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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

March 17, 2011

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

Gerard Allan  
Quality Compliance Manager  
Environmental Compliance Resources, LLC  
1903 South Greeley Highway, Suite 307  
Cheyenne, Wyoming 82007

**FILE COPY**

Subject: ECR Calcium Hypochlorite Granules  
EPA Registration No. 86460-1  
Application Dated: December 5, 2010  
Receipt Dated: December 21, 2010

Dear Mr. Allan:

This acknowledges the receipt of your Amendment application dated December 5, 2010 in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, is acceptable with comments listed below.

**Submission and Proposed Changes**

Label amendment to add additional "Direction for Uses" for Reservoirs, Breweries, Carbonated Beverage Plants, Cider Plants, Wineries, Grape Juice Plants, Sanitation Disinfection & Odor Control for Locker Rooms, Elevator Pits & Toilets, Canneries, Dairy Industries, Irrigation Canals, Farm Premises, and Aquacultural use sites.

**Conditions**

Based on the submitted materials, the following comments apply:

- a. Page 8. Under "**WINERIES-Plant Sanitation**". In sixth sentence, change comma to period to read "Let stand 10 minutes. Storage vessels, ..."
- b. Page 9. Under "**Cannery Cooling Water**" In fifth and sixth sentences change "2-PPM" to "2 ppm"
- c. Page 10. Under "**Water Supplies**". In second sentence change "3D-gallon" to "30-gallon plastic container..."
- d. Page 10. Under "**Water Supplies**" -move "**General Sanitizing**" as a new subheading.
- e. Page 15. Under "**FARM PREMISES**" in the last sentence change "water" to "waterers" to read "...fountains and waterers must be rinsed with potable water before reuse." (see EPA memo dated December 21, 2010).

**General Comments:**

A stamped copy of the label with comments is enclosed. Submit one copy of your final printed labeling before distributing or selling the product bearing the revised labeling.

This amendment and a copy of this letter have been inserted in your file for future reference

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If you have any questions or comments concerning this letter, please contact [liem.david@epa.gov](mailto:liem.david@epa.gov) or call (703) 305-1285.

Sincerely,



Wanda Y. Henson  
Acting Product Manager - Team 32  
Regulatory Management Branch II  
Antimicrobial Division (7510P)

{FRONT PANEL – MANDATORY LANGUAGE FOR ALL LABELS}

**ECR Calcium Hypochlorite Granules**

**for Industrial Applications and Swimming Pool Use  
Water-Treating Agent – Bactericide – Algaecide – Bleach**

{OPTIONAL MARKETING CLAIMS}

- [Dry, free-flowing form] [Concentrated Chlorinating Agents]
- [65% Available Chlorine] [Fast Acting]
- [Quick Dissolving] [Disinfects Pool Water] [Swimming Pool Disinfectant] [Will not cause over stabilization]
- [Contains No Cyanuric Acid]
- [Good for all pool surfaces] [May be used with Pulsar, Constant Chlor, Hammonds, Arden Industries, and Accu-Tab chlorinator systems.]
- [Approved Reservoir Treatment]

**EPA Reg. No. 86460-1  
EPA Est. No. 074815-IND-001**

ACCEPTED  
with COMMENTS  
in EPA Letter Dated:

MAR 17 2011

**ACTIVE INGREDIENT: Calcium Hypochlorite . . . 68%**  
**OTHER INGREDIENTS: . . . . . 32%**  
**TOTAL: . . . . . 100%**  
**Minimum 65% Available Chlorine**

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide, registered under EPA Reg. No. **86460-1**

**KEEP OUT OF REACH OF CHILDREN**

**DANGER**

Do not mix with other chemicals.  
**Always add product to water - Do not add water to product**  
See additional precautionary statements on back label.

**FIRST AID:** If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. If on skin or clothing, take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. If swallowed, call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. If inhaled, move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice. Note to physician, probable mucosal damage may contraindicate the use of gastric lavage. Contact INFOTRAC® at 1-800-535-5053 or your poison control center for 24-hour emergency medical treatment information. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

Manufactured Exclusively for:  
**Environmental Compliance Resources LLC**  
**1903 South Greeley Highway #307**  
**Cheyenne, Wyoming 82007**  
**PH: 307-256-5044 FAX: 888-482-5044**

**Emergency Telephone Number: 1-800-535-5053 (INFOTRAC®)**

**NET WT. [ ] [100 lbs. (45 Kg)] [ ] [55 lbs. (25 Kg)]**

[AQUAFIT is a Registered Trademark used by Environmental Compliance Resources LLC under license from Sree Rayalaseema Hi-Strength Hypo Limited]

**PRECAUTIONARY STATEMENTS -  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS -**

**DANGER** - Highly Corrosive. [REDACTED] get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. May be Fatal if swallowed. Irritating to Nose and Throat. Avoid breathing dust.

*{The following PPE information is required to be on the product label only when the agricultural use instructions (pages 12-17 of this master label) are on the label}*

**Personal Protective Equipment (PPE)**

**Applicators and other handlers must wear:**

- A. Goggles or face shield
- B. Long-sleeved shirt and long pants
- C. Waterproof gloves
- D. Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENVIRONMENTAL HAZARDS:** This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**PHYSICAL AND CHEMICAL HAZARDS:** Strong oxidizing agent! Mix only with water. Never add water to product. Always add product to large quantities of water. Do not mix with any other chemicals. Use only a clean, dry utensil made of metal or plastic each time product is taken from the container. **Do not add this product to any dispensing device containing remnants of any other product. Such use may cause violent reaction leading to fire or explosion.** Contamination with moisture, acids, organic matter, other chemicals or easily combustible materials such as petroleum or paint products may start a chemical reaction with generation of heat, liberation of hazardous gases and possible generation of a fire or explosion. In case of contamination or decomposition, do not reseal container. If possible isolate container in open air or well-ventilated area. Flood with large volumes of water, if necessary.

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**DIRECTIONS FOR USE:**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**READ ALL PRECAUTIONARY STATEMENTS BEFORE USE.**

**[[SEWAGE AND WASTERWATER EFFLUENT TREATMENT:**

The disinfection of sewage effluent must be evaluated by determining the total number of coliform bacteria and/or fecal coliform bacteria, as determined by the Most Probable Number (MPN) procedure, to ensure that the chlorinated effluent has been reduced to or below the maximum permitted by the controlling-regulatory-jurisdiction.

On the average, satisfactory disinfection of secondary wastewater effluent can be obtained when the chlorine residual is 0.5 ppm after 15 minutes contact. Although the chlorine residual is the critical factor in disinfection, the importance of correlating chlorine residual with bacterial kill must be emphasized. The MPN of the effluent, which is directly related to the water quality standards requirements, should be the final and primary standard and the chlorine residual should be considered an operating standard valid only to the extent verified by the coliform quality of the effluent.

The following are critical factors affecting wastewater disinfection.

1. **Mixing:** It is imperative that the product and the wastewater be instantaneously and completely flash mixed to assure reaction with every chemically active soluble and particulate component of the wastewater.
2. **Contacting:** Upon flash mixing, the flow through the system must be maintained.
3. **Dosage/Residual Control:** Successful disinfection is extremely dependent on response to fluctuating chlorine demand to maintain a predetermined, desirable chlorine level. Secondary effluent should contain 0.2 to 1.0 ppm chlorine residual after a 15 to 30 minute contact time. A reasonable average of residual chlorine is 0.5 ppm after 15 minutes contact time. ]

**[SEWAGE AND WASTEWATER TREATMENT:**

**EFFLUENT SLIME CONTROL** – Apply a 100 to 1000 ppm available chlorine solution at location which will allow complete mixing. Prepare this solution by mixing 2 to 20 oz. of this product with 100 gallons of water. Once control is evident, apply a 15 ppm available chlorine solution. Prepare this solution by mixing 0.3 oz. of this product with 100 gallons of water.

