

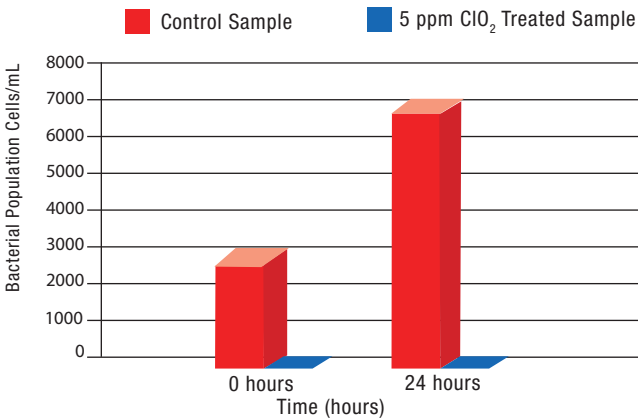
ProOxine[®] Disinfecting Solution For Animal Drinking Water

ProOxine[®] is the most effective tool for water management in animal facilities. ProOxine[®] keeps the bacteria level down in the water lines, and prevents biofilm from developing, thus keeping the animals healthier by keeping down the pathogen level that could potentially travel from one animal to another. ProOxine[®] makes drinking water more palatable to poultry and livestock and therefore they drink more. Additionally, ProOxine[®] is highly effective in keeping water systems free of buildup.

Efficacy of ProOxine[®] against Biofilm

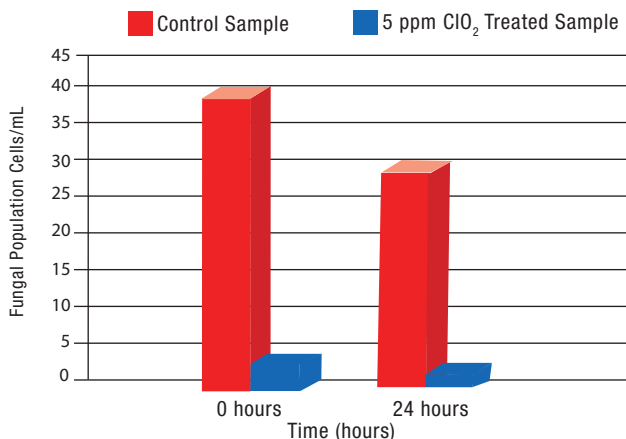
CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM BACTERIA

On Bacteria	Control Sample	5 ppm ClO ₂ Treated Sample
0 Hour	3000	30
24 Hours	7000	2



CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM FUNGI

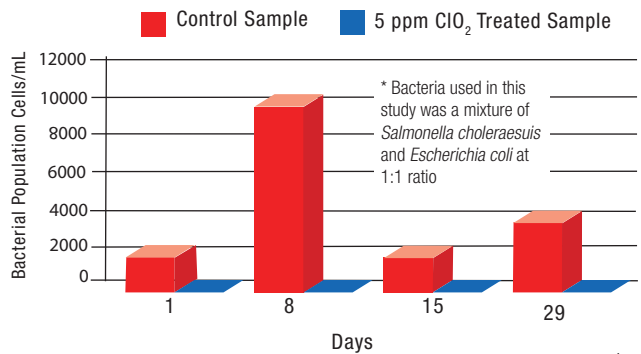
On Fungi	Control Sample	5 ppm ClO ₂ Treated Sample
0 Hour	40	4
24 Hours	30	2



Efficacy of ProOxine[®] against Salmonella and E-coli

REDUCTION OF BACTERIAL POPULATION* IN WATER AFTER CONTACT WITH 5 ppm CHLORINE DIOXIDE

On Bacteria	Control Sample	5 ppm ClO ₂ Treated Sample
1 Day	2000	20
8 Days	10000	2
15 Days	2000	2
29 Days	4000	2



Exceptional Chemistry • Extraordinary People • Excellent Service
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Bio-Cide International is ISO 9001:2008 certified

