

## WATER SANITATION

During routine use, material build up and contamination of a watering system will occur. As lime and scale deposits, rust, algae and dirt collect in the water lines, the functioning of the system will be affected. The build up of these materials on the inner surface of the system will provide a place for microorganisms to take hold. Organic material will supply nutrients for growth and multiplication of microbes. Every time the birds consume water they will be exposed to an increased microbial load through the drinking water. The effects of high microbial load in the drinking water include poor feed conversion, down grading of carcasses, increased mortality and increased condemnation. The build up of material will also have a negative effect on medication and vaccines delivered through the drinking water. Furthermore, sanitizers used to control the microbial load will be neutralized and bound by the debris in the drinking system decreasing their effectiveness. To keep the watering system in proper working order, a routine cleaning and sanitizing program should be developed.

Cleaning between flocks begins with flushing the lines with high pressure water. Next, fill the lines with the cleaning solution and allow to remain in the lines for at least an hour. If you are using a proportioner, thoroughly clean it after using cleaners. Finally, flush the lines with clean water again. Cups, plasons and other items should be thoroughly cleaned. The following cleaners and concentrations are recommended. Always consult with manufacturer's of watering systems to make sure the proper cleaners are used to avoid damage. The proportionate rate for the concentrate is 1 oz per gallon.

### **Cleaning Between Flocks\***

<b>CLEANER</b>	<b>PROPORTIONER</b>	<b>BULK TANK</b>
Citric Acid	4-5 packs (205 gram/pack) per gal water	4-5 packs in 128 gal water
Vinegar	no dilution needed	1 gal in 128 gal water
Ammonia	12-16 oz per gal water	12-16 oz in 128 gal water
Chlorine	12 oz per gal water	12 oz in gal water

\* Use these concentrations to clean between flocks. Do not use when birds are present.

To help keep the lines clean while birds are in the house, the following concentration of cleaner can be used for one day every two weeks. Regular cleaning during the life of the flock will help remove build up as it occurs. It will also increase the efficacy of between flock cleaning. Cleaning should be scheduled prior to water vaccinating and after water medicating. When using a cleaner while birds are present, watch the birds throughout the day to make sure they are consuming water. Mistakes in diluting the cleaner and proportioner malfunction can easily occur.

### Cleaning With Birds Present\*

CLEANER	PROPORTIONER	BULK TANK
Citric Acid	1 pack (205 gram/pack) per gal water	1 pack in 128 gal water
Vinegar	0.5 gal in 0.5 gal water	0.5 gal in 128 gal water
Ammonia	4-6 oz per gal water	4-6 oz in 128 gal water

\* These concentrations are safe for birds to consume.

Sanitizing water helps decrease the numbers of bacteria, viruses and other agents in the water. The level used for sanitizing is safe for the birds to consume without having an adverse effect. The addition of a sanitizer to the watering system not only decreases the microbial load, it also decreases algae growth, mineral deposits and slime build up. Chlorine also decreases the oxidation of iron which helps control rust deposits in the watering system. Sanitizers should not be used 48 hours prior to and 24 hours after vaccinating.

### Sanitizing Drinking Water\*

SANITIZER	PROPORTIONER	BULK TANK
Chlorine 5%	5 oz per gal water (Ziggity 1-2 oz / gal water)	5 oz per 128 gal water (Ziggity 1-2 oz / 128 gal)
Iodine 18.5%	12 oz per gal water	12 oz per 128 gal water
Peroxide 35%	0.5-1 oz per gal water	0.5-1 oz per 128 gal water

\* These concentrations are safe for birds to consume.

Prior to water vaccinating, the water lines should be cleaned. After the administration of medication, the lines should be cleaned to remove any residual medication. Some cleaners are useful in combination with medications to help in delivery. Ammonia at low levels helps increase the solubility of sulfa drugs. Citric acid helps keep tetracyclines in solution. Citric acid can be mixed at 1 pack per gallon of tetracycline stock solution. Citric acid at a concentration of 1 pack per gallon through a proportioner is useful after the administration of vitamins to decrease residue build up in the lines.

Caution should be used when handling hydrogen peroxide since it is corrosive and tissue damaging. Iodine is corrosive to galvanized steel, rubber and latex. Citric acid is corrosive to galvanized steel. Chlorine at high levels is corrosive to all metals including stainless steel. Chlorine, ammonia and commercial cleaning agents should not be mixed together since some combinations will react producing dangerous fumes. Good ventilation should be allowed when using chlorine.

To evaluate the cleaning and sanitizing efforts, some form of monitoring should be used. Bacterial evaluation of the water can be conducted by collecting three - five ml water samples per house. The samples are collected from different sites in the house. Avoid contaminating the samples with dust and dirt. Samples are then sent to a diagnostic lab for total bacteria and coliform counts. Results of <100 total bacteria and <10 coliforms per ml are acceptable levels.