**FILTER BEDS – SLIME CONTROL:** Remove filter from service, drain to a depth of 1ft. above filter sand, and add 16 oz. of product per 20 sq/ft evenly over the surface. Wait 30 minutes before draining water to a level that is even with the top of the filter. Wait for 4 to 6 hours before completely draining and backwashing filter. ]]

**[[DISINFECTION OF DRINKING WATER (Emergency/Public/Individual Systems):**

**[PUBLIC SYSTEMS**

Mix a ratio of 1 ounce of this product to 6000 gallons of water. Begin feeding this solution with a hypochlorinator until a free available chlorine residual of at least 0.2 ppm and no more than 0.6 ppm is attained throughout the distribution system. Check water frequently with a chlorine test kit. Bacteriological sampling must be conducted at a frequency no less than that prescribed by the National Primary Drinking Water Regulations. Contact your local Health Department for further details.]

**[INDIVIDUAL SYSTEMS**

**Dug Wells** - Upon completion of the casing (lining) wash the interior of the casing (lining) with a 100 ppm available chlorine solution using a stiff brush. This solution can be made by thoroughly mixing 1 ounce of this product into 40 gallons of water. After covering the well, pour the sanitizing solution into the well through both the pipe sleeve opening and the pipeline. Wash the exterior of the pump cylinder also with the sanitizing solution. Start pump and pump water until strong odor of chlorine in water is noted. Stop pump and wait at least 24 hours. After 24 hours flush well until all traces of chlorine have been removed from the water. Contact your local Health Department for further details.]

**[INDIVIDUAL WATER SYSTEMS**

**Drilled, Driven & Bored Wells** - Run pump until water is as free from turbidity as possible. Pour a 100 ppm available chlorine sanitizing solution into the well. This solution can be made by thoroughly mixing 1 ounce of this product into 40 gallons of water. Add 5 to 10 gallons of clean, chlorinated water to the well in order to force the sanitizer into the rock formation. Wash the exterior of pump cylinder with the sanitizer. Drop pipeline into well, start pump and pump water until strong odor of chlorine in water is noted. Stop pump and wait at least 24 hours. After 24 hours flush well until all traces of chlorine have been removed from the water. Deep wells with high water levels may necessitate the use of special methods for introduction of the sanitizer into the well. Consult your local Health Department for further details.]

**[Flowing Artesian Wells -** Artesian wells generally do not require disinfection. If analyses indicate persistent contamination, the well should be disinfected. Consult your local Health Department for further details.]

**[EMERGENCY DISINFECTION -** When boiling of water for 1 minute is not practical, water can be made potable by using this product. Prior to addition of the sanitizer, remove all suspended material by filtration or by allowing it to settle to the bottom. Decant the clarified, contaminated water to a clean container and add 1 grain of this product to 1 gallon of water. One grain is approximately the size of the letter "O" in this sentence. Allow the treated water to stand for 30 minutes. Properly treated water must have a slight chlorine odor, if not, repeat dosage and allow the water to stand an additional 15 minutes. The treated water can then be made palatable by pouring it between clean containers for several times.]

**[RESERVOIR: Algae control:** Rapid algae growth in reservoirs is an indication of increased chlorine demand. When algae become a problem, special action is necessary. There are several methods of treatment. One of these is to hypochlorinate streams feeding the reservoir. Suitable feeding points should be selected on each stream at least 50 yards upstream from the point of entry into the reservoir. Continuous chlorination is usually effective in destroying algae where a sufficient amount of sanitizer is fed to produce a chlorine residual of 0.2 to 0.5 ppm free available chlorine. Where continuous feeding is not possible, scheduled, intermittent feeding should be practiced. In doing so, broadcast calcium hypochlorite over the surface of the reservoir evenly, taking special care to treat shallows and edges. As it descends, the product dissolves, distributing a chlorinating action to all depths. Introduce a sufficient amount of calcium hypochlorite to provide a residual of from 0.2 to 1.5 ppm for up to 24 hours.]

**[RESERVOIR : Bacteria control:** Contamination of reservoirs is an ever-present possibility. In order to keep reservoir water bacteriologically acceptable, it is necessary to test regularly and chlorinate sufficiently to maintain a residual of 0.2 ppm free available chlorine. This is equivalent to 1.2 ounces of calcium hypochlorite per 30,000 gallons of water after chlorine demand has been satisfied. Where contamination is caused by overflowing streams, establish hypochlorinating stations upstream of the reservoir. Chlorinate the inlet water until the entire reservoir attains a 0.2 ppm available chlorine residual as determined by a chlorine test kit. Where contamination is from surface drainage, apply sufficient calcium hypochlorite directly to the reservoir to attain a 0.2 ppm available chlorine residual in all parts of the reservoir. Daily testing should be accomplished away from the water inlet. If samples must be taken near the inlet, allow them to stand at least 20 minutes before testing. Also, remember that chlorine demand will be higher during periods of heavy rainfall and extreme dryness or heat. Continuous feeding of calcium hypochlorite at the input source is usually the most effective means of maintaining adequate chlorine residual. When you apply granular calcium hypochlorite to surface water, take care to reach all parts of the reservoir with equal amounts of the product so that distribution is complete and equal throughout.]

**[New and Newly Cleaned Reservoirs:** New or recently cleaned reservoirs must be completely disinfected with calcium hypochlorite before use. Spray all parts and surfaces with a 0.5%, 5000 ppm solution (1 ounce calcium hypochlorite to 1 gallon of water). When the reservoir is filled, chlorinate as described above. NOTE: As a safety precaution, do not store calcium hypochlorite solution. When mixed, use immediately.]

**[Water Mains:** Newly installed water mains or those that have been repaired must be disinfected before being put into service as they are contaminated by construction conditions. Spray all parts and surfaces with a 5000 ppm solution (one ounce calcium hypochlorite to one gallon of water). Completely flush the section to be sanitized. Allow a water flow of 2.5 feet or more per second to continue under pressure while introducing a 1% available chlorine solution with a hypochlorinator. Continue injecting this solution until a 50 ppm free available chlorine reading is obtained at the distant end of the new section after a 24-hour retention period. Afterward, flush the heavily chlorinated water free of the system. Forty-eight hours after the initial treatment, test the water supply again for bacteria and chemicals. If results are unsatisfactory, maintain a 0.4 ppm free chlorine residual in the main until test samples are acceptable for two successive days. NOTE: Keep out trench water and other contaminants from new mains by capping the pipe ends before lowering them into place. ]

**[Public Wells:** Before using, flush the casing with a 50 ppm available chlorine solution (1 ounce of calcium hypochlorite for each 100 gallons of water). The solution should be pumped or fed by gravity into the well and thoroughly mixed and agitated. The well should stand overnight or for twelve hours under chlorination. It may then be pumped until bacterial examination of a representative raw water sample will indicate whether further treatment is necessary. After the initial treatment, begin feeding a 1% available chlorine solution of this product with a hypochlorinator, as directed above, until a free available chlorine residual of at least 0.2 ppm and no more than 0.6 ppm is attained throughout the distribution system. Check the water frequently with a chlorine test kit. Bacteriological sampling must be conducted at a frequency no less than the prescribed by the National Primary Drinking Water Regulations. Contact your local Health Department for further details.]]

#### **[OTHER CALCIUM HYPOCHLORITE USES**

Calcium Hypochlorite is also used in the sanitization of water systems, municipal water mains, sewage and industrial waste treatment, pulp bleaching, sanitization in the food industry, restaurants, dairies, and hospitals, odor and taste control in potable water systems, algae control in industrial cooling water systems, and general industrial sanitization.]

[[COOLING TOWER / EVAPORATIVE CONDENSER WATER:

**Cooling Tower and Heat Exchange Surface** – A clogged or fouled system must be mechanically cleaned to remove all physical soil prior to beginning treatment. Initially, treat by adding enough of this product to provide 10 ppm available chlorine (2 ounces-per-1000 gallons) as a shock dosage and circulate this product thoroughly through the system. Then, for continuous preventive control of algae and slime growth, regularly add enough of this product to the recirculation system to maintain a free chlorine residual between 0.5 and 1.0 ppm. Other water condition factors, such as pH, should be controlled as recommended by the equipment manufacturer.

