

# Disinfecting using Chlorine Dioxide

Using the Aqua-Tab 20G dry tablet product from Attica Veterinary Associates, P.C.

## Read this before mixing.

- The most common concentration of chlorine dioxide for disinfecting calf care equipment is 100 parts per million (ppm).
- One 20g tablet of sodium chlorite (Aqua-Tab 20g) in 5 gallons of water will generate that volume of active chlorine dioxide at the 100 ppm concentration.

## Follow these steps to make Chlorine Dioxide solution.

- Using a chemical-resistant container (for example, plastic waste can with cover) run as desired 5, 10 or 15 gallons of cool water (less than 70°). Cooler is better, so do NOT use hot water.
- For each 5 gallons of water (1) remove the individual tablet from the foil packet, (2) add tablet to water, (3) allow tablet to completely dissolve before using – solution will be yellow in color.
- Allow ingredients to activate. The activation period is longer with cooler water. Longer is good because there is less loss of active chlorine dioxide than when activated in warmer water. An overnight activation in cold water may be convenient.
- If stored in a closed container the chlorine dioxide may remain active for more than a week. Generally, as the color fades the concentration tends to be lower. The strength of the solution may be tested using a high-range (up to 500ppm) test strips. They may be ordered from Attica Vet or directly from LaMotte.

## Disinfecting Equipment for Colostrum and Milk Handling

- Prepare enough solution in order to either fill the equipment full (milker bucket, tube feeder) or submerge the equipment.
- For small objects (bottles, tube feeders, pails) after thorough washing submerge them in the solution for 1 full minute (longer is better) to destroy all live organisms – this includes cryptosporidia, Johne's, mycoplasma, Staph and Strep bacteria. It is not necessary to rinse equipment after disinfecting.

- For larger objects after thorough washing fill them with the solution and let soak for at least one minute. It is not necessary to rinse equipment after disinfecting.

### **Disinfecting Calf Premises**

- For disinfecting hutches and calf pens, clean off as much organic matter as possible. Mix the solution using 2 tablets per 5 gallons (200ppm). Let sit until a very strong yellow color – overnight may be convenient. Spray with the chlorine dioxide solution until all surfaces are thoroughly soaked. Free solution should be running down the surfaces. Our goal is to have the surfaces stay wet for at least 10 minutes.

## **Safety Instructions for Using Chlorine Dioxide Solutions**

**Instructions appear on the next page and should be printed to post in work areas and to give to everyone that will use this disinfectant.**

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For Calves with Sam blog go to [dairycalfcare.blogspot.com](http://dairycalfcare.blogspot.com)

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# Safety Instructions for Using Chlorine Dioxide Solutions

- **Avoid mixing with acid or low pH solutions – large amounts of poisonous chlorine gas may be created.**
- **Ventilation – use only in well ventilated areas.**
- **Respirator: When exposure is high, use NIOSH approved respirator.**
- **Eye protection: chemical goggles are recommended.**
- **Skin protection: nitrile gloves are recommended when dealing with high concentrations (100ppm is a low concentration).**

## Emergency and First-Aid Procedures

- **Skin: remove contaminated clothing. Wash exposed areas with plenty of soap and water for at least 15 minutes.**
- **Eye: Immediately flush with water for 15 minutes. Get medical attention immediately.**
- **Inhalation: Remove to fresh air. If irritation persists, get medical attention.**
- **Ingestion: If conscious drink large quantities of milk, gelatin solutions or water. DO NOT drink vinegar or other acid-containing solutions. Do not induce vomiting. Seek medical attention.**

## Routes of exposure and effects:

- **Skin: may irritate and cause redness.**
- **Eye: contact causes redness, irritation, pain, blurred vision, tearing, corneal injury and burns.**

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- **Inhalation: harmful if inhaled. Coughing, headaches, labored breathing, nausea, shortness of breath, pulmonary edema.**
- **Ingestion: can cause extreme irritation to throat, mouth, stomach and possible ulceration.**