

# Bio-Security and Hatchery Hygiene

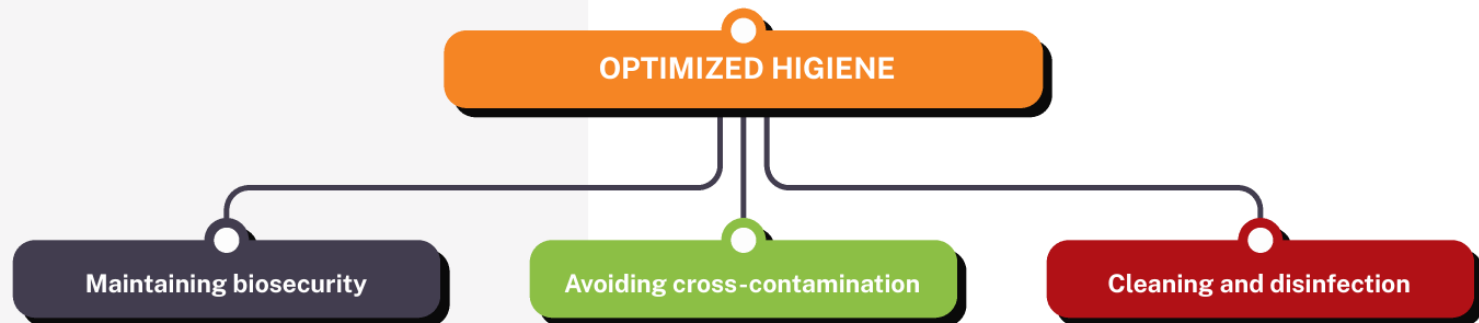


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Good hatchery hygiene is a global prerequisite for a healthy chick.

Often it is overlooked as being a **critical factor in chick hatch** numbers and field performance. **There are few things to note when considering hatchery hygiene.**





- ▶ Firstly, availability of detergents and sanitisers will vary from country to country due to registrations and ability to source a specific brand or type of product.
- ▶ Secondly, regardless of location of the facility, products need to be sourced and used as per manufacturers recommendations & aligned with the Breeder supplier guidelines.
- ▶ Lastly, management and staff of the hatchery need to be trained/educated in the risks associated with poor use of detergents and sanitisers and the long term benefits of using the right product in the right quantities at the right time.

When comparing between successful and poor hatchery, **successful hatchery** have a healthy breeding flock, clean hatchery with clear processes, dedicated staff taking good care of the birds health and welfare, they follow processes to safeguard optimal quality during all processes from breeder flock management to hatching egg collection, storage, incubation and chick handling.

On the other hand, **poor hatchery** is the opposite of successful hatchery and hence **result in reduced hatchability and chick quality** compared to breeder standards and therefore **economic losses due to poor Hatch of Fertile and bird field performance.**

Optimized hygiene in the hatchery is dependent on three key areas.

- ▶ First, **preventing pathogens from entering the hatchery**, in other words, maintaining **biosecurity**.
- ▶ Second, **avoiding cross-contamination** or the transfer of pathogens within the hatchery
- ▶ Third, **inhibiting further pathogenic development in the hatchery with cleaning and disinfection**.



The first key area, **Maintaining Biosecurity**, it can prevent pathogens from entering the hatchery. Pathogens can be carried into the hatchery by various means. The main ones are hatching eggs including transport equipment, hatchery staff and visitors, air entry and cross flow, rodents & wild birds and other means



For handling hatching eggs, hatching eggs need to be collected from nests frequently, use cleaned and disinfected egg trays to collect the eggs, workers should wear clean outer garments and wash hands prior to and after egg collection.



**It is recommended not to use dirty eggs for hatching, dirty eggs will need to be collected in a separate egg trays, store the collected clean hatching eggs in a designated room, clean and disinfect the egg processing area daily, implement effective rodent and insect control program, ensure that the farm allows for proper egg sanitation procedures and sanitation of the building itself.**



For vehicles and equipment, clean and disinfect vehicles thoroughly, wheel dips or wheel spraying at farm entrance, allow only necessary vehicles, **all new and used equipment should be thoroughly cleaned and disinfected, equipment brought onto the site from other hatcheries or units must be disinfected.**



**Maintaining Biosecurity with hatchery staff** and visitors includes having a wardrobe for clothing and shoes worn outside the hatchery to minimize cross over contamination, a clean shower, clear separation between the clean and dirty zone.

**Inside traffic should always flow from clean to dirty area**, having a wardrobe with clean, disinfected clothing and footwear to be worn inside the hatchery, foot baths and hand sanitizing stations between dirty and clean zones, employee cannot maintain poultry or pet birds at their residences, prohibit those who have visited another poultry operation.