**Slug Feed Method – Initial dose:** When system is noticeably fouled, apply 10 to 20 ounces of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine. Repeat until control is achieved. **Subsequent dose:** When microbial control is evident, add 1 to 2 ounces of this product per 10,000 gallons of water in the system daily, or as needed to maintain control and keep the chlorine residual at 1.0 ppm. Badly fouled system must be cleaned before treatment is begun.

**Intermittent Feed Method – Initial dose:** When system is noticeably fouled, apply 10 to 20 ounces of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blowdown. **Subsequent dose:** When microbial control is evident, add 1 to 2 ounces of this product per 10,000 gallons of water in the system to obtain a 1.0 ppm residual. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blowdown. Badly fouled system must be cleaned before treatment is begun.

**Continuous Feed Method – Initial dose:** When system is noticeably fouled, apply 10 to 20 ounces of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine. **Subsequent dose:** Maintain this treatment level by starting a continuous feed of 1 ounce of this product per 3,000 gallons of water lost by blowdown to maintain a 1.0 ppm residual. Badly fouled system must be cleaned before treatment is begun.]]

[[SANITIZATION OF NONPOROUS FOOD CONTACT SURFACES:

**RINSE METHOD** - A solution of 100 ppm available chlorine may be used in the sanitizing solution if a chlorine test kit is available. Solutions containing an initial concentration of 100 ppm available chlorine must be tested and adjusted periodically to ensure that the available chlorine does not drop below 50 ppm. Prepare a 100 ppm sanitizing solution by thoroughly mixing 1 ounce of this product with 40 gallons of water. If no test kit is available, prepare a sanitizing solution by thoroughly mixing 1 ounce of this product with 20 gallons of water to provide approximately 200 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. If solution contains less than 50 ppm available chlorine, as determined by a suitable test kit, either discard the solution or add sufficient product to reestablish a 200 ppm residual. Do not rinse equipment with water after treatment and do not soak equipment overnight. Sanitizers used in automated systems may be used for general cleaning but may not be reused for sanitizing purposes.

**IMMERSION METHOD** - A solution of 100 ppm available chlorine may be used in the sanitizing solution if a chlorine test kit is available. Solutions containing an initial concentration of 100 ppm available chlorine must be tested and adjusted periodically to ensure that the available chlorine does not drop below 50 ppm. Prepare a 100 ppm sanitizing solution by thoroughly mixing 1 ounce of this product with 40 gallons of water. If no test kit is available, prepare a sanitizing solution by thoroughly mixing 1 ounce of this product with 20 gallons of water to provide approximately 200 ppm available chlorine by weight. Clean equipment in the normal manner. Prior to use, immerse equipment in the sanitizing solution for at least 2 minutes and allow the sanitizer to drain. If solution contains less than 50 ppm available chlorine, as determined by a suitable test kit, either discard the solution or add sufficient product to reestablish a 200 ppm residual. Do not rinse equipment with water after treatment. Sanitizers used in automated systems may be used for general cleaning but may not be reused for sanitizing purposes.

**FLOW/PRESSURE METHOD** - Disassemble equipment and thoroughly clean after use. Assemble equipment in operating position prior to use. Prepare a volume of a 200 ppm available chlorine sanitizing solution equal to 110% of volume capacity of the equipment by mixing the product in a ratio of 1 ounce product with 20 gallons of water. Pump solution through the system until full flow is obtained at all extremities, the system is completely filled with the sanitizer and all air is removed from the system. Close drain valves and hold under pressure for at least 2 minutes to insure contact with all internal surfaces. Remove some cleaning solution from drain valve and test with a chlorine test kit. Repeat entire cleaning/sanitizing process if effluent contains less than 50 ppm available chlorine.

**CLEAN-IN-PLACE METHOD** - Thoroughly clean equipment after use. Prepare a volume of 200 ppm available chlorine sanitizing solution equal to 110% of volume capacity of the equipment by mixing this product in a ratio of 1 ounce with 20 gallons of water. Pump solution through the system until full flow is obtained at all extremities, the system is completely filled with the

[86460-1 ECR Calcium Hypochlorite Granules  
MASTER LABEL]

sanitizer and all air is removed from the system. Close drain valves and hold under pressure for at least 10 minutes to insure contact with all internal surfaces. Remove some cleaning solution from drain valve and test with a chlorine test kit. Repeat entire cleaning/sanitizing process if effluent contains less than 50 ppm available chlorine.

SPRAY/FOG METHOD - Preclean all surfaces after use. Use a 200 ppm available chlorine solution to control bacteria, mold or fungi and a 600 ppm solution to control bacteriophage. Prepare a 200 ppm sanitizing solution of sufficient size by thoroughly mixing the product in a ratio of 1 ounce product with 20 gallons of water. Prepare a 600 ppm solution by thoroughly mixing the product in a ratio of 3 ounces product with 20 gallons of water. Use spray or fogging equipment which can resist hypochlorite solutions. Always empty and rinse spray/fog equipment with potable water after use. Thoroughly spray or fog all surfaces until wet, allowing excess sanitizer to drain. Vacate area for at least 2 hours. Prior to using equipment, rinse all surfaces treated with a 600 ppm solution with a 200 ppm solution.]]

**[[SANITIZATION OF POROUS FOOD CONTACT SURFACES:**

RINSE METHOD - Prepare a 600 ppm solution by thoroughly mixing 3 ounces of this product with 20 gallons of water. Clean surfaces in the normal manner. Rinse all surfaces thoroughly with the 600 ppm solution, maintaining contact for at least 2 minutes. Prepare a 200 ppm sanitizing solution by thoroughly mixing 1 ounce of this product with 20 gallons of water. Prior to using equipment, rinse all surfaces with a 200 ppm available chlorine solution. Do not rinse and do not soak equipment overnight.

IMMERSION METHOD - Prepare a 600 ppm solution by thoroughly mixing, in an immersion tank, 3 ounces of this product with 20 gallons of water. Clean equipment in the normal manner. Prepare a 200 ppm sanitizing solution by thoroughly mixing 2 ounces of this product with 10 gallons of water. Prior to using, immerse equipment in the 200 ppm sanitizing solution for at least 2 minutes and allow the sanitizer to drain. Do not rinse and do not soak equipment overnight.

SPRAY/FOG METHOD - Preclean all surfaces after use. Prepare a 600 ppm available chlorine sanitizing solution of sufficient size by thoroughly mixing the product in a ratio of 3 ounces product with 20 gallons of water. Use spray or fogging equipment which can resist hypochlorite solutions. Always empty and rinse spray/fog equipment with potable water after use. Thoroughly spray or fog all surfaces until wet, allowing excess sanitizer to drain. Vacate area for at least 2 hours. Prior to using equipment, rinse all surfaces with a 200 ppm available chlorine solution. Prepare a 200 ppm sanitizing solution by thoroughly mixing 1 ounce of this product with 20 gallons of water.]]

**[[SANITIZATION OF NONPOROUS NON-FOOD CONTACT SURFACES:**

RINSE METHOD - Prepare a sanitizing solution by thoroughly mixing 1 ounce of this product with 20 gallons of water to provide approximately 200 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. Do not rinse equipment with water after treatment and do not soak equipment overnight.

IMMERSION METHOD - Prepare a sanitizing solution by thoroughly mixing, in an immersion tank, 1 ounce of this product with 20 gallons of water to provide approximately 200 ppm available chlorine by weight. Clean equipment in the normal manner. Prior to use, immerse equipment in the sanitizing solution for at least 2 minutes and allow the sanitizer to drain. Do not rinse equipment with water after treatment.

