



ROSS TECH 03/38

**POULTRY HOUSE
CLEANOUT
PROCEDURES**



Broiler and hatching egg producers worldwide face an ongoing challenge to ensure that their products are free from disease. The broiler industry will continue to adopt standards used in food preparation rather than in animal production. Effective cleaning out of poultry houses ensures that diseases are not transmitted from flock to flock and protects the consumer from food borne disease. This Ross Tech aims to highlight the important aspects of poultry house cleanout.

OBJECTIVES

To clean and disinfect the poultry house so that all potential poultry and human pathogens are removed and to minimise the numbers of residual bacteria, viruses, parasites and insects etc. between flocks minimising any effect on health, welfare and performance of the subsequent flock.

HOUSE DESIGN

The house and equipment should be designed to enable easy, effective cleaning. The poultry house should incorporate concrete floors, washable (i.e. impervious) walls and ceilings, accessible ventilation ducts and no internal pillars or ledges. Earth floors are impossible to clean and disinfect adequately. An area of concrete or gravel extending to a width of 1-3m surrounding the house can discourage the entry of rodents and provide an area for washing and storing removable items of equipment.

PROCEDURES

This Ross Tech aims to summarise the main tasks involved to achieve effective cleanout of Poultry houses. Cleanout can be broken down into the following stages:

PLANNING: A successful cleanout requires that all operations are effectively carried out on time. Cleanout is an opportunity to carry out routine maintenance on the farm and this needs to be planned into the cleaning and disinfection programme. A plan detailing dates, times and labour and equipment requirements should be drawn up prior to depleting the farm to ensure that all tasks can be successfully completed.

INSECT CONTROL: Insects are significant vectors of disease and must be destroyed before they migrate into woodwork or other materials. As soon as the birds have been removed from the house and while it is still warm, the

litter, equipment and all surfaces should be sprayed with a locally recommended insecticide. Alternatively, the house may be treated with an approved insecticide within 2 weeks prior to depletion. A second treatment with insecticide should be undertaken before fumigation.

REMOVE DUST: All dust, debris and cobwebs must be removed from fan shafts, beams, exposed areas of unrolled curtains in open-sided houses, ledges and stonework. This is best achieved by brushing so that the dust falls on to the litter.

PRE-SPRAY: A knapsack or low-pressure sprayer should be used to spray detergent solution throughout the inside of the house, from ceiling to floor, to dampen down dust before removal of litter and equipment. In open-sided houses, the curtains should first be closed.

REMOVE EQUIPMENT: All equipment and fittings (drinkers, feeders, perches, nest-boxes, dividing pens etc.) should be removed from the building and placed on the external concrete area. It may not be desirable to remove automatic nest boxes and alternative strategies may be required.

REMOVE LITTER: The aim should be to remove all litter and debris from within the house. Trailers or rubbish skips should be placed inside the house before they are filled with soiled litter. The full trailer or skip should be covered before removal, to prevent dust and debris blowing around outside. Vehicle wheels must be brushed and spray disinfected on leaving the house.

LITTER DISPOSAL: Litter must be removed to a distance of at least 1.5km (1 mile) from the farm, and disposed of in accordance with local government regulations in one of the following ways:

- Spread on arable crop land, and ploughed in within 1 week.
- Buried in a 'landfill' site, quarry or hole in the ground.
- Stacked and allowed to heat (i.e. compost) for at least one month before being spread on livestock grazing land.
- Incinerated.

LITTER MUST NOT BE STORED ON THE FARM, OR SPREAD ON LAND ADJACENT TO THE FARM.



WASHING: Firstly check that all electricity in the house has been switched off. A pressure washer with foam detergent, should be used to remove the remaining dirt and debris from the house and equipment. Following washing with detergent the house and equipment should be rinsed with clean fresh water using a pressure washer. During washing, excess floor water can be removed using “squeegees”. All equipment, which has been removed to the external concrete area must be soaked and washed. After equipment is washed it should be stored under cover.

Inside the house, particular attention should be paid to the following places:

- Fan boxes
- Fan shafts
- Fans
- Ventilation grilles
- Tops of beams
- Ledges
- Water pipes

In order to ensure that inaccessible areas are properly washed, it is recommended that portable scaffolding and portable lights be used.

The outside of the building must be also be washed and special attention given to:

- Air inlets
- Gutters
- Concrete pathways

In open-sided housing, the inside and outside of curtains must be washed. Any items that cannot be washed (e.g. polythene, cardboard) must be destroyed.

