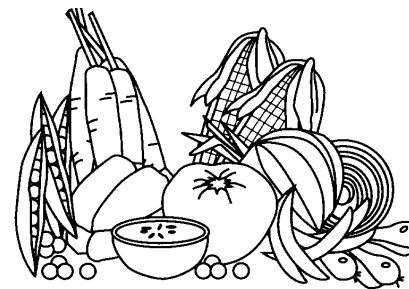


HTH[®] Dry Chlorinator for Use in: AGRICULTURE & FOOD PROCESSING



Advantages of HTH[®] Dry Chlorinator: *HTH[®]* Dry Chlorinator, which contains 70% available chlorine, is calcium hypochlorite, one of the most effective sanitizers known. It is convenient, easy to use and handle, doesn't require expensive, complex metering equipment or large storage tanks, and doesn't lose strength rapidly during storage. Be sure to comply with all government regulations for use.*

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FARM PREMISES

To help prevent disease and spoilage, clean and sanitize stalls, vehicles and feeding equipment and enclosures with solutions of HTH[®] Dry Chlorinator.

First, remove all animals, poultry, and feed from the area. Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other facilities occupied or transversed by animals or poultry. Empty all troughs, racks and other feeding and watering appliances.

Thoroughly clean all surfaces with soap or detergent and rinse with water. To disinfect, saturate all surfaces with a solution of at least 1000 ppm available chlorine for a period of 10 minutes. A 1000 ppm solution can be made by thoroughly mixing 15 grams of this product with 10 liters of water. Immerse all halters, ropes and other types of equipment used in handling and restraining animals or poultry, as well as the cleaned forks, shovels and scrapers used for removing litter and manure. Ventilate buildings, cars, boats and other closed spaces. Do not house livestock or poultry or employ equipment until chlorine has been dissipated. All treated feed racks, mangers,

troughs, automatic feeders, fountains and waterers must be rinsed with potable water before reuse.

BEE KEEPING

Leaf cutting bee cells and bee boards may be disinfected by immersion in a solution containing 1 ppm available chlorine for 3 minutes. To make this solution dissolve 1.5 grams (about 1/4 teaspoon) of HTH® Dry Chlorinator in 1000 liters of water. Allow cells to drain for 2 minutes and dry for 4 to 5 hours or until no chlorine odor can be detected. The bee domicile is disinfected by spraying with a 0.1 ppm solution until all surfaces are thoroughly wet. Allow the domicile to dry until all chlorine odor has dissipated.

VEGETABLES

Sanitization with HTH® Dry Chlorinator is an easy and effective way to control harmful bacteria and fungi that often contaminate vegetables. It protects crops from diseases like soft rot and blotch, during growth and after harvesting. And it improves the keeping qualities of vegetables.

Seeds

To control bacterial spot (*Xanthomonas vesicatoris*) on Pimento seeds, initially remove moist seeds from ripe fruits. To control surface fungi and bacteria on Tomato seeds initially wash seeds. Immediately soak seeds in 39,000 ppm solution for 15 minutes with continuous agitation. After treatment rinse seeds in potable water for 15 minutes. Dry seeds to normal moisture. The solution may be made by mixing 60 g of this product with 1 liter of water.

Growing Mushrooms

Solutions of HTH® Dry Chlorinator containing 100-200 ppm available chlorine help control bacterial blotch (*Pseudomonas tolosii*). The first application to the production surface should begin when pins form. Thereafter, apply the solution to the surface between breaks as needed, depending on the occurrence of bacterial blotch.

HTH® Dry Chlorinator may also be used directly for local applications to control concentrations of the disease. Apply 500-650 grams dry weight per square meter of growing space.

PICKED VEGETABLES

HTH® Dry Chlorinator solutions containing 25 ppm available chlorine can be used for disinfection. First, remove surface soil and debris in a wash tank. After draining, disinfect by submerging in a second wash tank for two minutes while circulating the chlorinated wash water. After this washing, spray rinse with fresh HTH

chlorine solution, rinse with potable water and then package.

