

SANITATION STANDARD OPERATING PROCEDURE – Processing Equipment Cleaning and Sanitation

INTRODUCTION

Clean and sanitized processing equipment and utensils are essential to the manufacture of safe food products. Processing equipment is cleaned after each day's run and sanitized immediately prior to the next use. Most equipment in a dairy plant is cleaned-in-place (CIP) using a computer controlled multi-step system. Items that cannot be cleaned with the CIP system must be cleaned and sanitized after each use by hand or in a COP (cleaned out-of-place) tub.

MATERIALS

1. Supplies
 - a. Cleaning and sanitizing agents
 - b. Cleaning equipment such as gloves, brushes, buckets, and foam sprayers
 - c. COP tub
 - d. Sanitation test records
2. Hazards
 - a. Burns from hot water and hot metal parts
 - b. Chemical burns to the skin and eyes from exposure to cleaners and sanitizers. Wear gloves and goggles when using the concentrated chemicals. Avoid breathing the vapors.

HAND CLEANING PROCEDURE

1. Utensils and items that cannot be adequately cleaned with the CIP system must be hand washed.
2. These items are dismantled and pre-rinsed with water to remove the heavy soil, then hand scrubbed using a chlorinated alkaline detergent, and rinsed again with water. Wire screens must be autoclaved following hand washing.
3. The cleaned items are reassembled and sanitized prior to use using the CIP sanitizing circuit if possible or dipped in a sanitizing solution.

CLEANED OUT-OF-PLACE PROCEDURE

1. Dismantle equipment to be cleaned and rinse with water.
2. Place the parts in a COP tub and fill the tub with approximately 150 to 200 gallons of water.
3. Turn the circulation pump on and heat the water to 170°F.
4. Slowly add the necessary amount of chlorinated alkaline cleaner.
5. Collect a sample of the cleaning solution and test the alkalinity and chlorine concentrations.
6. Circulate hot water and cleaner for at least 30 minutes.
7. Allow the COP tub to empty into a floor drain.
8. Rinse the equipment with an approved sanitizer.
9. Visually inspect each piece of equipment for possible damage and the presence of residual cleaner.
10. Reassemble the equipment and return it to its storage area.

OPERATION OF THE RAW CIP CIRCUIT

1. The raw CIP circuit is used to clean the milk delivery truck, the raw milk silo, the raw milk receiving lines and pump as well as the raw lines leading to the processing plant. Additionally, the two mixing tanks and the Breddo Liqwfier are cleaned and sanitized using the raw CIP circuit.
2. If needed, the equipment is pre-rinsed with water to remove most of the residual product.
3. The necessary line connections are made and the raw CIP program is activated.
 - a. The first step is a water rinse
 - b. Then water is heated and a chlorinated alkaline detergent is added. This solution is circulated throughout the circuit while valves and agitators are periodically pulsed to aid in soil removal.
 - c. The wash cycle is followed by a water rinse which cools down the circuit.

- d. Finally an acid sanitizer is added, circulated throughout the circuit, and allowed to drain to the floor.
- e. The line connections are returned to their original configuration.
4. Prior to the equipments next use a CIP sanitation step is performed using an acid sanitizer.

OPERATION OF THE PASTEURIZED CIP CRICUIT

1. The pasteurized CIP circuit is used to clean the all of the pasteurized storage tanks, filler lines, and the bottle and bag filling equipment.
2. If needed, the equipment is pre-rinsed with water to remove most of the residual product.
3. The necessary line connections are made and the pasteurized CIP program is activated.
 - a. The first step is a water rinse
 - b. Then water is heated and a chlorinated alkaline detergent is added. This solution is circulated throughout the circuit while valves and agitators are periodically pulsed to aid in soil removal.
 - c. The wash cycle is followed by a water rinse which cools down the circuit.
 - d. Finally an acid sanitizer is added, circulated throughout the circuit, and allowed to drain to the floor.
 - e. The line connections are returned to their original configuration.
4. Prior to the equipments next use a CIP sanitation step is performed using an acid sanitizer.