**Any area accessed prior to the changing rooms and showers in a hatchery should be regarded as a 'dirty area', with the 'clean area' of the hatchery incorporating:**

- ▶ The setter room
- ▶ Candling and transfer room,
- ▶ Hatcher rooms
- ▶ Chick handling and dispatch rooms at minimum

CLEAN ZONE	NEUTRAL ZONE	DIRTY ZONE
Egg reception room	Transfer room	Hatcher room
Egg disinfection room	Technical room	Chick take off room
Egg storage room ( $\pm 18^{\circ}\text{C}$ , 75% RH)	Hallway between transfer room and hatcher room and, if not separated:	Washing room (plus entrance of dirty chick boxes)
Setter room (18 days)	· Personnel rooms	Dispatching room
Hallway to setter room	· Showers and toilets	Hallway to dirty area
Storage room (of clean material - chick boxes, hatcher trays, setter trays and trolleys)		

**Technical areas should be located at the outside of the building**, so that engineers have no cause to enter the clean area. Similarly, offices for administrative personnel and canteens for truck drivers should be clearly and effectively separated from the clean areas. Only necessary visitors should be allowed into the hatchery.



**Proper hatchery design is key in hatchery hygiene.** The location should be carefully chosen, taking the position of nearby poultry farms and public roads in relation to prevailing wind direction into consideration. **Air filters in the air handling unit(s) minimize the introduction of pathogens into the hatchery.**

If a higher level of protection needs to be achieved, it is advised to install biofilters.



**Positive air flow will help minimize the risk of transfer of contamination** from the hatcher back to the setters and to the egg storage room.



**Prevention starts with keeping everything (including the surroundings) neat and tidy, avoiding the attraction of rodents with food such as hatchery waste.**

Monitoring should be based on observing the signs of rodent presence like footprints and droppings. **Outsourcing of rodent control could be considered.**

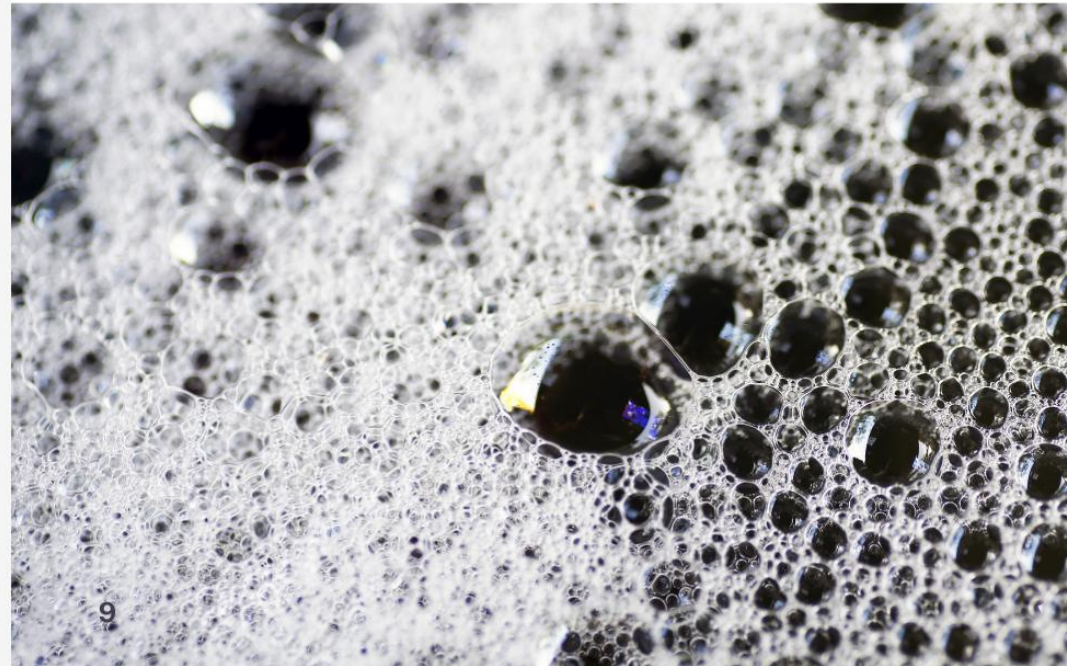
Pathogens could enter hatchery in other means such as water, contaminated paper chick boxes, dirty chick boxes after a previous chick delivery and air entry.

One should be alert for each of these vectors and take adequate action if required.



In **second key area on how to optimize hatchery hygiene**, the prevention of cross contamination.

- ▶ For good hatchery hygiene, it is vital to prevent contamination spreading from one room to another inside the hatchery.
- ▶ **To prevent cross-contamination, it is important to clearly distinguish between different hygienic zones inside the hatchery.** For instance, egg receipt area, egg storage, setter room should be in a clean zone, transfer room should be in neutral zone, hatcher room, chick take off, washing room and dispatching room are in the dirty zone.
- ▶ The processes in the hatchery should be carried out according to a one-way traffic system in line with the egg flow through the hatchery.
- ▶ A well-designed hatchery and different colored hatchery clothing and shoes greatly help to enforce hygiene responsible behavior.



### Third key area on how to optimize hatchery hygiene, cleaning and disinfection.

- ▶ For cleaning and disinfection frequency, it is important that every cleaning and disinfection should be recorded, this will allow to keep track of the cleaning, and helps in planning the various cleaning activities.
- ▶ A cleaning schedule will help to plan and track the various cleaning and disinfection activities. It is advised to review the cleaning schedule regularly.