Harvested Potatoes

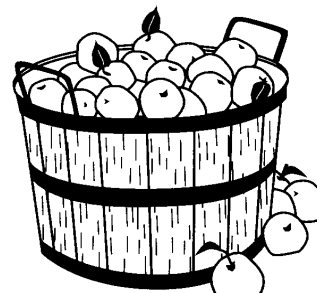
HTH chlorine solutions containing 500 ppm available chlorine help control and reduce the spread of organisms which cause soft rot. Spray 4.25 liters of this solution over each 1000 kilograms of unwashed tubers as they enter storage on a conveyor line. Provide tumbling action during this treatment.

Harvested Sweet Potatoes

HTH chlorine solutions containing 150-500 ppm available chlorine help control and reduce the spread of organisms which cause soft rot. The sweet potatoes should be sprayed with the solution, or dipped, for 2-5 minutes. If a dip is used, monitor the solution hourly and add HTH® Dry Chlorinator to maintain the recommended chlorine level. Or change the solution hourly (or as frequently as necessary) to prevent the available chlorine level from dropping too low.

ORCHARDS

Sanitization with HTH® Dry Chlorinator is an easy and effective way to control harmful bacteria and fungi that often contaminate fruits. It protects crops from diseases like soft rot and blotch, during growth and after harvesting. And it improves the keeping qualities of fruit.



Picked Fruits

HTH chlorine solutions containing 25 ppm available chlorine can reduce harmful bacterial accumulations and improve the keeping properties of fruit. Soak the fruit for two minutes in the solution, then rinse with potable water.

Cider Plants

Sweet cider, stored under cold conditions, frequently develops a fungus growth which causes spoilage. HTH chlorine solutions containing 3% available chlorine will prevent this fungus growth and keep cider from spoiling. Clean each cask thoroughly, then rinse with the HTH chlorine solution. Remember to rinse treated casks completely with potable water before refilling.

Pecan Cracking and Bleaching

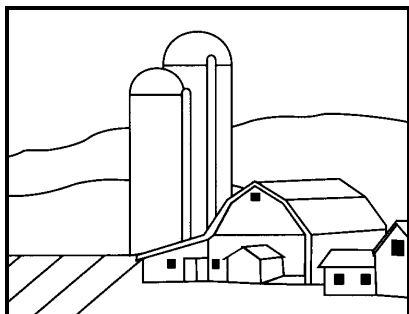
Solutions of HTH Dry Chlorinator can be used to control bacteria in pecans and also to bleach the shells in preparation for dyeing.

HTH chlorine solutions containing 1,000 ppm available chlorine will reduce bacteria in pecans without affecting the taste. Prior to cracking and shelling, soak the pecans in the HTH chlorine solution for at least 10 minutes, then remove. Let the pecans age for 24 hours to allow for softening of the meat. After this period, the pecans will crack more uniformly and the entire nut may be removed more easily.

HTH chlorine solutions containing 5000 ppm available chlorine will effectively bleach pecan shells. Before bleaching, the pecans should be washed in a rotary cleaner. Wash, drain, and soak the pecans in a 2% sulfuric acid bath at a temperature of 27°-32°C or 80°-90°F for one minute. Then place them in the HTH chlorine solution for four to eight minutes. After the pecans are bleached white, drain and wash in a 1% sulfuric acid bath at 27°-32°C (80°-90°F.) They are then ready to be dyed, after drying.

DAIRY PLANTS

Solutions of HTH® Dry Chlorinator provide an effective economical method of sanitizing processing equipment and problem areas in dairy plants. To prevent contamination of the dairy product, apply HTH chlorine solutions to every surface it will touch.



Pressure Method of Sanitizing Equipment

The pressure (or flow) method is commonly used to sanitize closed systems such as fluid milk cooling and handling equipment. It is also appropriate for sanitizing weigh tanks, coolers, short time pasteurizers, pumps, homogenizers, fillers, sanitary piping and fittings, and bottle and can fillers.

