



**THE DAIRY PRACTICES COUNCIL®**

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**GOOD MANUFACTURING PRACTICES FOR  
DAIRY PROCESSING PLANTS**

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# GOOD MANUFACTURING PRACTICES FOR DAIRY PROCESSING PLANTS

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# GOOD MANUFACTURING PRACTICES FOR DAIRY PROCESSING PLANTS

## INTRODUCTION

This guideline has been developed to highlight good manufacturing practices that should be followed by dairy plant owners, operators and employees to maximally assure the production of safe and sanitary products at all times. The guideline offers suggestions for measures and precautions that should be taken regarding employee health, food handling practices, appearance, personal hygiene, plant procedures, plant and equipment design, maintenance, and sanitation. It is important that every employee is made knowledgeable and aware of the necessity of adhering to these guidelines at all times; that the guidelines be re-emphasized on a regular basis; and that regular assessment and review of how well the guidelines are being followed is conducted by management.

## GMP'S - DESCRIPTION AND PURPOSE

Good manufacturing practices (GMP's) are guidelines established to assure that food products are manufactured and stored under safe and sanitary conditions. GMP guidelines are established to satisfy regulatory requirements as well as maintain the high quality standards of your products to your customers.

## PERSONAL PRACTICES

Personal cleanliness is of utmost importance to maintain the quality and safety of your products. Poor personal practices can cause contamination of products resulting in spoilage of product or illness of consumers.

### **1) Disease Control**

No person who is affected by a communicable disease, or while a carrier of such disease, infected wounds, boils, sores or other abnormal sources of microbiological contamination, should work in any capacity in a food plant where there is reasonable possibility of food or ingredients becoming contaminated and thereby capable of transmitting disease to other people. The most common communicable diseases that present potential concerns due to their ease of transmission by food handlers are Hepatitis(A, B, and C), Salmonella, Shigella and Giardia lamblia. Employees returning to work following illness from any communicable disease must provide a physician statement indicating the employee's recovery and fitness to work in a food plant.

### **2) Personal Hygiene**

- A high degree of personal cleanliness is necessary to prevent contamination of food products.- Hair must be completely covered by a hair net. A polypropylene, polyolefin or standard tyvek hair net that is breathable, non - irritating and lint free should be used. An elastic border that fits around the skull to confine the hair is required.

- No beards, long mustaches, etc. are permitted unless covered by a snood. The following are permissible in food plants:

a: A neat mustache, no wider than around the outer edge of the mouth and extending down no further than the bottom of the mouth.

b: A small lipstache - 1/2 inch or less.

c: Sideburns no longer than the bottom of the ear.

- Rings, earrings, watches, necklaces, and other jewelry are not permissible in a food plant because : hand jewelry cannot be adequately sanitized; there is danger of jewelry falling into product; jewelry may catch on equipment, presenting a safety hazard to the employee.

- Cosmetics should be discouraged but, if worn, must be in a manner to prevent product contamination. Fingernail polish, false eyelashes, etc., are not to be worn in the production areas. Fingernails are to be kept trimmed short for both sanitary and safety reasons.

### **3) Uniforms**

- Clean uniforms are to be worn. They should not be taken home. Facilities are to be provided for employees to change at the plant, with a storage area for clean uniforms away from street clothes or soiled uniforms. Street clothes are not allowed in the production areas.

- Footgear worn in processing and production areas should be confined to the plant.

- Sweaters, sweatshirts, etc., if worn, must be kept clean and worn under the uniform. Material must be tight-knit and shorthaired to prevent fibers from falling into product.

- In areas where product may come into direct contact with an employee's uniform, an apron of non-porous material should be worn. Aprons must be removed before using the rest room.

- Uniform shirts/tops should not have pockets. **No pens, pencils, thermometers, cigarettes, or objects of any kind are to be carried above the waist or behind the ear in production areas.**

- Shoes are to be kept clean, neat and in good repair. Open toes or heels, deep grooved soles (1/4" or more), canvas or nylon construction are not allowed.

