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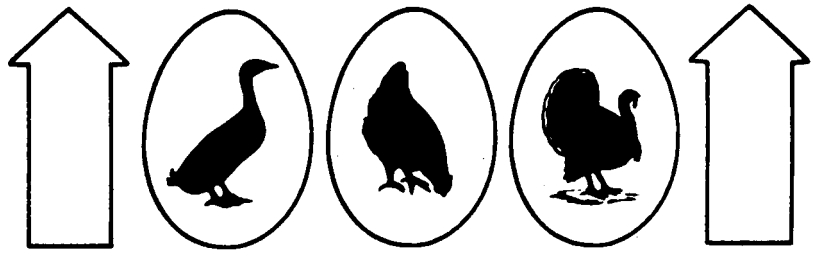
Poultry Facts



Sanitation

Good sanitation can be the difference between a profitable poultry operation and an unprofitable operation. Cleanliness is the most important aspect of a sanitation program. Disinfectants have little effectiveness if the facilities and equipment to which they are applied are not thoroughly clean. Many times organic matter can form films which could protect organisms against germicides. Many good detergents on the market can aid in removing organic matter from surfaces.

Only after the house and equipment are clean of organic matter should the disinfection process begin. The most commonly used disinfectant chemicals in poultry production include quaternary ammonium compounds (quats), hypochlorites, iodophors, phenolic derivatives and formaldehyde.

Quaternary ammonium compounds are effective against gram-positive (staph, strep) and most gram-negative organisms (coli, salmonella, and pseudomonas). Some pseudomonas are resistant to quats, but the addition of EDTA will help kill these organisms. Alkaline solutions can markedly improve the effectiveness of quat disinfection. Quats have essentially no activity against worm eggs and coccidia but have moderate effectiveness in killing some viruses and fungi. Soaps inhibit the effectiveness of the quat's ability to disinfect. Quat disinfection also is partially inactivated by excess calcium found in hard water and in reused egg wash water. A number of quaternary products have additional chemicals that improve their bactericidal activity.

Chlorine and iodine in their various forms kill bacteria, viruses, and parasite eggs, under proper conditions. Hard water does not affect their antibacterial action. Low concentrations of chlorine are adversely affected by organic matter not completely removed from surfaces. Chlorine and iodine compounds are capable of killing microbes much quicker in a slightly acid environment. However, at warm temperatures, these compounds destroy bacteria in the usual alkaline tap water. The various forms of iodine and chlorine disinfectants are used for rapid destruction of bacteria, but have little residual bactericidal action. Some of these disinfectants can be irritating to the skin and corrosive to metals.

Phenolic disinfectants are used more now since less toxic and odorless derivatives have been developed. There are now a large number of these compounds combined with a detergent which possess antimicrobial and good cleaning properties. The ratio of soap to phenolic has been adjusted by the manufacturer for optimum disinfection and should not be changed. Phenols are much more stable in the presence of organic matter than are quats.

Formaldehyde is active against most microbes. The bactericidal activity of formaldehyde is dependent upon high humidity. Formaldehyde gas has little penetrating power and is immediately dissipated on the surfaces of walls and equipment. Formalin will not penetrate organic matter and adequate cleaning is required before application. Disadvantages to the use of formaldehyde are that the disinfectant is irritating and pungent. Formaldehyde has been used for many years as a soil disinfectant. Five percent formalin (one part commercial 37 percent formaldehyde to 19 parts water) will kill most vegetative bacteria, fungi, and viruses. It will not kill most parasite eggs or coccidia. The dirt should be leveled and soaked with the solution to a minimum depth of two inches. A building may be disinfected, only if it is physically clean. It could be accomplished by the five percent formalin alone or a phenolic compound followed by formaldehyde gas fumigation with the equipment and litter in place. Formaldehyde gas can be generated from formalin solution or paraformaldehyde. Formaldehyde gas is also used as a fumigant for hatching eggs. The gas disinfection is only good for shell surface organisms and will not penetrate any organic matter on the shell surface.

Coal tar distillates have a strong odor, with some of them causing irritation to the skin. Some of these disinfectants are used in conjunction with a detergent. Greatest use of coal tar distillates is in the poultry house. They have been used in disinfecting floors, room surface areas, equipment, or as foot baths.

Application of disinfectants and their concentrations must be according to the manufacturers' directions.

COMMON POULTRY DISINFECTANTS

Properties and Uses	Iodophors	Quaternaries	Coal Tar Distillates	Synthetic Phenols	Hypochlorites
Spectrum of Activity					
Gram-Positive bacteria	Effective	Effective	Effective	Effective	Effective
Gram-Negative bacteria	Effective	Effective	Effective	Effective	Effective
Bacteria Ispores	Moderately effective	Not effective	Not effective	Not effective	Moderately effective
Fungi	Effective	Controls some forms	Most types effective	Most types effective	Effective
Animal viruses	Controls some forms	Controls some forms	Controls some forms	Controls some forms	Controls some forms
Physical Properties					
Speed of kill	Very rapid	Very rapid	Rapid	Rapid	Very rapid
Resistance to organic debris	Poor to fair	Fair	Excellent	Good	Very poor
Residual activity	No	Yes	Yes	Yes	No
Affected by hard water	Not affected	Reduces speed of kill	Some formulations adversely affected	Some formulations adversely affected	Not affected
Compatible with nonionics	Yes	Yes	No	No	Yes
Most effective pH range	Acid	Alkaline	Acid	Acid	**Acid**
Most Common Use Levels					
Disinfection (active ingredients)	50 to 100 ppm	400 to 800 ppm	Varies with type	Varies with type	200 ppm
Sanitizing (active ingredients)	25 ppm	200 ppm	Varies with type	500 ppm	50 ppm
Most Common Areas of Use	Egg dipping, hatchery disinfection, terminal house disinfection, processing plants, foot baths	Egg dipping, egg washing, hatchery disinfection, terminal house disinfection	Terminal house disinfection, equipment disinfection, foot baths	Egg dipping, hatchery disinfection, terminal house disinfection equipment	Egg dipping egg washing, processing plants

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