First, clean all equipment thoroughly, immediately after it is used. Then place back in operating position.

Prepare sufficient volume of an HTH chlorine solution containing 200 ppm available chlorine to fill the equipment. Allow a 10% excess for waste.

Pump the HTH chlorine solution through the system until it is filled and all air is excluded. Close final drain valves and hold under pressure for two minutes to ensure proper contact with all surfaces. Then drain the solution and flush with potable water.

Controlling Mold & Mildew

HTH chlorine solutions containing 5000 ppm available chlorine will destroy mold and non-residual mildew that often grows in cheese-aging rooms, storage rooms and other areas. Brush or spray all walls, floors, ceilings and shelves with the HTH chlorine solution. Then rinse all metal surfaces immediately, to prevent corrosion.

Treating Water Supplies

HTH chlorine solutions containing 1% available chlorine will disinfect and purify water supplies in dairy plants, to help safeguard the quality of the final product. A solution of sodium hypochlorite is most commonly used.

The sodium hypochlorite solution should be prepared using the following procedure:

Stir 1.5 kgs or of HTH Dry Chlorinator into a 100 liter (or 3 3/4 lbs. in 30 gallon) plastic container which is about full of warm water. Then add 1.2 kgs or 3 lbs. of light soda ash, stir thoroughly and dilute to 100 liters or 30 gallons. Introduce this solution to the water supply and allow 20 minutes contact time. If a free available chlorine residual of 0.2 ppm is present, the water supply has been adequately sanitized.

Dairy Plant Waste

HTH chlorine solutions containing 15-25 ppm available chlorine provide effective disinfection and odor control of dairy plant waste.

For continuous treatment, an overflow-type retention basin, flume or outfall of sufficient length is necessary to provide required contact time and mixing. HTH Dry Chlorinator is applied by a hypochlorinator capable of feeding the solution in proportion to waste flow. The feeder should be located near the point where the waste leaves the plant building, followed by baffles to provide agitation.

For batch treatment, waste should be impounded and treated with HTH chlorine solutions to produce a residual of 15-25 ppm.

Spray Method of Sanitizing Equipment

The spray (or fog) method is generally used to sanitize large, non-porous surfaces that have already been freed of physical soil. It is appropriate for batch pasteurizers, holding tanks, weigh tanks, tank trucks and cars, vats, tile walls, ceilings and floors.

Prepare an HTH chlorine solution containing 200 ppm available chlorine. If possible, use pressure spraying or fogging equipment designed to resist hypochlorite

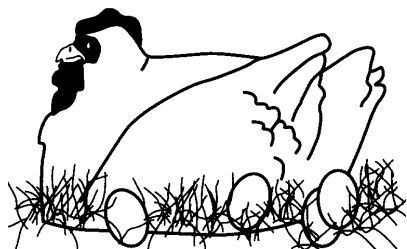
solutions (e.g. rubber coated, plastic or stainless steel). When using any other kind of spraying equipment, be sure to empty and rinse thoroughly with fresh water immediately after treatment.

Apply spray or fog heavily to all surfaces the dairy product will touch. All treated surfaces, corners and turns should be thoroughly sprayed. Allow excess solution to drain off, rinse with fresh water, then place in service.

General Disinfection

HTH chlorine solutions containing 1000 ppm available chlorine will sanitize plant floors, walls and ceilings, and also control odors in refrigerated areas and drain platforms.

Flush or swab surfaces generously with the HTH chlorine solution. After two minutes, hose or rinse all metal surfaces with fresh water.



POULTRY PLANTS

Solutions of HTH® Dry Chlorinator will control odors and bacterial growth in poultry feeding and dressing plants. Regular treatment with HTH chlorine solutions containing 5000 ppm available chlorine will sanitize poultry feeding areas, dropping boards, feeding troughs and watering fountains.