SPRAY/FOG METHOD - Preclean all surfaces after use. Prepare a 200 ppm available chlorine sanitizing solution of sufficient size by thoroughly mixing the product in a ratio of 1 ounce product with 20 gallons of water. Use spray or fogging equipment which can resist hypochlorite solutions. Prior to using equipment, thoroughly spray or fog all surfaces until wet, allowing excess sanitizer to drain. Vacate area for at least 2 hours.]]

**[[DISINFECTATION OF NONPOROUS NON-FOOD CONTACT SURFACES:**

RINSE METHOD - Prepare a disinfecting solution by thoroughly mixing 3 ounces of this product with 20 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the disinfecting solution, maintaining contact with the solution for at least 10 minutes. Do not rinse equipment with water after treatment and do not soak equipment overnight.

IMMERSION METHOD - Prepare a disinfecting solution by thoroughly mixing, in an immersion tank, 3 ounces of this product with 20 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment in the normal manner. Prior to use, immerse equipment in the disinfecting solution for at least 10 minutes and allow the solution to drain. Do not rinse equipment with water after treatment.]]



**[[SANITIZATION OF POROUS NON-FOOD CONTACT SURFACES:**

**RINSE METHOD** - Prepare a sanitizing solution by thoroughly mixing 3 ounces of this product with 20 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment surfaces in the normal manner. Prior to use, rinse all surfaces thoroughly with the sanitizing solution, maintaining contact with the sanitizer for at least 2 minutes. Do not rinse equipment with water after treatment and do not soak equipment overnight.

**IMMERSION METHOD** - Prepare a sanitizing solution by thoroughly mixing, in an immersion tank, 3 ounces of this product with 20 gallons of water to provide approximately 600 ppm available chlorine by weight. Clean equipment in the normal manner. Prior to use, immerse equipment in the sanitizing solution for at least 2 minutes and allow the sanitizer to drain. Do not rinse equipment with water after treatment.

**SPRAY/FOG METHOD** - After cleaning, sanitize non-food contact surfaces with 600 ppm available chlorine by thoroughly mixing the product in a ratio of 3 ounces of this product with 20 gallons of water. Use spray or fogging equipment which can resist hypochlorite solutions. Always empty and rinse spray/fog equipment with potable water after use. Prior to using equipment, thoroughly spray or fog all surfaces until wet, allowing excess sanitizer to drain. Vacate area for at least 2 hours.]

**[[BEVERAGE PLANTS**

**[BREWERIES**

Calcium Hypochlorite solutions enable breweries to prevent bacterial growth and assure the purity and fresh taste of their products on a continuing basis. As a general sanitizer, calcium hypochlorite is doubly effective because of its dissolving action on beer stone, proteins, slime, yeast and other matter commonly found in brewery lines, tanks, hoses, etc. To prepare a stock cleaning and sanitizing solution, add 5 pounds of calcium hypochlorite to 3 gallons of warm water in a 20-gallon container. Introduce 3 pounds of soda ash and stir until dissolved. Dilute this mixture with cold water to make 15 gallons of solution, then add 5 pounds of Caustic Soda by following directions of that product. Stir to dissolve and allow to stand. When diluted 1-to-10 with water, this solution is an excellent cleaner/sanitizer for piping and equipment, steel, glazed tile and concrete vats.]

**[Fermenting Tubs-Cyprus:** Clean and rinse the tub thoroughly to remove all traces of oil, then fill with 200 ppm available chlorine solution to sanitize. Allow to stand 10-12 hours.]

**[Washing Equipment:** Sanitize the washing equipment by first thoroughly cleaning, then flushing all surfaces with calcium hypochlorite solution containing 200 ppm available chlorine.]

**[Malting Areas:** Floors and walls around malt tanks should be thoroughly washed once a week to prevent mold formation and odor. After cleaning, flush both floors and walls with a solution containing 0.25% (2500 ppm) available chlorine.]

**[Aging Cellars:** Spray the concrete walls of aging cellars regularly with a calcium hypochlorite solution of 0.5% (5000 ppm) available chlorine to destroy existing mold and mildew and prevent odor.]

**[Pasteurizers:** Slime and odors that develop in pocket-type pasteurizers can be controlled with regular use of a 1% (10000 ppm) available chlorine solution fed into the pasteurizer water supply by a hypochlorinator. A feed rate which provides a dosage of 0.5 to 1.0 ppm available chlorine at the overflow is required for optimum results. After draining and cleaning pasteurizers, the hypochlorinator should be used to provide fresh refill water with the proper chlorine residual.]

**[Grain Steep Tanks:** Calcium hypochlorite is a highly effective sanitizer in controlling mold growth in humid malt house conditions. Steep tanks should be cleaned first, and then sprayed with a 1.5 to 2.0% (15000 to 20000 ppm) available chlorine solution. Allow to stand 30 minutes. The walls of concrete germination compartments should also be cleaned and treated as above. The perforated metal floors of germination compartments should be sprayed with high-pressure water for thorough cleaning and then covered at a rate of 0.15 oz. of dry calcium hypochlorite per square foot of wet floor. (A clean, dry, uncontaminated broadcaster or spreading device may be used effectively.) Allow the coating to stand for 30 minutes; rinse thoroughly with potable water before putting equipment in service.]

**[Water Supplies:** Calcium hypochlorite solutions containing 1% (10000 ppm) available chlorine will properly sanitize plant water used to produce beer. The calcium hypochlorite solution must be introduced into the water supply by a hypochlorinator. An available chlorine residual of 0.2 to 0.6 ppm must be maintained throughout the system at all times. Be sure to dechlorinate the water before it is used to process beer.]]

**[CARBONATED BEVERAGE PLANTS**

**Water Supplies:** Available plant water supplies used to produce carbonated beverages may be properly sanitized by introducing solution of 1% (10000 ppm) available chlorine. The solution should be introduced by a hypochlorinator and adjusted to supply an available chlorine residual of 0.2 to 0.6 ppm at all times. Be sure to dechlorinate the water before it is used to process beverages.

**Manufacturing Equipment:** The use of calcium hypochlorite is a reliable and economical way to sanitize equipment and control

the quality and taste of carbonated beverages. Before bottling operations start up feed a 200 ppm available chlorine solution through all pumps, lines and fillers to eliminate bacteria. Clean surfaces before treatment. After each bottling operation, thoroughly spray syrup tanks with 200 ppm available chlorine solution, and let stand for 30 minutes.]]

**[[CIDER PLANTS**

Even when stored under cold conditions, sweet cider is particularly susceptible to fungus growth, which causes spoilage. As a preventive, sanitize each cask for a period of two minutes with a 200 ppm available chlorine solution, before use. Clean thoroughly first; then rinse each cask with the solution.]]

**[[WINERIES**

**[Plant Sanitation:** Calcium hypochlorite will sanitize and prevent contamination in wineries to ensure product quality. Following each run, clean the entire plant area and its equipment. Immediately before the next run, sanitize with calcium hypochlorite as follows: Rinse nonporous wall surfaces, floors and equipment with a calcium hypochlorite solution containing 500 ppm available chlorine. Let stand for 10 minutes. Porous surfaces (wood, concrete, etc.) should be scrubbed or sprayed with a 1000 ppm available chlorine solution. Let stand 10 minutes. Storage vessels, fermenting vats, casks, presses and grape crushers should be cleaned of physical soil thoroughly before treatment. Rinse or spray with calcium hypochlorite solution containing 200 ppm available chlorine. Let stand 10 minutes.]

**[Mold Control:** Mold growth should be treated on discovery with calcium hypochlorite to prevent further spreading. Spray the affected surfaces with a calcium hypochlorite solution providing 0.5% (5000 ppm) available chlorine. Heavy growth may require scrubbing and/or repeated applications.]

