TwinOxide®
Total Water Disinfection

Bulletin

Livestock Industry

LIVESTOCK APPLICATIONS ; Dairy

DRINKING WATER FOR DAIRY CATTLE:
Dose / treat drinking water with 1.0 ppm TwinOxide to reduce the bacteria counts in milk. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 1.0 ppm and infuse to regular drinking water supply using an automatic dosing meter and chlorine dioxide sensor or test kit to ensure consistency of feed.

FARM APPLICATIONS:
Continuous on-line water dosing.
Make up TwinOxide stock solution of 3,000 ppm per label instructions using tap water. Use a dosing pump to deliver at a rate of 0.1 to 0.2 ppm.

SANITIZING MILKING MACHINES AND UTENSILS:
After milking, flush equipment with potable water. Dismantle equipment post- milking. Wash equipment, including all rubber parts and tubes and all utensils with a solution of standard detergent and a solution of 100 ppm TwinOxide®, ensuring an exposure time of 1 minute. Water should be warm, 100+°F. Do not mix TwinOxide with acid cleaners. Rinse equipment and utensils thoroughly with potable water.

SANITIZING DAIRY EQUIPMENT:
TwinOxide is effective as a sanitizer and deodorizer of dairy industry equipment. A dosage of 50 to 100 ppm and an exposure time of 2 minutes are required. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to a 50 to 100 ppm depending on the degree of microbial fouling. See Technical Bulletin for detailed directions and other dilution and application specifics. Use an automatic sensor or test kit to maintain solution at the desired strength. Normal operating temperatures are +/- 75F. If operating at lower temperatures the concentration of TwinOxide may be increased to the higher end of the above scale. Milk deposits and other organic matter should be removed by mechanical means prior to the application of TwinOxide. Do not mix TwinOxide with acid cleaners. Rinse equipment thoroughly with potable water.

SANITIZING RUBBER or METAL TEAT CUPS AND EQUIPMENT:
Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to achieve a 50 - 100ppm working solution. Soak equipment tubes and rubber suction cups with 50 to 100 ppm solution for 2 minutes to sterilize before milking and prior to switching from one cow to another. After each milking, soak or wash rubber cups and tubes. Rinse tubes and cups with potable water. Metal cups should be washed, not soaked. Do not mix TwinOxide with acid cleaners. Rinse equipment thoroughly with potable water.

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SANITIZING STORAGE TANKS AND PIPELINES:

After emptying the tank or pipeline, flush with potable warm water. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 50 ppm in the flush water and circulate the flush water through the system for 5 to 10 minutes. Use hot water if available, up to 160°F throughout the entire circulation system. Flush with potable water. Drain. Air dry. Close tanks to protect against contamination. Do not mix TwinOxide with acid cleaners.

SANITIZING SEPARATORS, STRAINERS, CHURNS, PASTEURIZERS CANS, and PAILS:

After use rinse with clean water. Wash or spray with a solution of 50 ppm Twinoxide. Rinse with clean water. Drain and air dry. Do not mix TwinOxide with acid cleaners. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 50 ppm in the wash or spray water by adding 1 part TwinOxide to 59 parts water.

SANITIZING MILK and WATER BOTTLES:

Clean and rinse with 20 ppm solution of TwinOxide prepared with cold or warm water. Drain thoroughly and air dry. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 ppm by adding 1 part TwinOxide to 149 parts water. Do not mix TwinOxide with acid cleaners.

DISINFECTION OF BARNS, STABLES:

Mechanically clean all litter, bedding, straw, sawdust etc, Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 to 50 ppm depending on the degree of contamination. Do not mix TwinOxide with acid cleaners. Wash, scrub/spray all exposed areas including floor, walls, ceiling posts and support beams. Expose all surfaces to spray for a minimum of 2 minutes. Rinse with clean water. Dry before housing animals.

SANITIZING TRANSPORTATION, LOADING AND HAULING EQUIPMENT:

Ship containers, railroad cars, railroad tank cars, trucks, truck trailers, loading chutes, re-useable crates and other equipment for transportation of animals, meat, produce, vegetables, should be cleaned and disinfected prior to use. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 to 50 ppm depending on the degree of contamination. Do not mix TwinOxide with acid cleaners. Wash, scrub/spray all exposed areas. Pressure-spray or scrub with solution. Expose all surfaces to spray for a minimum of 2 minutes. Rinse with clean water. Dry before use.

LIVESTOCK APPLICATIONS ; HOGS

HOGS DRINKING WATER DISINFECTION:

Mix TwinOxide according to label directions to create a 3,000 ppm solution. Use a dosing pump to inject a diluted solution of TwinOxide into the water system.

Stage 1: Depending on the age and maintenance history of the pipe network, this stage requires from 1 to several weeks to fully break down the biofilm layer in the pipe infrastructure. Start with a concentration of 1.0 ppm at the dosing point. Minimal TwinOxide will be detected at the drinking-end of the system during this phase as the TwinOxide is consumed to oxidize biofilm. Older systems may require a longer period of exposure to the initial concentration to remove the biofilm build- up.

