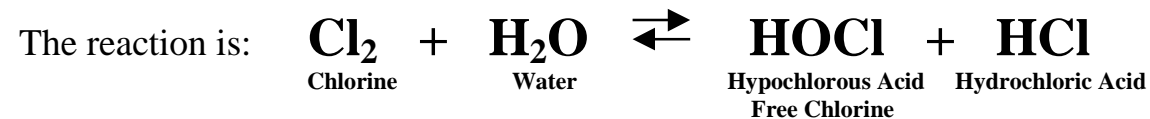


Why Use Fresh+Plus Instead of Bleach

There is a striking difference between the Hypochlor chlorine delivery system and bleach. When chlorine gas is added to water it forms hypochlorous acid (HOCl) which is an excellent germ killer. Hypochlorous acid provides free available chlorine.



Problems develop when chlorine gas is added to water and allowed to sit and age. Just as champagne or carbonated water “go flat” on sitting as the bubbly carbon dioxide gas escapes into the air, chlorine escapes from a hypochlorous acid solution thus weakening its germ killing value. In order to slow this escape, bleach manufacturers add sodium hydroxide (lye) to their product causing the pH to rise dramatically reducing the percent of HOCl in the solution, reducing its germicidal efficiency. Lye burns animal and plant tissues.

Hypochlorous acid dispensed from Fresh+Plus contains NO LYE!

Second, Chlorine in water splits into two forms, hypochlorous acid (HOCl) and hypochlorite (OCl⁻). At high pH the chlorine solution provided by bleach is in the hypochlorite form OCl⁻.



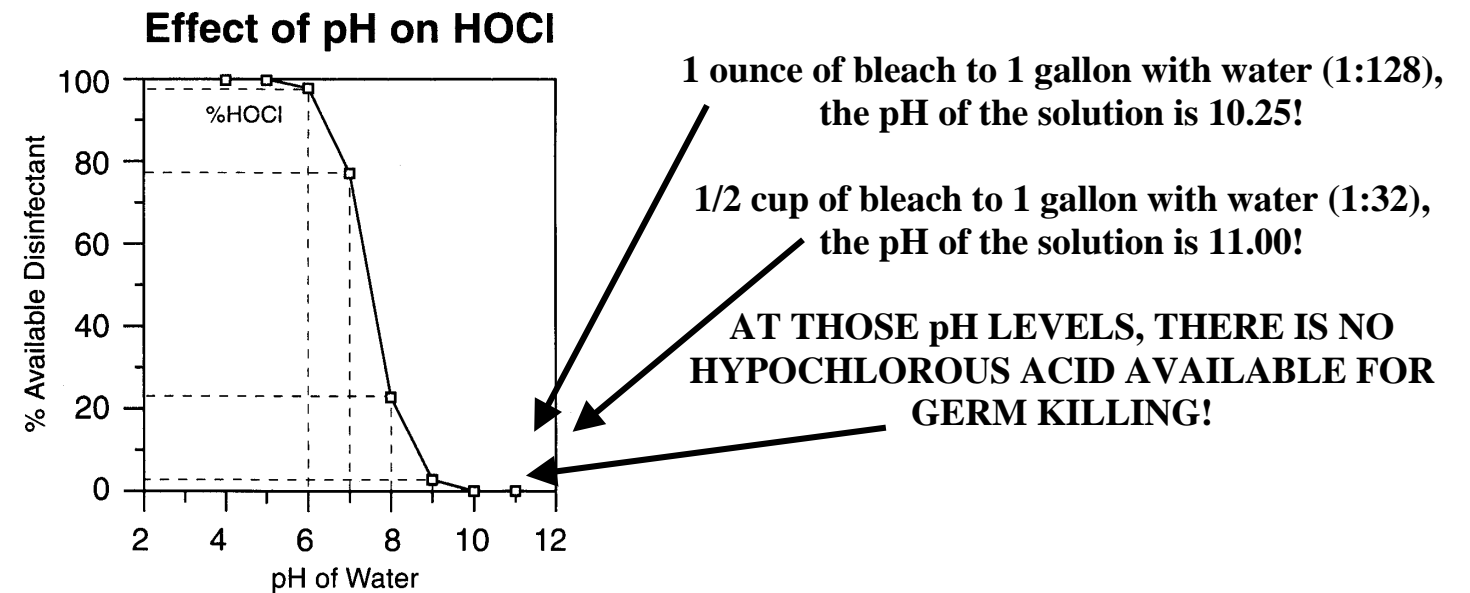
How much HOCl or OCl⁻ is present in a chlorine solution is totally dependent upon the pH of the solution. As pH level rises, less hypochlorous acid and more hypochlorite is in the solution. **As the pH rises, less germ killing power is available.** According to a University of Illinois study, **HOCl is 120 times more effective as a sanitizer than the -OCl ion.**