- Uniforms should not carry stickers or pins, which may fall into product. Visitor stickers or clip-on badges should not be worn above the waist in production areas.

- Earplugs are to be attached to a string to prevent falling into product.

- Bump caps are to be kept in clean condition.

- Uniforms should not contain buttons; zippers and/or grippers are preferred.

- Any eye wear, i.e., glasses or protective goggles, should be restrained to prevent them from falling into product. Use of contact lenses mandates use of restrained safety glasses.

### **4) Hand Washing**

- One of the most important steps to minimize risk of contaminating your products. Proper hand washing requires the use of warm water and a bacterial soap, thoroughly cleaning entire hands, wrists, between fingers, etc. and dipping in a hand sanitizer. Either single use paper towels or an air dryer should be used for drying hands.

- Hands/gloves should be washed and sanitized:

a: Before starting work

b: After coughing, sneezing, blowing nose, etc.

- c: After eating
- d: After using the rest room
- e: After touching anything unsanitary (pallets, floors, boxes, scratching head, etc.).

- Gloves, where used, must be of a non-porous rubber or latex-type material. Gloves need to be kept in a clean and sanitary condition.

### **5) Open Sores/Bandages**

- Open sores and bandages harbor bacteria which can cause illness, and must not come in contact with product. Gloves, or other suitable protection, are to be worn over bandages in production areas. Bandages should be a dark color to distinguish from product.

### **6) Use of Tobacco, Chewing Gum and Candy**

- The use of tobacco products, chewing gum, and candy are restricted to designated areas to reduce the risk of product contamination and transferring bacteria from the mouth and hands.

### **7) Visitor Guidelines**

- All employees and visitors working in or passing through production areas are expected to follow good manufacturing practices. Visitors may wear a clean lab coat over their street clothes. All other practices of hair covering, jewelry, etc., are applicable. Visitors unable to remove a ring may secure it by taping around it.

<b>GUIDELINES FOR SANITARY OPERATION AND PRODUCTION</b>
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### **1) Floors**

- Aisles should be of ample width, uncluttered and kept free of storage materials.
- Concrete floors should be in good repair and free of any residue build-ups.
- Tile brick floors should be maintained in good repair with grout wear at the wall and between bricks less than 1/8 - 1/4" deep.
- All floor surfaces should be sloped to floor drains and should be free of low spots that might collect pooled water.
- All floors should be maintained in a "dry floor" condition.
- Floors should not be hose rinsed near exposed product or product containers during production.

### **2) Drains**

- Drains after clean-up should be free of all debris.
- Drains should be free of any offensive odor.
- All drain traps should be cleaned and sanitized on a regular basis, i.e., nightly.
- Floor drain traps should be kept flooded to prevent backup odors.
- Drain traps and covers should be in place and in good repair.

### **3) Brush Program**

- Every plant should have a written brush program. It is ideal to have different colored brushes to be used in only certain areas.

#### **Examples of Brushes**

- Drains: Black bristles
- Equipment Surface Use ( Sanitary - pasteurized and finished product food contact surfaces): Blue bristles.
- Raw milk product surfaces: Red bristles.
- Non-Sanitary, non-food contact surfaces (e.g. forklifts, doors, walls, tanker exteriors etc.): Yellow bristles.

- All cleaning brushes should be placed in the cleaning solution or on a clean surface when not in use.

- Wet brushes should be hung up and allowed to dry in their natural shape. Brushes when stored **MUST** be segregated by color to prevent cross contamination.

- Each day prior to use, brushes should be checked for integrity. Poor quality brushes, i.e., loose bristles cracked blocks or handles, should be discarded and replaced.

- Brushes, including handles should be constructed of non-porous sanitary material.

### **4) Periodic Cleaning Schedule**

CFR, Code of Federal Regulations, Title 21, Sec. 110.80(e) states, "Processing equipment shall be maintained in a sanitary condition through frequent cleaning including sanitizing where indicated. Insofar as necessary equipment shall be taken apart for thorough cleaning."