**[Storage and Filling Tanks:** Disinfect storage and filling tanks with calcium hypochlorite to maintain a high level of product quality. After a run and before refilling tanks, they should be thoroughly disinfected with calcium hypochlorite. For wooden or nonporous tanks, first pre-clean then fill with calcium hypochlorite solutions containing 600 ppm available chlorine. Solutions should stand for at least 10 minutes. Then, rinse tanks with potable water for a period of 2 minutes immediately before refilling. Unused tanks and vats should be kept sanitized with calcium hypochlorite. Fill each with water and dry calcium hypochlorite to obtain a residual of approximately 15 ppm available chlorine. Test every week and repeat treatment if residual falls below 2 ppm.]

**[Press Cloths:** Press cloths contaminated with bacteria or organic matter must be treated with calcium hypochlorite solutions to neutralize microorganisms and prevent spreading. After use, wash cloths thoroughly, and then soak as follows: For every 100 pounds dry weight of the cloth, add 2 oz. dry calcium hypochlorite to 60 gallons of water. Soak for 15 minutes.]

**[[GRAPE JUICE PLANTS**

Sanitize equipment and problem areas of grape juice plants using the same treatment procedures recommended for wineries.]]

**[[LAUNDRY SANITIZERS**

**Household Laundry Sanitizers** - In Soaking Suds - thoroughly mix 1 tbsp. of this product to 10 gallons of wash water to provide 200 ppm available chlorine. Wait 5 minutes, then add soap or detergent. Immerse laundry for at least 11 minutes prior to starting the wash/rinse cycle. - In Washing Suds - thoroughly mix 1 tbsp. of this product to 10 gallons of wash water containing clothes to provide 200 ppm available chlorine. Wait 5 minutes then add soap or detergent and start the wash/rinse cycle.

**Commercial Laundry Sanitizers** - Wet fabrics or clothes should be spun dry prior to sanitization. Thoroughly mix 1 oz. of this product with 20 gallons of water to yield 200 ppm available chlorine. Promptly after mixing the sanitizer, add the solution into the prewash prior to washing fabrics/clothes in the regular wash cycle with a good detergent. Test the level of available chlorine, if solution has been allowed to stand. Add more of this product if the available chlorine level has dropped below 200 ppm.]]

**[[FOOD PROCESSING**

**For use in federally inspected meat and poultry plants.**

**[Chlorine potable water treatment compounds.**

Chlorine may be present in processing water of meat and poultry plants at concentrations up to 5 parts per million calculated as available chlorine. Also, chlorine may be present in poultry chiller intake water, and in carcass wash water at concentrations up

to 50 parts per million calculated as available chlorine. Chlorine must be dispensed at a constant and uniform level and the method or system must be such that a controlled rate is maintained.]

**[Cooling and retort water treatment compounds.**

Chemical agents may be added to water used to cook and cool containers of meat and poultry products to prevent staining of containers and to control corrosion and deposit formation on surfaces of processing equipment. The amount used must be the minimum sufficient for the purpose.

Calcium hypochlorite solutions providing 1% available chlorine should be fed into tanks or channels by an elevated tank to provide a concentration of 2 ppm available chlorine. The flow may be controlled with a noncorroding valve or a pinch-stop on a rubber hose. Feed points should be located to provide uniform distribution of solution throughout the entire system. Long and narrow tanks may require the solution to be fed at two points to ensure proper distribution. Test the water for available chlorine. If a residual of 2 ppm is present throughout the system, the water is properly sanitized. Test for available chlorine every hour until dosage requirements are established. Thereafter, check every 2 or 3 hours to verify that available chlorine residual of 2 ppm is maintained throughout the system.]

**[Compounds for treating boilers, steam lines, and/or cooling systems where neither the treated water nor the steam produced may contact edible products. This does not include compounds added to water used to cook and cool containers of meat and poultry products.** A clogged or fouled system must be mechanically cleaned to remove all physical soil prior to beginning treatment. Initially, treat by adding enough calcium hypochlorite to provide 10 ppm available chlorine (2 ounces per 1000 gallons) as a shock dosage and circulate it thoroughly through the system.

Then, for continuous preventative control of algae and slime growth, regularly add enough calcium hypochlorite to the recirculation system to maintain a 1.0 ppm free chlorine residual.

Other water condition factors, such as pH, should be controlled as recommended by the equipment manufacturer.]

**[Sanitization, Disinfection and Odor Control:** An effective general sanitizer or disinfectant, calcium hypochlorite solutions also provide odor control in meat processing plants.]

**[Killing Rooms:** Disinfect the entire killing room with calcium hypochlorite solution to prevent the contamination of meat and the development of offensive odors. Scrub all walls and floors completely. Spray thoroughly with a solution containing 5000 ppm available chlorine. Drains and traps through which blood passes should be flushed thoroughly with water and flushed with solution containing 5000 ppm available chlorine. Allow this solution to stand overnight, then flush.]

**[Inedible Rooms:** Solutions containing 1000 ppm available chlorine will properly disinfect inedible rooms, prevent odors and improve the handling qualities of hides and other marketable items. Thoroughly clean inedible rooms on a regular basis. After cleaning, spray the tank house, the press rooms and the hide rooms generously with the calcium hypochlorite solution.]

**[Edible Rooms:** Calcium hypochlorite solutions containing 1000 ppm available chlorine will disinfect and control bacteria in refrigerating, curing, and processing areas to prevent taste and color problems in products. Thoroughly clean all edible rooms on a regular basis. After cleaning, room surfaces and equipment should be sprayed well with 1000 ppm solution for 10 minutes. Rinse with 200 ppm available chlorine solution for a period of 2 minutes.]

**[Equipment and Utensils:** To prevent contamination, sanitize all equipment and utensils that came in contact with meat with a solution containing 200 ppm available chlorine. Clean equipment and utensils thoroughly, removing all fat and grease, spray or rinse with solution. Let stand 2 minutes.]

**[Locker Rooms, Elevator Pits and Toilets:** Disinfect and deodorize locker rooms, elevator pits and toilets with a calcium hypochlorite solution containing 5000 ppm available chlorine. Locker rooms, shower rooms, toilets, urinals and drains should be cleaned, then sprayed or flushed with the solution on a regular basis. After treatment, let stand 10 minutes, then rinse exposed surfaces with potable water to prevent corrosion. Add 1 level tablespoon of calcium hypochlorite to the residual water of toilet bowls and swab.]]

**[[Canneries:**

**[Cannery Cooling Water** – Hot, freshly-packed cans are often cooled by immersion in cold water. This creates a partial vacuum in the container which may allow the cooling water to enter through seams or pin holes. If bacteria are present in the water, contents may become contaminated and spoil. Solutions of this product containing 1% available chlorine will sanitize cooling water, protect canned goods from contamination and spoilage and prevent staining of cans. The solution should be fed into cooling tanks or channels to reach a concentration of 2-PPM available chlorine. Check every two to three hours to be sure that an available chlorine residual of 2-PPM is maintained throughout the cooling system. To make a 1% solution, mix 10-oz of this product into 5-gallons of water.] → 2 ppm → 2 ppm

**Water Supplies:** One percent chlorine solutions will effectively purify the water supply in canneries. Feed the solution into the

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water supply by a hypochlorinator on the intake side of the pump. An available chlorine residual of 0.2 to 0.6 ppm must be maintained throughout the water distribution system to assure adequate purification. Regular testing should be initiated to assure proper chlorine residuals are present at all times.

**Wastes:** Solutions containing 1000 ppm available chlorine controls odors from dry food waste disposed in dumps or collecting points. Accumulations of waste should be sprayed or soaked with calcium hypochlorite solution daily to eliminate odors. Calcium hypochlorite solutions applied by continuous treatment to maintain a residual of 15 to 25 ppm will control odors in food waste being removed by water suspension.]]

**[[DAIRY INDUSTRIES (Creameries, Ice Cream Factories, Cheese Factories, and Milk Plants)**

Calcium hypochlorite solutions provide an effective, economical method of sanitizing processing equipment and problem areas in creameries, ice cream factories, cheese factories and milk plants. To prevent contamination of the product, apply calcium hypochlorite solutions to every surface the product will touch.]