Dropping boards and feeding troughs should be sprayed or flushed thoroughly with the HTH chlorine solution. All watering fountains should be rinsed with this solution.

Poultry dressing areas should be cleaned regularly before treatment. Immediately after cleaning, spray the walls, tables, floors and ceilings with solutions of HTH Dry Chlorinator containing 5000 ppm available chlorine.

All cleaned equipment and utensils should be rinsed with HTH chlorine solutions containing 200 ppm available chlorine. After a contact period of two minutes, rinse all metal surfaces with clear water. For other surfaces, allow to drain or air dry before contacting food surfaces.

Poultry Drinking Water

In float control fountains, treat poultry drinking water with 7.5 grams of HTH Dry Chlorinator for every 1,000-5,000 liters or (1 ounce per 1000 to 5000 gallons) of water by using a gravity feeder. *In refillable fountains*, add 7.5 grams or 1 ounce of HTH Dry Chlorinator for every 1,000-5,000 liters or gallons of poultry drinking water.

Egg-Breaking Operations

Solutions of HTH Dry Chlorinator will control bacteria on contaminated eggs and sanitize all equipment and areas involved in egg-breaking operations. Separate all dirty eggs from clean ones. First clean them thoroughly with a detergent solution spray. Then prepare an HTH chlorine solution containing 100 ppm available chlorine in warm potable water. Spray all eggs with this solution.

All egg cups, breaking knives, trays and other equipment that come in contact with "off" eggs should be thoroughly cleaned and sanitized. First, clean all equipment with washing powder and rinse with clear water. Then, just before placing back in use, spray with an HTH chlorine solution containing 50 to 200 ppm available chlorine, as authorized by the USDA for use in federally inspected meat, poultry, rabbit and egg plants.

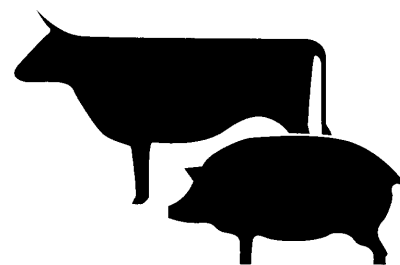
In egg-breaking rooms, all equipment, walls and floors should be deodorized and sanitized with solutions of HTH Dry Chlorinator. After cleaning and just before using, spray, wipe or rinse tables, stools, walls and floors with an HTH chlorine solution containing 1,000 ppm available chlorine. Food contact surfaces must be rinsed with potable water prior to use.

To sanitize egg freezers and dryers (tanks, pipelines and pumps), use the spray (or fog) method of treatment. This procedure is generally used to sanitize large, non-porous surfaces that have already been freed of physical soil.

Prepare an HTH chlorine solution containing 200 ppm available chlorine. If possible, use pressure spraying or fogging equipment that is designed to resist hypochlorite solutions (plastic, rubber coated, or stainless steel). When using any other kind of spraying equipment, be sure to empty and rinse thoroughly with fresh water immediately after treatment.

Apply spray or fog heavily to all surfaces the eggs will touch. All treated surfaces, corners and turns should be thoroughly sprayed. Allow excess solution to drain off, then place in service.

MEAT PROCESSING PLANTS



Solutions of HTH® Dry Chlorinator will control odors and bacteria in meat processing plants, while serving as effective general sanitizers.

Killing Rooms

Disinfection of the entire killing room with HTH chlorine solutions will prevent the contamination of meat and the development of offensive odors. First, scrub the walls and floors completely. Then spray thoroughly with an HTH chlorine solution containing 5000 ppm available chlorine. All drains and traps which blood may pass through should be flushed thoroughly with water. Then flush again with an HTH chlorine solution containing 500 ppm available chlorine. Allow this solution to remain overnight, then remove.

Inedible Rooms

HTH chlorine solutions containing 1000 ppm available chlorine will properly sanitize inedible rooms, to prevent odors and improve the handling qualities of hides and other marketable items. Inedible rooms should be thoroughly cleaned on a regular basis. After each cleaning, spray the tank house, the press rooms and the hide rooms generously with the HTH chlorine solution.