Stage 2: After initial disinfection, the biofilm structure is weakened sufficiently to allow a lower dose of between 0.5 to 1.0 ppm for a period of 2 to 3 weeks, and in cases of high contamination, as long as 8 weeks. . During this period of disinfection, the entire distribution system is completely cleaned of soft biofilm. A very low dose of TwinOxide is measurable at the drinking nozzles during this time period. Bacteria counts should be performed every 3 to 4 days to measure the bacterial load of the water at drinking points.

Stage 3: progresses to the maintenance dosage to keep the drinking water disinfected and prevent the re-colonization of biofilm within the pipe system. This dose is between 0.1 ppm to 0.2 ppm (in cold climates). At drinking points, a minimal residual of TwinOxide (< 0.1 ppm) is acceptable.

FARM APPLICATIONS:

Continuous on-line water dosing.
Make up TwinOxide stock solution of 3,000 ppm per label instructions using tap water. Use a dosing pump to deliver at a rate of 0.1 to 0.2 ppm.

DISINFECTION OF HOG-BARNS & STABLES :

Mechanically clean all litter, bedding, straw, sawdust etc, Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 to 50 ppm depending on the degree of contamination. Do not mix TwinOxide with acid cleaners. Wash, scrub/spray all exposed areas including floor, walls, ceiling posts and support beams. Expose all surfaces to spray for a minimum of 2 minutes. Rinse with clean water. Dry before housing animals.

SANITIZING TRANSPORTATION, LOADING AND HAULING EQUIPMENT:

Ship containers, railroad cars, railroad tank cars, trucks, truck trailers, loading chutes, re-useable crates and other equipment for transportation of animals, meat, produce, vegetables, should be cleaned and disinfected prior to use. Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 to 50 ppm depending on the degree of contamination. Do not mix TwinOxide with acid cleaners. Wash, scrub/spray all exposed areas. Pressure-spray or scrub with solution. Expose all surfaces to spray for a minimum of 2 minutes. Rinse with clean water. Dry before use.

LIVESTOCK APPLICATIONS ; POULTRY

POULTRY DRINKING WATER DISINFECTION:

Mix TwinOxide according to label directions to create a 3,000 ppm solution. Use a dosing pump to inject a diluted solution of TwinOxide into the water system.

Stage 1: Depending on the age and maintenance history of the pipe network, this stage requires from 1 to several weeks to fully break down the biofilm layer in the pipe infrastructure. Start with a concentration of 1.0 ppm at the dosing point. Minimal TwinOxide will be detected at the drinking-end of the system during this phase as the TwinOxide is consumed to oxidize biofilm. Older systems may require a longer period of exposure to the initial concentration to remove the biofilm build- up.

Stage 2: After initial disinfection, the biofilm structure is weakened sufficiently to allow a lower dose of between 0.5 to 1.0 ppm for a period of 2 to 3 weeks, and in cases of high contamination, as long as 8 weeks. . During this period of disinfection, the entire distribution system is completely cleaned of soft biofilm. A very low dose of TwinOxide is measurable at the drinking nozzles during this time period. Bacteria counts should be performed every 3 to 4 days to measure the bacterial load of the water at drinking points.

Stage 3: progresses to the maintenance dosage to keep the drinking water disinfected and prevent the re-colonization of biofilm within the pipe system. This dose is between 0.1 ppm to 0.2 ppm (in cold climates). At drinking points, a minimal residual of TwinOxide (< 0.1 ppm) is acceptable.

FARM APPLICATIONS:

Continuous on-line water dosing.
Make up TwinOxide® stock solution of 3,000 ppm per label instructions using tap water. Use a dosing pump to deliver at a rate of 0.2 to 0.4 ppm.

EGG HANDLING:

Hatching Egg Fumigation:
Make up TwinOxide per label instructions using tap water. Fill fogger per fogger manufacturer's instructions. Fog until a complete coverage has been obtained without soaking the eggs. The dosage rate may vary between 0.1 ppm and 0.5 ppm. For sterilizing food eggs, the sanitizer temperature should not exceed 130°F. Spray TwinOxide at 0.1 ppm so the eggs are completely wet. Dry the eggs completely before packaging or breaking. Do not apply a potable water rinse.

INCUBATOR HUMIDIFICATION SYSTEMS:

Make up TwinOxide per label instructions using tap water to make a stock concentrate at 3,000 ppm. For manual dilution: Dilute to a solution of 1.0 ppm by adding 1 part TwinOxide to 2,999 parts water. For automated dilution: Fit dosing pump to humidification water supply line and set at 1.0%.

DISINFECTION OF BARNS & POULTRY HOUSES:

Mechanically clean all litter, bedding, straw, sawdust etc, Make up TwinOxide per label instructions to create a 3,000 ppm solution. Dilute to 20 to 50 ppm depending on the degree of contamination. Do not mix TwinOxide with acid cleaners. Wash, scrub/spray all exposed areas including floor, walls, ceiling posts and support beams. Expose all surfaces to spray for a minimum of 2 minutes. Rinse with clean water. Dry before housing animals.

SANITIZING TRANSPORTATION, LOADING AND HAULING EQUIPMENT:

Ship containers, railroad cars, railroad tank cars, trucks, truck trailers, loading chutes, re-useable crates and other equipment for transportation of animals, meat, produce, vegetables, should be cleaned and disinfected prior to use.