**[Pressure Sanitizing Equipment:** Pressure is commonly used to sanitize closed systems, such as fluid milk cooling and handling equipment. The pressure method is also appropriate for sanitizing weight tanks, coolers, short-time pasteurizers, pumps, homogenizers, fillers, sanitary piping and fittings, and bottle and can fillers. Immediately after use, clean all equipment thoroughly, and then place back in operating position. Prepare a sufficient amount of a calcium hypochlorite solution containing 200 ppm available chlorine to fill the equipment. (Allow a 10% excess for waste.) Pump the calcium hypochlorite solution through the system until it is filled and air is excluded. Close final drain valves and hold the system under pressure for 2 minutes to ensure proper contact with all surfaces. Drain the solution.]

**[Spray Sanitizing Equipment:** A spray (or fog) method is generally used to sanitize large, nonporous surfaces which have been freed of physical soil and thoroughly cleaned. It is appropriate for batch pasteurizers, holding tanks, weigh tanks, tank trucks and cars, vats, tile walls, ceilings and floors. Prepare a solution containing 200 ppm available chlorine. Use pressure spraying or fogging equipment designed to resist hypochlorite solutions (rubber-coated; plastic or stainless steel). When using other types of spraying equipment, empty and rinse thoroughly with fresh water immediately following treatment. Heavily spray or fog all surfaces the product will contact. All surfaces, corners and turns must be thoroughly coated. Allow excess solution to drain off, and then place in service.]

**[Water Supplies:** Calcium hypochlorite solutions containing 1% (10000 ppm) available chlorine will disinfect water supplies used in the production of dairy products. The solution should be prepared using the following procedure: Mix 3.75 pounds of calcium hypochlorite into a 30-gallon plastic container 1/3 full of warm water. Add 3 pounds of light soda ash stir thoroughly and dilute to 30 gallons. Add this solution to the water supply and let stand 20 minutes. The water supply has been sanitized when a 0.2 ppm of available chlorine is present. **General Sanitizing:** Sanitize plant floors, walls and ceilings, and control odors in refrigerated areas and on drain platforms with a 1000 ppm calcium hypochlorite solution. Flush or swab surfaces generously with solution. Allow to stand 2 minutes.]

30 ←  
new subheading ↓

**[Controlling Mold and Mildew:** To control mold and nonresidual mildew that often grows in cheese aging rooms, storage rooms and other areas with a calcium hypochlorite solution of 5000 ppm available chlorine. Brush or spray all precleaned walls, floors, ceilings and shelves with the solution. Then, rinse all metal surfaces immediately to prevent corrosion.]

**[Wastes:** Calcium hypochlorite solutions containing 15 to 25 ppm available chlorine provide odor control of dairy plant waste. An overflow-type retention basin, flume or outfall of sufficient length is necessary to provide required contact time and mixing. For continuous treatment, calcium hypochlorite is introduced by a hypochlorinator capable of feeding the solution in proportion to waste flow. The hypochlorinator should be located near the point where waste leaves the plant building, followed by baffles for agitation. Batch waste should be impounded and treated with calcium hypochlorite solution which provides a residual of 15 to 25 ppm available chlorine.]]

**[Fish Filleting:** Eviscerated and degilled fish removed from the fishing vessel are placed in a wash tank of seawater or fresh water which has been treated with enough product to produce a chlorine residual of 25 ppm, as determined by a test kit. Remove fish from treated water 24 to 48 hours before filleting. After scaling, the fish are again washed in a 25 ppm solution, and are ready for filleting]

**[Pecan cracking and bleaching –**Prepare 1,000-PPM available chlorine soaking solution by adding 1-oz of this product for each 5-gallons of water to obtain a 1,000-PPM available chlorine content. Soak for a minimum of 10-minutes. After removal, age pecans for 24-hours. Before bleaching, pecans are placed in a rotary cleaner where they are washed, drained, and soaked in a 2% sulfuric acid bath at 80 to 90°F for 1-minute. Transfer to a solution containing 107-oz of this product for each 100-gallons of water (5,000-PPM). After 4 to 8-minutes, they are drained and washed in a 1% sulfuric acid bath at 80 to 90°F. The pecans are then dried.]

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**[Fruit & Vegetable Washing:** Thoroughly clean all fruits and vegetables in a wash tank. Thoroughly mix 1 ounce of this product in 200 gallons of water to make a sanitizing solution of 25 ppm available chlorine. After draining the tank, submerge fruit or vegetables for two minutes in a second wash tank containing the recirculating sanitizing solution. Spray rinse vegetables with the sanitizing solution prior to packaging. ]

**[Commodity Fruit & Vegetable Treatment:** Wash fruits and vegetables to remove organic matter; then treat as noted below.

**[Table of Recommended Levels and Use Dilutions for Available Chlorine**

Commodity	Usage Dilution dry oz. added to 250 gal. of water	(ppm) Available Chlorine	Contact Time
Apple	7.7 - 10.3	150 - 200	45-90 sec.(dump tank) 5-15 sec. (spray)
Artichoke	5.1 - 7.7	100 - 150	5-15 sec. (spray)
Asparagus	6.4 - 7.7	125 - 150	5-15 sec. (spray) 20-30 min.(hydrocooler)
Brussels Sprouts	5.1 - 7.7	100 - 150	5-15 sec. (spray)
Carrots	5.1 - 10.3	100 - 200	1-5 min. (dump tank) 1-5 min. (flume)
Cauliflower	15.4 - 20.5	300 - 400	5-15 sec. (spray)
Celery	5.1 - 5.7	100 - 110	5-15 sec. (spray)
Cherry	3.9 - 5.1	75 - 100	5-15 sec. (spray)
Chopped Cabbage <sup>1</sup>	4.1 - 5.1	80 - 100	5-15 sec. (spray)
Chopped Lettuce <sup>1</sup>	4.1 - 5.1	80 - 100	5-15 sec. (spray)
Citrus Fruits	1.3 - 10.3	40 - 75 30 - 50 100 - 200	5-15 sec. (spray) 2-3 min. (dump tank) 3-5 min. (drench)
Cucumbers	15.4 - 18.0	300 - 350	5-15 sec. (spray)
Green Onions	3.9 - 6.2	75 - 120	5-15 sec. (spray)
Melons	5.1 - 7.7	100 - 150 30 - 75	5-15 sec. (spray) 20-30 min.(hydrocooler)
Peaches, Nectarines and Plums	2.6 - 5.1	50 - 100	5-15 sec. (spray)
Pears (without buffer)	10.3 - 15.4	200 - 300	2-3 min. (dump tank)
Peppers	15.4 - 20.5 5.1 - 6.9	300 - 400 100 - 135	5-15 sec. (spray) 2-5 min. (dump tank)
Potatoes	3.3 - 6.4	65 - 125	2-5 min.(dump tank)(30-100ppm) 2-5 min. (flume)(200-300ppm) 5-30 sec.(spray)(100-200ppm)
Radishes	5.1 - 7.7	100 - 150	5-15 sec. (spray)
Stonefruit	1.5 - 3.9	30 - 75	20-30 min. (hydrocooler)
Tomatoes	15.4 - 18.0	300 - 350	2-3 min (tank)(200-350 ppm) 5-15 sec.(spray)(100-150ppm)

**Note:** 1. After treatment the adhering water must be removed by a centrifugation process.]

**[Poultry Drinking Water:** Spray or flush with a solution containing 1-oz of this product for every gallon of water (5000 ppm). Treat poultry drinking water to a dosage of 1 to 5-PPM available chlorine by adding 0.2 to 1-oz of this product per 1,000-gallons of water. ]

**[Food Egg Sanitization:**

Thoroughly clean all eggs. Thoroughly mix 0.8 oz. of this product with 20 gallons of warm water to produce a 200 ppm available chlorine solution. The sanitizer temperature should not exceed 130°F. Spray the warm sanitizer so that the eggs are thoroughly wetted. Allow the eggs to thoroughly dry before casing or breaking. Do not apply a potable water rinse. The solution should not be re-used to sanitize eggs.]]