WHEN WASHING IS COMPLETE THERE SHOULD BE NO DIRT, DUST, DEBRIS, OR LITTER PRESENT. PROPER WASHING REQUIRES TIME AND ATTENTION TO DETAIL.



Many different industrial detergents are available. Manufacturers instructions should be followed when using detergents.

Staff facilities should be thoroughly cleaned at this stage. In parent stock forms the egg store should be washed out and disinfected. Humidifiers should be dismantled, serviced and cleaned prior to disinfection.

THE WATER SYSTEM

Procedure:

- Drain pipes and header tanks.
- Flush lines with clean water.
- Physically scrub header tanks to remove scale and biofilm deposit. Drain to the exterior of the house.
- Refill tank with fresh water and add an approved water sanitiser.
- Run the sanitiser solution through the drinker lines from the header tank ensuring there are no air locks.
- Make up header tank to normal operating level with additional sanitiser solution at appropriate strength. Replace lid. Allow disinfectant to remain for a minimum of 4 hours.
- Drain and rinse with fresh water.
- Refill with fresh water prior to chick arrival.

Evaporative cooling and fogging systems can be sanitised at cleanout using a bi-guanide sanitiser. Bi-guanides can also be used during production to ensure that water in these systems contains minimal bacteria and reduce bacterial spread into the poultry house.

THE FEED SYSTEM

Procedure:

- Empty, wash and disinfect all feeding equipment i.e. feed bins, track, chain, hanging feeders.
- Empty bulk bins and connecting pipes and brush out where possible. Clean out and seal all openings.
- Fumigate wherever possible.

REPAIRS AND MAINTENANCE

A clean, empty house provides the ideal opportunity for structural repairs and maintenance. Once the house is empty, attention should be given to the following tasks:

- Repair cracks in the floor with concrete/cement.
- Repair pointing and cement rendering on wall structures.
- Repair or replace damaged walls and ceilings.
- Carry out painting or whitewashing where required.
- Ensure that all doors shut tightly.

RODENT AND WILD BIRD CONTROL

It is necessary to prevent rodents and wild birds from entering the building because they transmit disease and eat feed.

Procedure:

- Check all walls, panels and ceilings for holes, and repair these if necessary.
- Ensure that the fan/inlet boxes are bird proof.
- Check that all doors close firmly and tightly, with no gaps.
- Check for any leaks in the feed system. Easily accessible feed attracts vermin.
- In open-sided housing, the building must be made bird-proof, and repaired where necessary.

An area of concrete or gravel extending to a width of 1-3m around the house can discourage rodents from entering.

DISINFECTION

Disinfection should not take place until the whole building (including external area) is thoroughly clean and all repairs are complete. Disinfectants are ineffective in the presence of dirt and organic matter.

Disinfectants, which are officially approved for use against specific poultry pathogens of both bacterial and viral origin, are most likely to be effective. Manufacturers' instructions must be followed at all times. Table 1 contains details of commonly used disinfectants.

Disinfectant should be applied by the use of either a pressure-washer or a knapsack sprayer. Foam disinfectants allow greater contact time thus increasing the efficacy of disinfection.

Heating houses to high temperatures after sealing can enhance disinfection.

Most disinfectants have no effect against coccidial oocysts. Where selective coccidial treatments are required, compounds producing ammonia should be used, by suitably trained staff. These are applied to all clean internal surfaces and will be effective even after a short contact period of a few hours

TABLE 1. DISINFECTANTS AND BIOCIDES COMMONLY USED FOR POULTRY HOUSES AND EQUIPMENT.

Disinfectant type	Properties	Comments
Phenolic/synthetic phenolics	Bacteriocidal Weakly virucidal in some cases Low tolerance to organic matter	Not suitable for the food industry Environmentally unfriendly
Chlorine compounds	Bacteriocidal/Virucidal	Corrosive Economic Environmentally unfriendly
Organo-chloro compounds eg: chloramines and sodium dichloro-isocyanurate	Produce free chlorine in water Can be in powder form Inactivated by organic matter	Less corrosive than Hypochlorites Require long surface contact times
Iodophores	Release free Iodine in water Fast acting against bacteria. Virucidal	Non-corrosive Non-toxic Staining
Peroxygens	Broad spectrum anti-microbial activity Powerful oxidisers in concentrated form and require careful handling.	Environmentally safe Safe to use in diluted form
Aldehydes eg: formaldehyde, gluteraldehyde	Broad spectrum anti-microbial activity Can be used in liquid or gaseous form	Highly toxic to humans
Quarternary ammonium compounds	Some detergent properties Broad spectrum Bacteriocidal	Only bacteriocidal Very effective in combination with other disinfectants eg: gluteraldehyde Non-corrosive Tend to foam
Polymeric bi-guanides	Broad spectrum biocides/surfactants which form a film on chiller units	Film dissolves in condensate during slow release of disinfectant Non-corrosive
Organic acids	Acidic, generally a blend of formic/propionic acids in water. Antimicrobial by reducing pH to below 4.5	Non-corrosive Effective water sanitiser
Coccidial oocides	Most common compounds used are ammonium salts with surfactants which on activation release ammonia gas which is toxic to the oocyst	Pollution risk Hazardous to humans
Insecticides	Organo-phosphates and derivatives most commonly used	Extremely toxic to aquatic life. Staff training is essential