- A 'Master Sanitation Schedule Manual' should be created. This should list the standards frequency of dismantling and cleaning equipment and the cleaning of walls, ceilings and floors in each area.

- CIP, clean-in-place, systems should be monitored and recorded. The system should be maintained to assure maximum performance.

- All cleaning and sanitizing compounds shall conform with all Federal, State, and Local guidelines.

### **5) Footwear Baths**

- Footwear baths should be located at each entrance to a food production area from a non-food production area. Each footwear bath should be located on a flat surface.

- An approved sanitizing solution should be used in each bath.

- The sanitizing solution should be fresh at the beginning of each shift and changed or recharged at least once during the shift. Testing to assure proper maintenance and solution strength should be done on a routine basis. Results should be recorded.

- Any sanitizer used should be maintained at regulatory and/or manufacturer recommendations.

- Both sides of footbaths, and the area around and underneath the baths, should be cleaned prior to recharging.

### **6) Mats**

- Rubber mats used for employee foot comfort at work stations shall be distinguished from mats used for product clean up. All dismantled food contact equipment parts should be placed on clean, white rubber

mats or a stainless table for protection(not on the floor). Black rubber mats should be used to stand on. Equipment mats should be kept in clean condition and should be hung up when not in use. All mats should be routinely checked for cleanliness.

### **7) Hand Dips**

- Employees shall wash and sanitize their hands thoroughly at a hand-washing facility before starting work and after each absence from the work area.
- Hand sanitizing facilities must be provided in an easily accessible location in each production area.
- An approved sanitizing solution should be used in each bath.
- The sanitizing solution should be fresh at the beginning of each shift and changed at least once during the shift.
- Area around dip station and container should be cleaned before being recharged.
- Sanitizer strengths should be maintained at regulatory and/or manufacturers recommendations.
- Quality control follow-up testing to assure proper maintenance and strength should be conducted at least weekly.

### **8) Containers for Food Product**

- Food contact containers used for holding raw materials or food shall be clean and sanitary, dry and kept in good repair.
- White or stainless containers should be used for food products.
- Scrap product unacceptable for addition to finished product should be stored in gray or black containers.
- Reclaimed product with extraneous matter that could be sorted prior to addition to finished should be stored in a red container.
- Food contact containers should be properly cleaned and sanitized after use.
- All clean product containers should be covered until time of usage.
- Product storage containers should not be stored next to containers for waste and non-product items.

### **9) Sanitary Utensils**

- Food contact utensils should meet 3A Standards, be in good repair, and be clean prior to being sanitized.
- Employees working in food production departments should use a sanitizing dip for utensils at least every two hours. Sanitizing concentration should be maintained at proper strength in accordance with regulatory and/or manufacturers recommendations.
- Clean utensils should be stored in a sanitary location free of dirt and moisture.
- The design and construction of all utensils must prevent any possible adulteration and contamination of food by metal fragments, water and other contaminants. Use of wooden handles on equipment used in processing areas is forbidden to safeguard against bacterial growth.



- Quality control follow-up testing of the sanitizer should be conducted at least weekly to assure proper maintenance and strength.

### **10) Trash Storage and Disposal**

- Trash shall be conveyed, stored and disposed of so as to minimize the development of odor, prevent waste from becoming an attractant, harborage, or breeding place for vermin, and prevent the contamination of food, food contact and surfaces, ground surfaces, and water supplies. Littering or contributing to poor housekeeping and poor sanitary conditions should be prohibited.

### **11) Cleaning of Ingredient Bags/Containers Prior to Opening**

- Brush dust from bags or top of cases on production pallets before bringing them to the process areas. Clean product stored on a dirty pallet should be transferred to a clean pallet prior to opening. Before opening drums, cans, or containers, damp wipe and sanitize when practical. Keep opening tools clean, sharp, and rust-free. Bag products should have outer bag removed before bringing into production area.

### **12) Lubricants**

- Only food grade lubricants (USDA approved) are acceptable for use on or around food contact surface areas.

- Fittings, bearings, and other wear surfaces utilizing lubricants should be free of excess grease and oil to avoid product contamination.