Even at dilutions as low as 1 ounce of bleach to a gallon of water, the pH of the solution is 10.25 and all of chlorine is in the hypochlorite form (-OCl) ion.

Third, If a chlorine solution does not contain enough HOCl to satisfy the chlorine demand of the surface or product to be disinfected, chloramines will form as chlorine and nitrogen-based materials combine. Examples of nitrogen-based materials are proteins and blood. Chloramines are responsible for the obnoxious odor sometimes associated with chlorine disinfection. **The obnoxious, pungent, eye-stinging smell of chloramines, mistakenly identified as free chlorine, indicates that the chlorine/water mix is not effective. There is not enough HOCl to satisfy the chlorine demand**

Sometimes, the chloramine odors result this way—put produce or fruit through a hydro cooler, flume or spray. As more product is added to the hypochlorous acid in the solution is used up, if no more HOCl is available because of pH or concentration chloramines will start to form, releasing chloramine gas.

IF WE DILUTE:



The chlorine solution provided by the **FRESH+PLUS** or the **BUCCANEER** delivery systems has a buffering capacity to a pH of 8. Buffering means that the disinfecting solution coming out of the **FRESH+PLUS** or **BUCCANEER** system resists a pH increase when alkalis (bases) are present or added.

Unless the pH and PPM of the solution is monitored and adjusted as more product is added to the flume, hydro cooler or spray, the chloramine odors will increase until the smell in the plant is unbearable. The problem is not too much Chlorine it is not enough HOCl.

Fourth, Bleach has a problem with shelf-life stability. Allow a bottle of bleach that starts out at a low-yield 5.25% sodium hypochlorite to sit over time and it weakens as it reverts to sodium chloride (table salt). It loses one half of its potency every 60 to 90 days from date of manufacture depending on storage temperatures and light. Higher “bleach” sodium hypochlorite concentrations have a bigger problem; they lose potency more rapidly than lower concentrations.

The calcium hypochlorite solution produced by **FRESH+PLUS** and **BUCCANEER** PRODUCE A SOLUTION WITH A HIGH ORP, OVER 800mv at 25ppm FAC AND A pH of 8, HIGHER READING CAN BE ACHIVED WITH LOWER pH. **HARD TO MEET WITH OTHER DISINFECTANTS**

THE FRESH +PLUS and BUCCANEER SYSTEMS PROVIDES STABLE, SOLID 68% AVAILABLE CHLORINE TO ASSURE THAT THE GERM KILLING AND OXIDIZING POWER YOU NEED IS THE STRONGEST AVAILABLE AT THE TIME WHEN YOU NEED IT! AND, THERE IS NEVER A NEED TO RINSE!! FRESH+PLUS (calcium hypochlorite) is exempt from the requirements of tolerance to residues (40 CFR 180.1054)

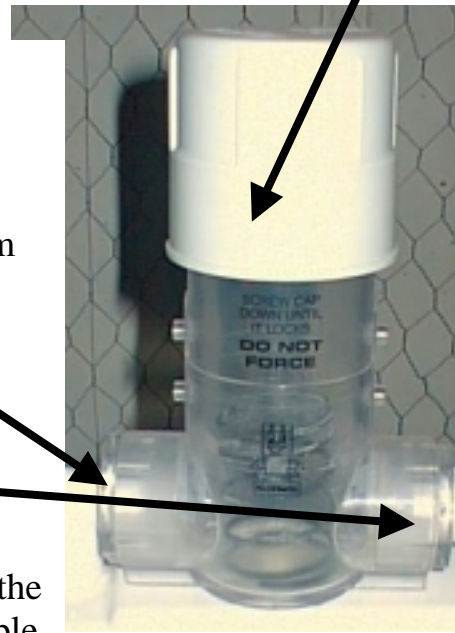
ALL AT A COST OF PENNYS PER GALLON!