Edible Rooms

HTH chlorine solutions containing 1000 ppm available chlorine will control bacteria in edible rooms (refrigerating, curing and processing areas) to prevent taste and color problems in the products. All edible rooms should be thoroughly cleaned on a regular basis. After each cleaning, all room surfaces and equipment should be sprayed well with the HTH chlorine solution. After spraying, wait 2 minutes, then rinse thoroughly with fresh water.

Equipment and Utensils

HTH chlorine solutions containing 200 ppm available chlorine will sanitize all equipment and utensils that come in contact with meat, to help prevent contamination. Clean equipment and utensils thoroughly, removing all fat and grease. Spray or rinse with HTH chlorine solution. Wait two minutes, then rinse all metal surfaces with fresh water. For other surfaces, allow to drain or air dry before contacting food surfaces.

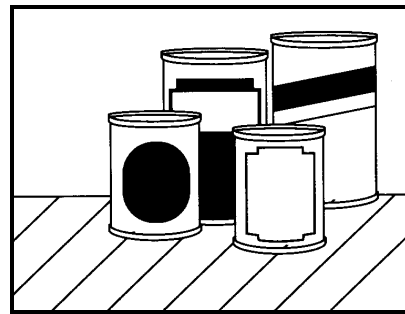
Locker Rooms, Elevator Pits and Toilets

HTH chlorine solutions containing 5000 ppm available chlorine will sanitize and deodorize locker rooms, elevator pits and toilets, to provide employees with uncontaminated facilities. Locker rooms, shower rooms, toilets, urinals and drains should be cleaned and sprayed or flushed with the HTH chlorine solution on a regular basis. After treatment, wait 10 minutes and rinse exposed metal surfaces with clear water to prevent corrosion. For toilet bowls, add 15 grams, or 1 level tablespoon, of HTH Dry Chlorinator to the residual water and swab.

Laundry Department

All linens, clothing, cheesecloth, ham wrappings and other laundry items which may come in contact with the product should be disinfected with an HTH bleaching solution while being washed.

To prepare this solution: Stir 1.5 kgs of HTH Dry Chlorinator in a 100 liter or (3 3/4 pounds in 30 gallon) plastic container holding 25 liters or 7.5 gallons of warm water. Add 1.2 kgs (3 pounds) of soda ash and mix thoroughly. Immediately before using, dilute the solution to 100 liters (or 30 gallons). When the wash wheel is in its rinse cycle, add 1.5 liters of bleaching solution for each 100 liters (or 2 quarts per 64 gallons) of water (20 kgs or 100 pounds dry load). Follow with a potable water rinse.



CANNERIES

Cannery Cooling Water

Freshly-packed hot cans are often cooled by immersion in cold water. This process creates a partial vacuum inside the container which may allow cooling water to enter through seams or pin holes. If any bacteria exist in the water, the can contents may become contaminated and spoil. Solutions of HTH[®] Dry Chlorinator will sanitize cooling water and protect canned goods from contamination and spoilage.

HTH chlorine solutions containing 1% available chlorine should be fed into cooling tanks or channels by an elevated tank to reach a concentration of 2 ppm available chlorine. The flow may be safely controlled by using a pinch stop on a rubber hose or a non-corroding valve.

Dosage points should be properly located to provide a uniform distribution of the solution throughout the entire system. If channels or tanks are long and narrow, it may be necessary to apply the HTH chlorine solution at two points to insure proper distribution.

Check the cooling water for available chlorine. If a chlorine residual of 2 ppm is present throughout the system, the water has been properly sanitized.

Check for available chlorine every hour until dosage requirements are established. Then, check every two or three hours to be sure that an available chlorine residual of 2 ppm is maintained throughout the cooling system.

Water Supplies

Solutions of HTH Dry Chlorinator containing 1% available chlorine will effectively purify the water supply in canneries.