- Lubricant containers should be easily cleanable and maintained in a sanitary condition.

### **13) Reuse Packaging Materials (Pallets and Boxes)**

- Dirty or broken pallets shall not be used. Pallets shall be clean and repaired when needed and should be stored in areas free of extraneous matter and bird, insect, and rodent contamination.

- Wooden pallets should not be brought into the processing areas. Only easily cleanable or non-porous pallets should be used in processing areas.

- Pallets labeled on their exterior as having carried pesticide, oil or other toxic materials should not be used for transporting food.

- No production boxes and/or food containers shall be used for the collection of trash or storage of any materials.

### **14) Use of Glass in Production Areas**

- Glass should not be brought into any production area.

- Equipment, including laboratory test equipment, should be constructed of non-glass materials or the sample should be removed to a non-production area for testing.

- Mercury-filled and other glass thermometers should not be used in the processing areas, except where permitted/required for regulatory purposes.

- Light bulbs and fixtures suspended over processing lines shall be of the safety type or shielded to prevent contamination in case of breakage. Burned out bulbs should not be changed until production has ended.

- Samples should not be collected in glass containers.

### **15) Receiving and Shipping Practices**

- Refrigerated units transporting temperature sensitive products must be set according to the product being shipped with the temperature being recorded.
- Damaged boxes should be replaced.
- Loose or torn tape should have box retaped.
- Trailer or rail car doors should be closed immediately after loading. An appropriate seal needs to be attached to the rail car or trailer doors.
- Trailers or rail cars should be sufficiently pre-cooled prior to loading temperature sensitive products.
- All finished product should leave the facility in good visible condition with no external dirt or debris, and on a suitable pallet where applicable.
- All product received must meet the same criteria as product shipped out.
- Packaging and dry ingredient materials should not be received if there is any visible damage or filth on the materials, the covering containers or the pallets.
- All incoming and outgoing vehicles should be inspected to insure that they are free of conditions that could contaminate products - no birds, rodents, insects, spillage, objectionable odors, or extraneous matter should be evident. Inspection by black light will help identify problems.

### **16) Hand Cleaning and Toxic Compounds**

- Cleaning and sanitizing materials and janitorial supplies should be clearly marked and stored in a separate area, apart from packaging supplies, raw material ingredients, and processed food.
- Under no circumstances should cleaning chemicals, lubricants, toxic compounds, etc. be stored or dispersed from a food or food ingredient container.
- All cleaning and sanitizing compounds (agents) shall be FDA and/or USDA approved for use in food plants.
- Any paints or surfacing materials used should be a type in accordance with regulatory guidelines.
- Volatile solvents which are toxic and harmful around food products such as chloroform, benzene, acetone, germicide sprays, etc. must not be used in any area where they will come in contact with ingredient, product, storage, or packing material.
- Special restricted areas with lock and key shall be used for storage of previously opened flammable raw materials. Keep separate from other areas used for pesticides and cleaner compounds.
- Special screened off areas with lock and key shall be used for storage of previously opened cleaning compound containers and pesticides. Pesticides must be stored in a separate area away from cleaner compound storage. Containment type pallets should be used for all cleaning and pesticide materials.
- Pesticide applications should be conducted by a licensed person or an individual trained and supervised by a licensed person.
- All pesticides and rodenticides should be regarded as poisons and kept away from product and raw materials.

- All cleaners and pesticides must be labeled correctly.
- Cleaner containers should be stored on containment type pallets or racks off the floor.
- Covers on active cleaner drums should be in place to prevent moisture absorption and contamination.
- The floor area where chemicals are stored should be constructed so as to contain and control all spills.
- The storage area should have a source of rinse water (safety) and floor drains for expedient handling of accidents and for the clean-up of spillage.
- Safety equipment designated by the chemical label should be provided in the storage area.