The absolute ease of use is the main benefit of using the **Fresh+Plus** and **BUCCANEER** point-of-use chlorine delivery system. Tablets are furnished in the cartridge shown on the left. The screw top of the FRESH+PLUS dispenser, shown on the right, is removed and the cartridge is inserted into the dispenser.



Simply attach to a water line or hose. A spring regulates the exposure of individual dry chlorine tablets to the water stream flowing through the dispenser.

Tightening the top by screwing up or down regulates the amount of chlorine discharged, for higher volumes of water the **BUCCANEER** is available



After use, the Hypochlor cartridge is simply thrown away and replaced with another. There is no need for you or your personnel ever to come into contact with individual tablets. Because of its point-of-use design, **producing a constant stream of highly chlorinated water**, FRESH+PLUS eliminates the need for proportioners, complex metering devices and batch mixing of chemicals by your employees. Since there is no batch mixing and negligible clean-up time, Hypochlor limits worker liability while enhancing worker and product safety.

For a study on the efficacy of the **FRESH PLUS** and **BUCCANEER** systems, see:

“Evaluation of a chlorine dispensing system, for reduction of pathogenic and spoilage microorganisms on various food products”, Aramouni, Bohra, and Nutsch, Kansas State University.

“Use of KLORMAN for washings fresh seafoods” W. Steven Otwell, Ph.D. University of Florida.

“The difference between Cal Hypo and “Bleach” as disinfectants” Stanley R. Pickens, Ph. D. PPG Industries, Inc. Chemical Technical Center.

Copies available on request

NOTE TO PUBLIC OFFICIALS: The hypochlorous acid delivery system employed by **Fresh+Plus** has many other uses in the public health field. In different configurations it can be used to sanitize USDA inspected food processing plants, produce processing and food packaging plants

WHEN DISINFECTING WITH CHLORINE or any other SOLUTIONS, MAKE SURE THAT THE PROPER pH, PPM AND CONTACT TIMES ARE OBSERVED, AND THAT PRODUCTS ARE USDA and FDA APPROVED and EPA REGISTERED FOR THE INTENDED USE.

Fresh+Plus™

The **FRESH+PLUS** Sanitizing System using patented Hypochlor cartridges assures disinfected, sanitized product and processing equipment. This tested, point-of-use system has proven its ability to safely and economically control disease and improve operational efficiency.



Fresh+Plus

Simple and easy to use!

- SIMPLY ATTACH TO A WATER HOSE OR WATER LINE, FOR INLINE OPERATION PRODUCING A CONTINUOUS WATER FLOW OF SUPER CHLORINATED WATER AT THE RIGHT pH AND PPM WITH NO BATCH MIXING REQUIRED
- NO RINSING REQUIRED
- APPROVED FOR DIRECT CONTACT FOR PROCESSING AND POST-PROCESSING RINSE OF FRUIT AND PRODUCE WITH NO TOLERANCE LIMIT TO RESIDUE
- **HIGH OXIDATION-REDUCTION POTENTIAL, OVER 650 mV AT 25PPM FREE AVAILABLE CHLORINE**

Fresh+Plus

Works!

- Kills bacteria and viruses on contact including **E.Coli, Listeria, Salmonella and Campylobacter**
- Pathogens cannot develop immunity to chlorine
- Improves shelf-life
- Sanitizes equipment and facilities
- Low maintenance and long shelf-life



Fresh+Plus™

- Utilizes components that are:
- USDA Approved
- FDA Approved
- EPA Registration No. 57425-3
- California EPA Registration 57425-3-AA
- Helps to comply with the **FOOD QUALITY PROTECTION ACT.**

For More Information, Contact:

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