



## Biosecurity for Exotic Fowl

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Biosecurity is a practice designed to prevent the spread of disease into your farm. It is accomplished by maintaining the facility in such a way that there is minimal traffic of biological organisms (viruses, bacteria, rodents, etc.) across its borders. Biosecurity is the cheapest, most effective means of disease control available. No disease prevention program will work without it.

### What is biosecurity?

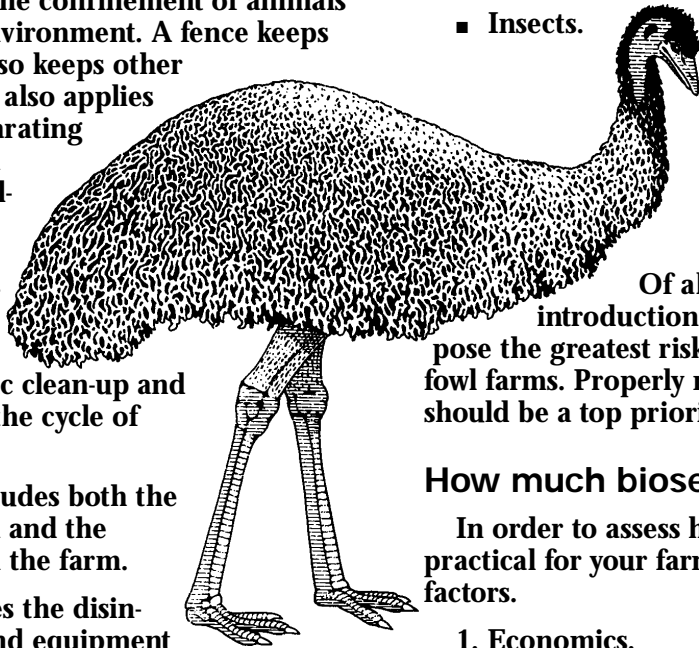
Biosecurity has three major components:

1. Isolation
2. Traffic control.
3. Sanitation.

**Isolation** refers to the confinement of animals within a controlled environment. A fence keeps your birds in, but it also keeps other animals out. Isolation also applies to the practice of separating birds by age group. In poultry operations, all-in/all-out management styles allow simultaneous depopulation of facilities between flocks and allow time for periodic clean-up and disinfection to break the cycle of disease.

**Traffic control** includes both the traffic onto your farm and the traffic patterns within the farm.

**Sanitation** addresses the disinfection of materials and equipment entering the farm and the cleanliness of the personnel on the farm.



Infectious diseases can be spread from farm to farm by:

- Introduction of diseased birds.
- Shoes and clothing of people who move from flock to flock.
- Introduction of healthy birds who have recovered from disease but are now carriers.
- Contact with inanimate objects (fomites) that are contaminated with disease organisms.
- Carcasses of dead birds that have not been disposed of properly.
- Impure water, such as surface drainage water.
- Rodents and free-flying birds.
- Insects.
- Contaminated feed and feed bags.
- Contaminated premises through soil or old litter.
- Air-borne fomites.
- Egg transmission.

Of all of these factors, the introduction of new birds and traffic pose the greatest risk to bird health on exotic fowl farms. Properly managing these two factors should be a top priority on your farm.

### How much biosecurity do I need?

In order to assess how much biosecurity is practical for your farm, look at these three factors.

1. Economics.
2. Common sense.
3. Relative risk.

New birds represent a great risk to biosecurity because their disease status is unknown. They may have an infection or be susceptible to an infection that is already present in birds that appear normal (healthy carriers) on your farm.

While all-in/all-out management isn't feasible for most exotic fowl farms, it is possible for you to maintain a separate pen or place to isolate and quarantine all new, in-coming stock from the resident population. Isolation pens should be located as far away from the resident birds as possible. At least 2 weeks of quarantine is suggested; 4 weeks is better.

Direct the flow of human traffic from youngest birds to oldest birds. Direct the traffic flow from the resident flock to the isolation area. Use a different pair of foot-covers in the isolation area and in the resident bird area to prevent the mechanical transfer of disease organisms on footwear.

Footwear should be disinfected at each site. Footbaths may help to decrease the dose of organisms on boots. Wash your hands after handling birds in isolation or birds of different groups. Establish a "clear zone" free of vegetation around buildings to discourage rodent and insect traffic into the buildings. Plan periodic clean-out, clean-up, and sanitation of facilities and equipment. Disinfect waterers and feeders on a regular basis. Remember that drying and sunlight are very effective in killing many disease-causing organisms.

### How do I disinfect my premises?

To disinfect the premises of an exotic fowl farm, follow these steps.

#### First, clean.

1. Remove all bedding, feed, and manure.
2. Sweep out loose dirt, cobwebs, etc.
3. Scrub all surfaces with a detergent/disinfectant.
4. Rinse all detergent and organic matter from surfaces.

A steam or high-pressure water hose may be helpful for steps 3 and 4.

#### Next, sanitize.

5. Apply the disinfectant.
6. Allow the disinfectant to dry completely.

7. Reapply the disinfectant and allow it to dry a second time (optional).
8. Bed the area with fresh materials and rinse all water and feeding equipment before refilling them.

These steps are adapted from a procedure published in "Policies for Prevention," *Large Animal Veterinarian*, May/June 1993.