{NOTE to EPA: The PPE information noted above will be applied to the product label only when these agricultural use instructions are on the label.}

**[DIRECTIONS FOR USE:** It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**AGRICULTURAL USE REQUIREMENTS:**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirement for the protection of agricultural workers on farms, forests, nurseries, greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Workers Protection Standard.

The Restricted-Entry Interval (REI) is 0 days when using this product.

There are no posting or notification requirements when using this product.

Personal Protective Equipment must be worn as described under the "Precautionary Statements" section of this label.

**[DIRECTIONS FOR THE CONTROL OF  
BACTERIA, ALGAE, SLIME BUILD-UP AND CLOGGING IN  
SPECIFIED IRRIGATION SYSTEMS**

[[AQUAFIT] [ECR AQUAchlor] [DPG AgChlor] ECR Calcium Hypochlorite Granules may be mixed with water to produce a chlorine solution. Always add granules to water; never add water to granular product. To produce a 0.5% available chlorine solution, add 1.03 dry oz. of this product to (1) gallon of water. This solution may then be fed by gravity, or a metering pump to the irrigation system water to achieve the desired available chlorine strength in the water. The Application Rates section provides the levels of free residual chlorine needed to prevent or address bio-fouling occurring in drip/trickle irrigation systems. When utilizing a metering pump, refer to the instruction manual for varying the output of the pump. This product is to be applied through drip, micro, trickle, or sprinkler irrigation systems only for agricultural crops only where this manner of use will not cause crop damage.

**[APPLICATION RATES**

If the irrigation water has high levels of nutrients causing bacterial, algal, or other bio-fouling that reduces system performance, continuous use of this product may be necessary. The recommended level of free residual chlorine for continuous feed is 1 to 2 ppm, measured at the end of the farthest lateral using a good quality test kit for free chlorine (also called "free residual" or "free available" chlorine).

Periodic shock treatments at a higher available chlorine rate of up to 20 ppm free residual may be appropriate where bacteria and/or algae clogging and build-up are not managed by maintaining a continuous residual. The frequency of the shock application depends upon the frequency and extent of bio-clogging.

Superchlorination, bringing concentrations to as much as 100 ppm total available chlorine, is recommended for reclaiming low-volume irrigation systems if clogged by algae and bacterial slimes. Set the chlorinator to deliver 100 ppm in the drip system and monitor the free chlorine residual at the end of the farthest lateral. As soon as it is established that the free residual reading is between 10 and 20 ppm, shut the system down and leave it undisturbed for up to 24 hours. Then flush all submains and laterals with fresh water. Superchlorination will not dissolve/remove scale or inorganic sediment fouling.]

[\*Note: To correctly establish the dose setting required, it is necessary to measure the free chlorine concentration (ppm) at the end of the treated increment in the field and adjust the dose setting until the desired free chlorine concentration is obtained. This is because contaminants in the water may consume available chlorine resulting in a concentration that is less than the concentration desired as specified above. Only experience can establish the actual chlorinator settings required to provide the amount of free chlorine at the end of the farthest lateral (and consequent treatment of the irrigation system). Normally the treatment level at the end of the farthest lateral will be 1 – 2 ppm free chlorine.]

**[GENERAL APPLICATION INSTRUCTIONS**

Chlorination should be started during irrigation, near the end of the irrigation sequence, but early enough to establish the desired free chlorine concentration throughout the system being treated.

Apply this product upstream of the filter to help keep the filter clean.

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Determine the level of free chlorine as described above, using a free chlorine test kit. Allow sufficient time to achieve a steady reading.

**DO NOT** apply this product when fertilizers, herbicides, and insecticides are being injected since they will consume the available chlorine and may produce toxic reaction products.

Shut down the product feed as soon as the irrigation water is switched to the next irrigation sector. Leave the treated water residing in the section that has been shut down.

Refer to the chlorinator use instructions as needed.]

**[[IRRIGATION CANALS AND LATERALS**

In irrigation canals or other high stream flow areas, apply this product at a continuous rate of 4.5 to 9oz per minute per 10 cft. per second flow rate until 5 to 10 ppm available chlorine is achieved at the downstream end of the intended treatment section.]

**[[IRRIGATION RESERVOIR: Algae control:** Rapid algae growth in irrigation reservoirs is an indication of increased chlorine demand. When algae become a problem, special action is necessary. There are several methods of treatment. One of these is to hypochlorinate the water feeding the reservoir. Suitable feeding points should be selected upstream from the point of entry into the reservoir. Continuous chlorination is usually effective in destroying algae where a sufficient amount of sanitizer is fed to produce a chlorine residual of 0.2 to 0.5 ppm free available chlorine. Where continuous feeding is not possible, scheduled, intermittent feeding should be practiced. In doing so, broadcast calcium hypochlorite over the surface of the reservoir evenly, taking special care to treat shallows and edges. As it descends, the product dissolves, distributing a chlorinating action to all depths. Introduce a sufficient amount of calcium hypochlorite to provide a residual of from 0.2 to 1.5 ppm for up to 24 hours.]]

**[SENSITIVE PLANT SPECIES**

Certain plants, including various species of trees, flowers, shrubs, agronomic crops, fruits and vegetables are adversely affected by chlorinated irrigation. The use of this product can impact the growth, appearance and health of the plants.

Begonias, geraniums and other ornamental plant species are known to be sensitive to continuous chlorination at levels of 1-2 ppm free chlorine. Plant species such as tomato, lettuce, broccoli, and petunia are sensitive to periodic chlorination levels of 10-20 ppm free chlorine.

If uncertain of a plant's tolerance, consult an agronomist or a support agency or use an alternate method to remove bio-fouling from the irrigation system.]

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**[ [AQUAFIT®] [ECR AQUAchlor] ECR Calcium Hypochlorite Granules – EPA Reg. No. 86460-1 Supplemental Labeling for Agricultural Use**

**DIRECTIONS FOR USE:** It is a violation of federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the areas during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**AGRICULTURAL USE REQUIREMENTS:**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirement for the protection of agricultural workers on farms, forests, nurseries, greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Workers Protection Standard.

Do not enter or allow worker entry into treated areas during the Restricted-Entry Interval (REI) of 12 hours.

**Personal Protective Equipment (PPE):**

The following PPE is required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water.

Applicators and other handlers of the diluted (20,000 ppm solution) must wear the following.

- Coveralls over long-sleeved shirt and long pants.
- Waterproof gloves.

Chemical-resistant footwear plus socks.  
 Protective eyewear.  
 Chemical-resistant headgear for overhead exposure.

Mixers and Loaders of the concentrate product must wear:  
 Coveralls over long-sleeved shirt and long pants.  
 Waterproof gloves.  
 Chemical-resistant footwear plus socks.  
 Protective eyewear.  
 Chemical-resistant headgear for overhead exposure.  
 Chemical resistant apron when cleaning equipment, mixing or loading.  
 Dust/mist filtering respirator (MSHA/NIOSH...D/M approval # prefix TC-21C).

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. ]

**[FOR USE ON SEEDS FOR SPROUTING AS FOOD FOR HUMAN CONSUMPTION:** While this treatment may reduce populations of E coli O157, *Salmonella* spp. & *B.cereus* (food poisoning) on seeds intended for sprout production, it may not eliminate these organisms on the seeds. Additionally, treatment may not reduce or eliminate these organisms on the final sprouts.

**Dosage:** In a well-ventilated area, prepare a 2% calcium hypochlorite solution (20,000 ppm available chlorine) by dissolving 4.1 ounces of product into 1 gallon of potable water. Below is a table for preparing various amounts of calcium hypochlorite treatment solutions.

Available Chlorine	Gallons of Water						
	ppm	1	5	15	30	50	100
2.0	20,000	4.1 ozs.	1 lb.& 5 ozs.	3 lbs.& 13 ozs.	7 lbs.& 11 ozs.	12 lbs.& 13 ozs.	25 lbs.& 10 ozs.