OPERATION OF THE HTST CIP CIRCUIT

1. The HTST CIP circuit is used to clean the bowl, homogenizer, separator, and pasteurizer, all of the lines connecting these pieces to equipment, as well as the lines and valves leading to the pasteurized storage tanks.
2. If needed, the equipment is pre-rinsed with water and the bowl is allowed to overflow with water in order to remove most of the residual product.
3. The necessary line connections are made and the HTST CIP program is activated following the required initial ten minute delay.
 - a. The first step is a caustic rinse using an alkaline cleaner. This solution is circulated throughout the circuit while valves are periodically pulsed to aid in soil removal. It is also allowed to overflow the bowl.
 - b. The caustic rinse cycle is followed by a water rinse.
 - c. The water is then heated and an acid detergent is added. This solution is circulated throughout the circuit while valves are periodically pulsed to aid in soil removal. During this time the bowl may be hand washed if needed.
 - d. An alkaline cleaner is then added to the acid detergent that is being circulated (caustic override). During this time the heat is maintained and the valves continue to pulse periodically.
 - e. The wash cycle is followed by a water rinse which overflows the bowl and cools down the circuit.
 - f. Finally an acid sanitizer is added and circulated throughout the circuit. This sanitizer remains in the system until the equipment is used again.
 - g. The line connections are returned to their original configuration.
4. Prior to the equipments next use a CIP sanitation step using an acid sanitizer is performed.
 - a. The residual acid sanitizer (from step 3f above) is rinsed out with water.
 - b. A fresh solution of acid sanitizer is prepared in one of the mixing tanks.
 - c. The HTST is started up using its product setting (not CIP) and high speed. This will pump the acid sanitizer from the mixing tank through all of the equipment that is scheduled to be used that day.

CLEANING OF BURNED ON RESIDUE

1. Rinse out residual product.
2. Fill the tank with water and add a powdered chlorinated detergent.
3. Heat the solution to approximately 180°F and allow it to soak until the residue is softened and able to be removed.
4. Make the necessary CIP line connections and initiate the appropriate CIP program.

CLEANING AND SANITATION OF ICE CREAM PROCESSING EQUIPMENT

1. The ice cream mix tanks are cleaned using the pasteurized CIP circuit described above.
2. The flavor vats and ice cream freezers are rinsed with water following each use. Then a solution of hot water and chlorinated alkaline detergent is circulated through this equipment and the lines connecting them. Following the cleaning step the equipment is rinsed with water.
3. Prior to each days operations the pasteurized lines, flavor vats, freezers, ingredient feeder, half-gallon and three-gallon filling equipment, as well as all the lines connecting this equipment are sanitized with a chlorine sanitizer. Residual sanitizer is flushed out of the lines by pumping approximately three gallons of ice cream mix through the circuit and draining it onto the floor. On days when the dixie cup or pint filling equipment is used it is likewise sanitized prior to use with a chlorine sanitizer which is allowed to drain to the floor.
4. After each use, the filling equipment is rinsed with water to remove most of the residual product. Then it is hand washed with a chlorinated alkaline detergent and rinsed with water again. Additionally, at the end of each week the filling equipment that has been used is washed using a self foaming chlorinated alkaline detergent and rinsed with water.

CLEANING AND SANITATION OF BEVERAGE CONTAINER FILLING EQUIPMENT

1. The filling lines and equipment are cleaned and sanitized using the pasteurized CIP circuit described above.
2. On days when dairy products are packaged the following additional cleaning and sanitizing steps are preformed.
 - a. Prior to packaging the acid sanitizer which was retained in the filler bowls is drained through the filler tubes and onto the floor. The nozzle heads are also sprayed with an acid sanitizer.
 - b. At changeovers (when one products is finished being packaged and another begins), the product remaining in the bowl is expelled through the filler tubes. The area is then rinsed with water and sprayed with an acid sanitizer.
 - c. When packaging is finished, the product that remains in the bowl is expelled through the filler tubes and the area is rinsed with water. The bowl is flushed with water and the CIP connection to the filler heads is made. All exterior surfaces are first hand washed with a chlorinated alkaline detergent, then washed with a self foaming chlorinated alkaline detergent and rinsed with water.
3. On days when non-dairy products are packaged the following additional cleaning and sanitizing steps are preformed.
 - a. Prior to packaging, the acid sanitizer which was retained in the filler bowls is drained through the filler tubes and onto the floor. A new solution of acid sanitizer is prepared in a mixing tank and pumped through all of the equipment and tanks that will be used that day. It is also allowed to overflow the bowl and flow through all of the filler tubes. Pasteurized water is then pumped through all of the equipment, bowl and filler tubes. The nozzle heads are sprayed with an acid sanitizer.
 - b. At changeovers, the product remaining in the bowl is expelled through the filler tubes. The area is then rinsed with water and sprayed with an acid sanitizer.
 - c. When packaging is finished the product that remains in the bowl is expelled through the filler tubes and the area is rinsed with water. The bowl is flushed with water and the CIP connection to the filler heads is made. All exterior surfaces are hand washed with a chlorinated alkaline detergent and rinsed with water.

