakage of waste material should be dealt with promptly.

12. CONTROL OF PESTS

a. An effective rodent control programme should be part of routine hatchery management.

b. Wild birds should be excluded from the hatchery and associated equipment.

Design Of A New Hatchery

Hazard Analysis Critical Control Point (HACCP) principles should be considered for control of salmonella at all stages of design and construction in new hatcheries. Specialist microbiological advice should be sought at an early stage.

Transfer Of Salmonella From A Hatchery To Breeder Farms

13. MANAGEMENT

It is possible that salmonella will spread from a hatchery to a breeder farm unless adequate precautions are taken. A thorough hygiene programme for equipment and personnel should be drawn up to eliminate that risk.

14. EQUIPMENT

a. Egg trolleys and trays should be cleaned, disinfected and stored in separate indoor accommodation, which is clean and free of wild birds and rodents.

b. All equipment leaving the hatchery should be fogged or fumigated in the trolley dispatch area or delivery vehicle.

c. A separate exit for dispatch of equipment to breeder farm and for chicks should be provided and used.

15. VEHICLES AND DRIVERS

The standard described for collection of hatching eggs is applicable.

Annexe A

Consideration Of Nesting Wild Birds

Section 1 of the Wildlife and Countryside Act 1981 makes it an offence to take measures to disturb birds when they are already nesting, or building a nest. Where possible proofing should, therefore, be carried out before nesting commences. For *most* bird species, however an exception to Section 1 of the Act is provided where public health and safety and the risk of disease is involved (Section 4 of the Act) and that is applicable here. *This exception is not available in the case of certain birds, such as the barn owl*, listed in Schedule 1 of the Act except under licence from the Secretary of State. These licences would only be granted in very exceptional circumstances. Furthermore in cases where the building in question is known to be used as a nesting site for barn owls, action outside the nesting period should be taken only after consultation with ADAS or other organisations experienced in conservation.

Annexe B

Visitors' Book

The following headings are recommended:

Date	Name of Visitor	Company Address	Purpose of Visit

Annexe C

Salmonella Status Of Supply Flocks

Hatchery Name:

Update:/...../.....

The current salmonella status of the flocks supplying this hatchery are listed below:

Supply Farm	High Risk			Low Risk	
	Confirmed Infection	Antibiotic Treated	Under Investigation	No Known Isolates	Seronegative

Signed

Position

Notes

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