Room	Cleaning frequency	Room and equipment	Cleaning frequency
Egg receiving room	Once every week	Hatcher room	Once every week
Egg storage	Once every week	Hatchers	After each hatch
Egg setting room	Once every week	Chick handling room	After each handling
Setter room	Once every week*	Chick dispatch room	After each handling
Setters	After each incubation cycle	Racks, egg trays, hatcher baskets, chick boxes	After each use
Egg transfer room	After each handling	Egg and chick trucks	After each egg/chick delivery

*\*Never fumigate the setter room with formalin when eggs younger than four days of incubation are inside the setters.*

**Hatchery hygiene monitoring is essential element of any hatchery quality assurance program** for the evaluation of cleaning and disinfection procedures. **It is crucial to conduct the monitoring program on a routine basis**, for example, once every two weeks.

To avoid dissuading hatchery personnel from just devoting extra attention to cleaning and disinfection prior to a scheduled hatchery hygiene monitoring, **it is advisable to monitor occasionally at unscheduled times.**



**Three levels of hatchery hygiene monitoring include visual inspection, agar-cultures and specific bacterial and fungal monitoring.**

**Eggs & Personnel play a large part in the Hatchery processes & these are the hardest to control.** Hatchery air starts at the cool room & is easily controllable.



- ▶ In farm egg room or hatchery cool room, eggs should be kept dry and not wet with detergents, water, sanitisers, or allowed eggs to sweat.
- ▶ A routine wash down and thorough sanitize in the room should be done on a routine basis.
- ▶ Egg trays should be inspected for cleanliness upon arrival. This area should not be used for storage of consumables (cardboard trays and boxes etc.) if possible.
- ▶ Fumigation following clean and sanitize and or when eggs are loaded into the room is recommended.

For transport to hatchery, any driver & passenger should be aware of and follow company guidelines regarding site to site quarantine, cleanliness required of vehicle and clothing.





It should be noted that **disinfectants alone cannot solve all of sanitation problems and cannot solve all your problems without quality management.**

We must do basic things in process order & with well trained staff.

- ▶ Breeder farm influences need to be considered and appropriate action taken to increase good practices when needed.
- ▶ Segregation of work areas
- ▶ Management of work flow and personnel, control waste, manage personnel access and movement with tight biosecurity protocol.

- ▶ Basic cleaning and hygiene starting from removal of organic matter, usage of correct detergents and disinfectants, quality control and monitoring of the process.



For air handling systems, **special attention needs to be made to the maintenance and sanitation of the hatchery's Ventilation Systems.**

- ▶ Insulation materials & accessibility to ducting internals for cleaning
- ▶ Filter type and disinfection requirements, accessibility for cleaning and disinfection
- ▶ Daily/weekly/monthly cleaning requirements and challenges with door opening & closing changing the room environment need to be considered.

Each hatchery will have different air handling systems with their unique facility layout and demand for ventilation. **It is critical to survey the air quality regularly to implement a cleaning program to maintain clean fresh air at the correct volume.**

**Egg storage lengths require different temperature settings depending on type of breeders.**

- ▶ **Eggs stored for longer periods** are stored at a cooler temperature, so this will keep microbial challenges closer to the introduced levels
- ▶ **Eggs stored for lesser times** are at slightly warmer temperatures and will allow poor hygiene practices to impact the hatch.





For incubators, rough handling at setting or at transfer creates egg breakage during setting, which allows organic matter to be exposed to bacterial/microbial challenge, rough or out of specification mechanics of turning, will also create egg breakage and will adversely effect hatchability.

**Eggs must be transferred at the correct Emryo development timing to avoid any chicks hatching in the incubator which releases moulds and bacteria.**

Depending on availability of incubator space, a depopulation program should be developed to empty the incubator and perform a thorough clean with commercial grade detergents and sanitisers, plus conduct any routine maintenance. If the incubator environment can be kept as clean as possible, contaminant build up will be minimised between full clean times.

**Transfer time is between 18 to 19 days**, so contaminants and bacterial loading has been under incubation for that period. **‘Clean as you go’ is one of the best practices to adopt during transfer.**



**Vaccine room is a critical part in the hatchery.**

A dedicated vaccine room to prepare and mix vaccine is required. It should be clean with positive air pressure.

Hatchers are depopulated after each hatch, which allows for a total clean to be implemented. The hatcher cabinets experience extensive exposure to contaminants between transfer time and the hatch pull, so detailed cleaning measures need to be adopted after emptying.

Chick Pull and Processing rooms can be either manual or automated and must receive thorough cleaning after each process day.

**These areas are classified as the dirtiest areas in the hatchery.** Abundance of chick fluff, hatch residue, organic matter, packaging materials, equipment & personnel are all carriers of bacterial and mold challenge. Cross contamination from these areas back to the clean areas of the hatchery must be avoided.

Following the Chick treatments, counting and sorting, the process room needs to be depopulated to allow effective cleaning and sanitising.



# Thank you!

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