CLEANING AND SANITATION OF CHEESE PROCESSING EQUIPMENT

1. Cheddar and ricotta vats
 - a. The vats are sanitized prior to use with an acid sanitizer.
 - b. After use the residual product is rinsed out with water.
 - c. The vats are then filled with water and hand washed using both a powdered chlorinated detergent and a chlorinated alkaline detergent.
 - d. Following cleaning, the vats are thoroughly rinsed with water.

2. Kettle and homogenizer
 - a. Prior to use the kettle is filled with water which is heated to 180°C. This water is circulated within the kettle, pumped through the lines to the homogenizer, and then drained onto the floor.
 - b. Following use, the residual product is rinsed out of the kettle with water.
 - c. The kettle is then filled with water and a powdered chlorinated detergent and heated. This detergent solution is circulated within the kettle, pumped through the lines to the homogenizer, and then drained onto the floor.
 - d. Additionally, the homogenizer is dismantled, washed by hand with a chlorinated alkaline detergent and rinsed with water.
3. Cone-bottom processor and pasteurized storage tank (PT6)
 - a. The cone-bottom processor and PT6 are sanitized prior to use with an acid sanitizer.
 - b. Following use, the residual product is rinsed out with water.
 - c. The door gasket, fill lines, and exterior surfaces are hand washed with a chlorinated alkaline detergent and rinsed with water.
 - d. Then the necessary line connections are made and the CIP program is activated.
4. Yogurt filler
 - a. Prior to use a solution of chlorinated alkaline cleaner is prepared and flushed from the filler bowls, over the track and then drained onto the floor.
 - b. Following use, the residual product is rinsed off with water.
 - c. The removable parts of the filler are cleaned in a COP tub with a powdered chlorinated detergent and rinsed with water.
 - d. All exterior surfaces are hand washed with a chlorinated alkaline detergent and rinsed with water.
5. Cheddar processing equipment
 - a. Following use the cheddar press is rinsed with water, hand washed with a chlorinated alkaline detergent, and then rinsed again.
 - b. The cheddar mill is sanitized prior to use. After each use it is rinsed with water, hand washed with a chlorinated alkaline detergent, and then rinsed again.
 - c. The vacuum packager is sanitized using a chlorine soaked cloth prior to use and cleaned with an aerosol cleaner following use.
 - d. The cheddar pans and liners are dipped in a solution of chlorine sanitizer prior to use. After use the liners are discarded and the pans are rinsed with water. The pans are then cleaned in a COP tub with a powdered chlorinated detergent and rinsed with water.

VALIDATION

1. Cleaned equipment and utensils are visually inspected to determine if they are free of residue and foreign material.
2. Periodic swabbing of cleaned equipment with ATP bioluminescence swabs is used to monitor food contact surfaces for the presence of residual soil.
3. Swabbing with milk protein detecting swabs prior to the manufacture of non-dairy drinks is used to monitor for possible cross-contamination.
4. Samples are automatically collected from the various cycles within each CIP program. These are titrated to determine their chemical concentration. If the concentrations are not consistently within an acceptable range the chemical injection time will be adjusted.

RECORDKEEPING

1. Results from the chemical titrations of cleaning and sanitizing solutions are recorded on the sanitation test records. These tests are performed to determine the concentrations of cleaning and sanitizing solutions used in both the CIP system and the COP tubs.
2. Results obtained from ATP bioluminescence swabs are recorded on ATP monitoring forms.
3. Results obtained from milk detection swabs are recorded on the records of manufacture for non-dairy drinks.

The following individual is responsible for implementation of this SSOP and has the overall authority on-site:

Name: _____ Title: _____ Date: _____