### How do I choose a disinfectant?

When choosing a disinfectant, consider these characteristics:

- Cost.
- Efficacy (killing efficiency against viruses, bacteria, fungi).
- Activity with organic matter.
- Toxicity (relative safety to animals).
- Residual activity.
- Effect on fabric and metals.
- Activity with soap.
- Solubility (acidity, alkalinity, pH).
- Contact time.
- Temperature.

The relative importance of these characteristics will depend on your individual situation, but efficacy and toxicity to animals are always important concerns.

Disinfectants can be divided into the following classes based on their chemical composition:

- Phenols.
- Hypochlorites (chlorine).
- Iodophors (iodine).
- Quaternary ammonium.
- Formaldehyde gas.
- Formaldehyde powder.
- Alkali (lye).
- Chlorhexidine (Nolvasan).

The most commonly used disinfectants are the phenols, iodophors, hypochlorites, and quaternary ammonium.

**Phenols.** Phenols are coal-tar derivatives. They have a characteristic pine-tar odor and turn milky in water. Phenols are effective antibacterial agents, and they are also effective against fungi and many viruses. They also retain more activity in the presence of organic material than iodine- or chlorine-containing disinfectants. In commercial poultry operations, phenols are used for egg

dipping, hatchery and equipment sanitation, and footbaths. Examples of the phenol class include: Lysol, Pine-Sol, Cresi-400, Environ, and Tek-Trol.

**Iodophors.** Iodine compounds are available as iodophors, which are combinations of elemental iodine and a substance that makes the iodine soluble in water. They are good disinfectants, but they do not work well in the presence of organic material—that is, on dirty surfaces. Iodophors are effective against bacteria, fungi, and many viruses. In hatcheries, iodine is used on equipment and walls and for water disinfection. Iodine is the least toxic of the disinfectants discussed here, but it can stain clothing and some surfaces. Examples of the iodophor class include: Betadine, Iofec, Isodyne, Losan, Tamed Iodine, and Weladol.

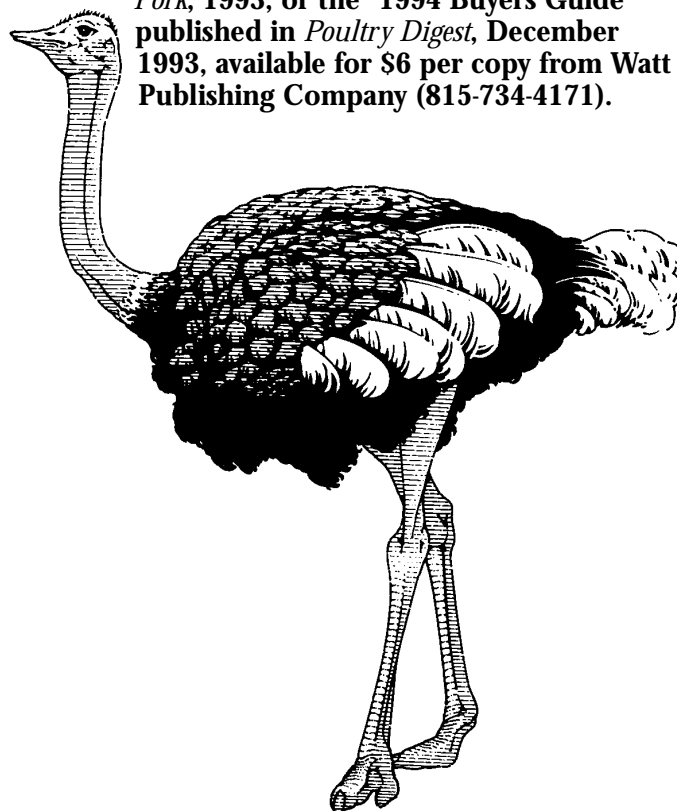
**Hypochlorites.** Chlorine compounds are good disinfectants on clean surfaces, but they do not work well on dirty surfaces. Chlorine is effective against bacteria and many viruses. These compounds are also much more active in warm water than in cold water. Chlorine solutions are somewhat irritating to skin and are corrosive to metal. They are relatively inexpensive. Examples of the hypochlorite class include: Clorox, Chloramine-T, and Halazone.

**Quaternary Ammonium.** Quaternary ammonium compounds are generally odorless, colorless, non-irritating, and deodorizing. They also have some detergent action, and they are good disinfectants. However, they are inactivated in the presence of some soaps or soap residues. Their antibacterial activity is reduced in the presence of organic material. Quaternary ammonium compounds are effective against bacteria and somewhat effective against fungi and viruses. These compounds are used widely in commercial hatcheries. Examples of the quaternary ammonium class include: Roccal, Germex, Hi-Lethol, San-O-Fec, Warden, and Zephiran.

## For more information

For further information on disinfectants and sanitizers, refer to the "Disinfectants for Swine Herd Health Management" section of the "County Swine Herd Health Guide," by Bruce Lawhorn, Associate Professor and Extension Swine Veterinarian. Your county Extension agent has a copy of this guide, so contact the Extension office for more information.

A more complete listing of commercial disinfectants and sanitizers can be found in the article "Guide to Health and Nutrition" published in *Pork*, 1993, or the "1994 Buyers Guide" published in *Poultry Digest*, December 1993, available for \$6 per copy from Watt Publishing Company (815-734-4171).



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