The HTH chlorine solutions should be fed into the water supply by a hypochlorinator on the intake side of the pump. An available chlorine residual of 0.1-0.2 ppm must be maintained throughout the water distribution system to assure adequate purification. A regular testing program should be initiated to make sure that the proper chlorine residuals are present at all times.

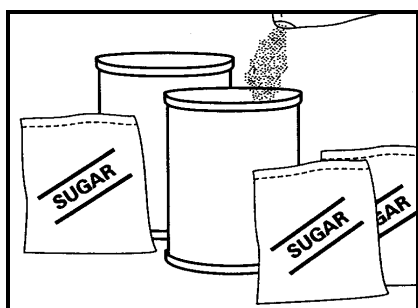
Odor Control

Solutions of HTH Dry Chlorinator containing 1,000 ppm available chlorine will control odors from dry food waste disposed of in dumps or collecting points. These accumulations of waste should be sprayed or soaked with HTH chlorine solutions daily, until odors are eliminated.

HTH chlorine solutions applied by continuous treatment to a residual of 15-25 ppm will control odors in food waste being removed by suspension in water.

Dry Food Waste

HTH chlorine solutions containing 1000 ppm available chlorine will control odors from dry food waste disposed of in dumps or collecting points. These accumulations of waste should be sprayed or soaked with HTH chlorine solutions daily, until odors are eliminated. HTH chlorine solutions applied by continuous treatment to a residual of 15-25 ppm will control odors in food waste being removed by suspension in water.



SUGAR REFINERIES

General Sanitization

Solutions of HTH[®] Dry Chlorinator containing 500 ppm available chlorine will properly sanitize floors, pipes, tanks and other problem areas in sugar refineries.

All areas needing treatment should be rinsed and flushed with the HTH chlorine solution. Then rinse with potable water before exposing to edible products.

Sugar Bags

HTH chlorine solutions can eliminate certain types of bacteria on sugar bags that mere washing cannot. Proper use of HTH Dry Chlorinator during the washing process will thoroughly sanitize and deodorize sugar bags.

Prepare a HTH chlorine solution containing 1% available chlorine. Stir in 0.75 kgs of soda ash for each 1.0 kgs of HTH Dry Chlorinator and allow to settle.

Add this solution slowly to the bag washer. Five minutes after application, test for available chlorine. A chlorine residual of 50 ppm should remain in the wash water. If not, add more solution, wait five minutes and test again, until a residual of 50 ppm is indicated.

Beet Sugar Waste Water

HTH chlorine solutions containing 1-3% available chlorine will remove undesirable odors and impurities from reusable beet sugar waste water. The solution must remain in the waste for a contact period of 10-30 minutes.

Continuous treatment may be accomplished by gravity feed or by a hypochlorinator. The HTH chlorine solution should be applied to the waste water as soon as possible after it leaves the plant. After a contact period of at least 10 minutes, treated waste should show a residual of from 1 to 1.5 ppm.

For treatment of beet sugar waste water that will not be reused, apply HTH chlorine solutions to a residual of 10-15 ppm for at least 30 minutes, every 4 or 5 days. This process will prevent flume contamination.

RELATED INFORMATION

HTH[®] Dry Chlorinator -- Product Data Bulletin
ADS6158-297

HTH[®] Dry Chlorinator for Use in: Cleaning and
Sanitizing HTHADS97-6

HTH[®] Dry Chlorinator for Use in: Aquaculture &
Processing HTHADS97-1

HTH[®] Dry Chlorinator for Use in: Beverage
Production HTHADS97-2

HTH[®] Dry Chlorinator for Use in: Private Water
Supplies HTHADS97-8

Please refer to the Material Safety Data Sheet (MSDS) for complete information on Storage and Handling, Toxicological Properties, Personal Protection, First Aid, Spill and Leak Procedures, and Waste Disposal. To order an MSDS, call your Arch sales office. Review the MSDS thoroughly before handling product.

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