**Frequency/Timing of Application:** Prewash seeds with potable water for at least 5 minutes. Treat pre-washed seeds once by soaking 5 pounds of seeds in 1 gallon of a 2% calcium hypochlorite solution for 15 minutes at room temperature with continuous agitation. After treatment, drain the solution and rinse the treated seeds thoroughly with potable water for 10 minutes (changing the water several times as necessary). Prepare fresh solution for each batch of seeds.

To control bacterial spot 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 8-oz of this product with 1-gallon of water.

**Restricted Entry Interval (REI):** 12 hours

[The USEPA has determined that this REI applies when the calcium hypochlorite is sprayed on the benches or areas around the soaking containers. Note, the REI is not applicable when the disinfectant is applied directly to the raw commodity (seeds) by soaking in a container/bin. There are no re-entry interval concerns when treating pests in this manner (soaking).]

**[AGRICULTURAL USES**

**[BEES – Disinfect leaf cutting bee cells and bee boards** by immersion in a solution containing 1-PPM available chlorine for 3-minutes. Allow cells to drain for 2-minutes and dry for 4 to 5 hours or until no chlorine order can be detected. This solution is made by thoroughly mixing ¼ Tsp. of this product to 200-gallons of water. The bee domicile is disinfected by spraying with 0.1-PPM solution until all surfaces are thoroughly wet. Allow the domicile to dry and do not let bees re-enter until all chlorine odors have dissipated.]

**[Mushrooms –** To control bacteria blotch (*Pseudomonas toloasil*), use a 100 to 200-PPM solution of this product prior to watering mushroom production surfaces. This solution may be made by mixing 0.2 to 0.4-oz of this product with 10-gallons of water. First application should begin when pins form, and thereafter, between breaks on a need basis depending on the occurrence of bacterial blotch. This product may be applied directly to pins to control small infection foci. Apply 1.5 to 2.0-oz per square foot of growing space.]



**[SEEDS:** To control bacterial spot 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 8 oz of this product with 1 gallon of water.]

**[HARVESTED SWEET POTATOES:** To control and reduce the spread of soft rot causing organisms in water and on sweet potatoes (*Ipomoea batatas*), spray or dip the potatoes with a 150 to 500 ppm solution for 2 to 5 minutes. Thoroughly mix 0.3 to 1.0 oz. of this product per 10 gallons of water to obtain this solution. Monitor the chlorine concentration and change the solution after one hour or as needed.]]

**[FARM PREMISES**

Remove all animals, poultry, and feed from premises, vehicles, and enclosures. Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other facilities occupied or traversed 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 2 oz. of this product with 10 gallons 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 ~~waters~~ must be rinsed with potable water before reuse.]

*waterers*

**[AQUACULTURAL USES**

**[Fish Ponds:** Remove fish from ponds prior to treatment. Thoroughly mix 20 oz of this product to 10,000 gallons of water to obtain 10 ppm available chlorine. Add more product to the water if the available chlorine level is below 1 ppm after 5 minutes. Return fish to pond after the available chlorine level reaches zero.]

**[Fish Pond Equipment:** Thoroughly clean all equipment prior to treatment. Thoroughly mix 1 oz of this product to 20 gallons of water to obtain 200 ppm available chlorine. Porous equipment should soak for one hour.]

**[Control of Scavengers in Fish Hatchery Ponds:** Prepare a solution containing 200 ppm of available chlorine by mixing 0.5 oz of this product with 10 gallons of water. Pour into drained pond potholes. Repeat if necessary. Do not put desirable fish back into refilled ponds until chlorine residual has dropped to 0 ppm, as determined by a test kit.]]

**[SWIMMING POOL WATER DISINFECTION]**

**SWIMMING POOL WATER DISINFECTION:**

For a new pool or spring start-up, superchlorinate with 10 to 20 oz. of product for each 10,000 gallons of water to yield 5 to 10 ppm available chlorine by weight. Check the level of available chlorine with a test kit. Adjust and maintain pool water pH to between 7.2 to 7.6. Adjust and maintain the alkalinity of the pool to between 50 to 100 ppm.

To maintain the water, add manually or by feeder device, 2 oz. of this product for each 10,000 gallons of water to yield an available chlorine residual between 0.6 to 1.0 ppm by weight. Stabilized pools should maintain a residual of 1.0 to 1.5 ppm available chlorine. Test the pH, available chlorine residuals and alkalinity of the water frequently with appropriate test kits. Frequency of water treatment will depend upon temperature and number of swimmers.

Every 7 days, or as necessary, superchlorinate the pool with 10 to 20 oz. of product for each 10,000 gallons of water to yield 5 to 10 ppm available chlorine by weight. Check the level of available chlorine with a test kit. Do not reenter pool until the chlorine residual is between 1.0 to 4.0 ppm.

At the end of the swimming pool season or when water is to be drained from the pool, chlorine must be allowed to dissipate from treated pool water before discharge. Do not chlorinate the pool within 24 hours prior to discharge.

**WINTERIZING POOLS:**

While water is still clear and clean, apply 0.6 oz. of this product per 1,000 gallons, while filter is running, to obtain a 3.0 ppm available chlorine residual, as determined by a suitable test kit. Cover pool; prepare heater, filter, and heater components for winter by following manufacturers' instructions.

**SPAS, HOT-TUBS, IMMERSION TANKS, ETC.:**

Spas/hot-tubs – Apply 0.5 oz. of this product per 500-gallons of water to obtain a free available chlorine concentration of 5-PPM, as determined by a suitable chlorine test kit. Adjust and maintain pool water to a pH between 7.2 to 7.8. Some oils, lotions, fragrances, cleaners, etc. may cause foaming or cloudy water as well as reduce the efficiency of this product.

To maintain the water, apply 0.5 oz. of this product per 500-gallons of water over the surface to maintain a chlorine concentration of 5-PPM.

After each use, shock or treat with 1.5 oz. of this product per 500-gallons of water to control odor and algae.

During extended periods of disuse, add 1.5 oz. of this product per 500-gallons of water to maintain a 3-PPM chlorine concentration.

Re-entry into treated spa / hot tubs is prohibited above 5 ppm due to risk of bodily harm.

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**[SANITIZATION OF DIALYSIS MACHINES:**

Flush equipment thoroughly with water prior to using this product. Thoroughly mix 7 oz. of this product to 60 gallons of water to obtain at least 600 ppm available chlorine. Immediately use this product in the hemodialysate system allowing for a minimum contact time of 15 minutes at 20° C. Drain system of the sanitizing solution and thoroughly rinse with water. Discard and DO NOT reuse the spent sanitizer. Rinsate must be monitored with a suitable test kit to ensure no available chlorine remains in the system.

This product is recommended for decontaminating single and multipatient hemodialysate systems. This product has been shown to be an effective disinfectant (virucide, bactericide, pseudomocicide) when tested by AOAC and EPA test methods. This product may not totally eliminate all vegetative microorganisms in hemodialysate delivery systems due to their construction and/or assembly, but can be relied upon to reduce the number of microorganisms to acceptable levels when used as directed. This product must be used in a disinfectant program which includes bacteriological monitoring of hemodialysate or reverse osmosis (RO) membranes.

Consult the guidelines for hemodialysate systems which are available from the Hepatitis Laboratories, CDC, Phoenix, AZ 85021]

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**STORAGE AND DISPOSAL:**

Do not contaminate food or feed by storage, disposal, or cleaning of equipment.

**Pesticide Storage**

Keep this product dry in a tightly closed container when not in use. Store in a cool, dry, well ventilated area away from heat or open flame. In case of decomposition, isolate container (if possible) and flood area with large amounts of water to dissolve all materials before discarding this container.

**Pesticide Disposal**

Pesticide wastes may be hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

**Container Handling**

Non-Refillable Container, triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available or place in trash collection.