BENEFITS

- Broad spectrum, high antimicrobial activity
- Kills bacteria, virus, fungi and protozoa
- Removes biofilm - keeps plumbing clog free
- Selective chemistry - no reaction with ammonia
- Effective over a wide pH range
- Easily implemented and fed to system
- Not affected by temperature variations
- Does not chlorinate to form halogenated organics (e.g., THMs, HAAs)
- Resists neutralization by organic-load and water hardness
- Highly soluble, permitting it to homogenize throughout the system
- Excellent oxidizer for iron and manganese, eliminating the buildup of sludge
- Controls taste and odor problems associated with hydrogen sulfide, chlorophenols and biological organisms
- Low corrosivity
- Low toxicity
- Cost effective

SPECIFIC PATHOGENS

Activated ProOxine® at 3 ppm with a ten minute exposure time is an effective disinfectant for poultry and livestock drinking water against the following pathogens:

- Escherichia coli
- Enterococcus faecium

ProOxine® is an effective virucide against the following pathogens when used at 500 ppm activated use solution with a ten minute contact time:

- Avian Influenza A Virus (H3N2)
- Canine Parvovirus
- Newcastle Disease Virus (NDV)
- Porcine Reproductive and Respiratory Disease Syndrome Virus (PRRS)
- Pseudorabies Virus
- Porcine Epidemic Diarrhea Virus

PROOXINE® VERSUS CHLORINE

ProOxine® is Better than Chlorine

- Much greater antimicrobial efficacy
- More organic-load bearing capability
- Does not impart offensive odor or taste to drinking water
- Less corrosive to equipment
- Works in a wider pH range (hypochlorites typically lose biocidal efficacy above pH 7; whereas ProOxine® is effective pH range of 3-10, providing microbial control during pH swings in incoming water)
- Does not create toxic THM's
- Safer for workers and the environment
- 2.6 times more powerful oxidizing capacity than Chlorine
- Requires much lower use solution than hypochlorites

COMPARISON WITH OTHER DISINFECTING AGENTS

Biocide	Active Ingredient Concentration (ppm)	P. aeruginosa	S. aureus	S. cerevisiae	E. coli 0157:H7
ProOxine	Chlorine Dioxide 50,000	5	30	30	3
Chlorine	Sodium Hypochlorite 52,500	200	200	400	600
Hydrogen Peroxide	Hydrogen Peroxide 300,000	36,000	68,000	270,000	No Data

Biocide concentration required for $> 10^5$ reduction in viable cell counts in 60 seconds. (milligrams/liters)

Success Story

- ProOxine® was recently introduced to a large Mid-Atlantic grower operation where the product competed against 175 other houses. The house employing ProOxine® was the most profitable of all 176 houses.
- Mortality rates were approximately 5% lower than the average of all other houses. Houses had a mortality rate of 2687 birds per 31,500 as opposed to the ProOxine® house which had a rate of 984 per 31,500.
- The birds treated with ProOxine® weighed 0.48 lbs. per bird more than the mean average of all other houses.
- The effectiveness of ProOxine® in raising livability rates and promoting larger, healthier birds resulted in an average of 50,000 lbs more bird to the processor over the other houses.
- With this data, the grower converted all the other houses to ProOxine® and is now converting their entire corporate and contract farms to ProOxine®!

DELIVERY EQUIPMENT

A variety of equipment is available for delivery of ProOxine®. Contact your distributor for these options and to request literature on Bio-Cide International's range of equipment that will suit your needs.

DIRECTIONS FOR USE

To Disinfect Drinking Water Supply

Activated ProOxine® solution can be either batch loaded or metered into the poultry and livestock drinking water supply at a point in the system which ensures uniform mixing and distribution of up to 5 ppm chlorine dioxide.

PROPERTIES

Concentration:	5.00 – 5.2 % available chlorine dioxide
pH:	8.2 – 9.0
Solubility in Water:	Complete
Freezing Point:	25.2° F (-3.78° C)
Toxicity:	Very Low (EPA CAT III)
Non-Flammable	
Non-Explosive	
Stable Solution	