When using disinfectants close attention should be paid to manufacturers instructions on safety, dilution rates and contact times.

FORMALIN FUMIGATION

Where formalin fumigation is permitted fumigation should be undertaken as soon as possible after completion of disinfection. Surfaces should be damp. The houses should be warmed to 21°C. Fumigation is ineffective at lower temperatures and at relative humidities of less than 65%.

Doors, fans, ventilation grilles and windows must be sealed. Manufacturers' instructions concerning the use of fumigants must be followed. After fumigation, the house must remain sealed for 24 hours with NO ENTRY signs clearly displayed. The house must be thoroughly ventilated before anyone enters.

After litter has been spread, all the fumigation procedures described above should be repeated. For further guidance, reference should be made to local Health and Safety regulations, which should be adhered to at all times.

Fumigation is hazardous to animals and humans. Protective clothing i.e. respirators, eye shields, gloves must be worn. At least two people must be present in case of emergency.

**LOCAL HEALTH AND SAFETY
REGULATIONS MUST BE CONSULTED
BEFORE FUMIGATING.**



CLEANING EXTERNAL AREAS

It is vital that external areas are also cleaned thoroughly. Ideally, poultry houses should be surrounded by an area of concrete or gravel, 3m in width. Where this does not exist, the area must:

- be free of vegetation
- be free of unused machinery/equipment
- have an even, level surface
- be well drained, free of any standing water

Particular attention should be paid to cleaning and disinfection of the following areas:

- under ventilator and extractor fans
- access routes
- door surrounds

All concrete areas should be washed and disinfected as thoroughly as the inside of the building.

EVALUATION OF FARM CLEANING AND DISINFECTION EFFICIENCY

It is essential to monitor the effectiveness and cost of cleaning out and disinfection. Effectiveness is evaluated by undertaking total viable bacterial counts (TVC). Table 2 indicates the standards to be achieved in Parent Stock and Broiler houses. Monitoring trends in TVC's will allow continuous improvement in farm hygiene and comparison of different cleaning and disinfection methods.

TABLE 2. EVALUATION OF CLEANING AND DISINFECTION.

Sample site	Recommended No of Samples	Parent Stock		Broiler		
		TVC*		Salmonella	Maximum TVC*	Salmonella
		Target	Maximum			
Stanchions	4	5	24	Nil	100	Nil
Walls	4	5	24	Nil	100	Nil
Floors	4	30	50	Nil	1000	Nil
Feed Hopper	1			Nil		Nil
Nest Boxes	20			Nil		
Crevices	2			Nil		Nil
Drains	2			Nil		Nil

* Total viable count in colony forming units / cm²

The high standards of cleanliness and biosecurity required in modern parent stock and broiler operations are best achieved by establishing standard procedures for cleanout and monitoring results. This Ross Tech provides a template for cleanout which will allow continuous improvement of poultry house hygiene resulting in improved health and performance.

This information comes to you from the Technical Team of Aviagen. Although it is considered to be the best information available at the present time, the effect of using it cannot be guaranteed because performance can be affected substantially by many factors including flock management, health status, climatic conditions etc.

Every attempt has been made to ensure the accuracy and relevance of the information presented. However, Aviagen accepts no liability for the consequences of using the information for the management of chickens.

Data presented in this Ross Tech should not therefore be regarded as specifications but illustrate potential performance.

For further information on the range of technical literature available for Aviagen Stock please ask your local Technical Services Manager or contact our Marketing Department at:

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The Aviagen logo features the word "Aviagen" in a white serif font with a trademark symbol. Above the letter 'i' is a stylized red and white graphic of a bird's head in profile, facing right.