REGAL GAS CHLORINATOR

APPLICATION / INSTALLATION DATA SHEET

DISINFECTION OF FRUIT AND VEGETABLE IRRIGATION & PROCESS WATER

GENERAL

Prevention of pathogens on produce and fruit is crucial. It is a proven fact that properly chlorinated irrigation water, washdown water and equipment cleanup water provides a tremendous increase in product safety and shelf life, which translates to increased product salability and profitability. Many decay and pathogen problems with fruits and vegetables are the result of ineffective sanitizing of the irrigation, washdown, and cleanup water. Bacteria can double every 20 minutes. A single bacterium can increase to 2 million in seven hours without water disinfection.[1] Bacteria can hide and thrive in bio-film within pipes. If iron is a problem in water, chlorine can precipitate it and then be removed through filtration or other means.

IRRIGATION WATER

Quality and safety of irrigation water determines the quality and safety of the produced crops. Prevention of pathogens on produce is a serious concern for regulators, buyers, and consumers. Raw fruits and vegetables are culprits in a growing list of outbreaks (i.e. E-coli on spinach and lettuce, Hepatitis A on green onions, Cyclospora on raspberries, Salmonella on tomatoes and cantaloupe, and Shigella on parsley.)

Surface water such as ponds, creeks, rivers and canals can easily be contaminated due to runoffs containing animal feces, manure or faulty septic systems. Well water may also be contaminated.

Crops grown close to the surface are a greater risk, as they can easily come in contact with contaminants, either through splashed soil or manure during irrigation. Produce that is eaten fresh is at a higher risk, large leafy surfaces can trap water and are at a great risk of contamination. Water should be tested regularly for microorganisms that are indicators of fecal contamination and E-coli. Regular chlorination is the best method to ensure water disinfection.

PROCESS WATER

Wash tanks, dump tanks, cooling tanks and flumes must be properly and continuously sanitized. Chlorine is the most commonly used sanitizer. It reacts with all organic compounds, including bacterial cells in water. Chlorine oxidizes the bacterial cell wall and kills them. Chlorination will reduce the number of spores in the water, thus reducing or preventing the contamination of produce. Effectiveness of chlorine depends on a number of factors such as initial load of microorganisms, temperature of water, type of produce, and contact time of the produce with the chlorinated water. Water should be monitored to ensure chlorine residuals are optimal.

EQUIPMENT CLEAN-UP WATER

Equipment cleanup water is an important step in fruit and vegetable processing. Produce comes from the field, goes through dump tanks, then onto conveyors and into packaging. Maintaining adequate free available chlorine residuals is extremely important for pathogen control and safe produce.

CHOICE OF CHEMICAL

Because of the high level of efficiency of gas chlorine for destroying bacteria, fruit and vegetable packing houses are increasingly washing their produce with chlorinated water.

Chlorine reacts with all organic compounds, including bacteria cells that are present in water. The most efficient, most effective, and safest way to chlorinate is by disinfecting the water with gas chlorine.[1] Gas is the preferred form of chlorine for these applications, not only for its proven economies, but for its flexibility over other forms. Gas is safer and more reliable.

Gas chlorine is always at 100% strength no matter how long it is in storage. Frequent feeding residual adjustments are eliminated, and maintenance and upkeep of the gas feed system is minimal. It is delivered in rugged steel containers. There is no handling or mixing of the chemical itself in gas form. The empty containers are removed by the supplier and reused.

Gas chlorine does not increase pH levels in the system. However, sodium hypochlorite (bleach) and calcium hypochlorite (granular and tablets) do raise pH levels. An increase of pH reduces the germicidal effectiveness of chlorine, which is a crucial element in the disinfection process.

Gas chlorine is much less expensive than hypochlorites. Because gas chlorine is pure, it does not add anything to the water. (e.g.: salt and calcium)

TYPICAL INSTALLATIONS

The drawings included in this bulletin represent some of the installations that may be used in these applications. Some packing houses may have specific needs, requiring a combination of the installations shown. Some may require installations not pictured in this bulletin. Your local REGAL dealer or Chlorinators Incorporated, is available to help you size and select the REGAL system best suited for your application.