### **17) Packaging Practices and Product Protection**

- Care should be exercised in moving, handling and storing product to avoid damage to packaging which would affect adversely the contents of the food packaging.
- Pre-lined and empty, pre-made product containers must be covered or the top cases inverted until time of use.
- All packaging material stock that is partially used must be covered properly.
- Product or production lines during relief breaks, lunch breaks, or down time for longer than fifteen minute duration should be emptied and/or covered.
- Pasteurization means that every particle of a product shall be heated to the proper pasteurization temperature. No ingredient shall be added after pasteurization unless specifically specified for that product.
- Rollstock and packaging supplies should be stored off the floor. These materials should be removed off the machines after production has ended.
- Foods that can support the rapid growth of microorganisms considered to be of public health significance or that are subject to bacterial decomposition shall be held at control temperatures.
- Adequate area or rooms shall be provided for product salvage and rework. All such product handling should be done in a sanitary manner.
- Extreme care shall be taken to prevent product from falling on the floor. If it does, the product should be regarded as non-saleable for human consumption.
- Good housekeeping and general sanitation should be practiced on a continual basis in production and warehouse areas. Floors should be kept clean.
- Any loose fibers from fraying belts in processing areas should be trimmed on a regular basis to prevent these fibers from getting into the product.
- Keep hand contact with ingredients, blends, and finished products to a minimum.
- Do not 'finger' food products unless job work requires it. Follow proper hand sanitation at all times.
- Do not handle product after touching non-product zone without washing and sanitizing hands.

- Employees should wear suitable clean outer garments to prevent contamination of food.
- Aisles or working areas between and around equipment shall be of sufficient width and kept free of obstruction to permit employees to carry out their duties without contamination of food or food contact surfaces.
- Doors in the product production room shall be self-closing and kept closed in order to control air flow and/or pressure, insects, rodents, birds, animals, and other vermin.
- All surfaces coming in contact with food shall be kept in good repair and be free of pits, cracks, and open seams.
- Use raw materials and ingredients in proper rotation.
- Do not reuse single service containers.
- Store all ingredient bags off the floor, whether full or empty.
- Carrier (push carts) equipment shall be clean and in good repair, and have no holes, cracks, or crevices which could aid in the spread of microorganisms.
- Do not sit on equipment or working surfaces.
- Product storage containers should not be stored directly next to containers for waste or non-product items.
- No pencils, pens, glasses, tools, etc., should be kept in pockets above the waist or belt line.
- Fingernail polish, false fingernails, and eyelashes, etc., are prohibited.
- Exposed product should not be handled with injured or bandaged hands unless protected by gloves.
- Gum, candy, and tobacco chewing are not permitted in production areas.
- Storage of clothing or other personal belongings in food processing areas is not allowed.
- Gaskets and o-rings need to be routinely inspected and replaced where necessary and stored properly.
- Steel wool scouring pads should not be allowed in any production area. Care should be taken to eliminate product contamination from stainless steel or plastic scouring pads.
- Any pipe or roof leaks should be addressed immediately. This includes product lines. Dripping condensate should be eliminated in production and warehouse areas.
- Hoses should be stored off the floor and kept clean. A suggestion is to store discharge ends in a sanitizer. Wash down hoses should not be used to supply water to product batches.
- Separate color scoops should be used for chemicals and products.
- Remove all maintenance equipment immediately after use, i.e., wrenches, screwdrivers.
- Any food contact surfaces must be re-cleaned and sanitized after maintenance work prior to use.
- Avoid use of high-pressure hoses at all times when production is in progress.

### **18) Rail Car and Container Loading Practices**

- Assure that dock to rail car or trailer protective barrier seal is in place to minimize the opening space to the exterior between open doors.
- Assure rail car or trailer is clean and in good repair.
- Place product cases or bags on slipsheets when loaded onto the floor.
- Containers used for product shipping must be clean, in good repair and have no leaks.

### **19) Product Storage Practices**

- Raw materials and finished product should be stacked 18 inches from walls. Walls should have a 12 inch white strip around them. These criteria provide for: access for inspection, cleaning, creating a barrier to keep loads off walls, room for rodent control operations, and protection from forklift, pallet, or other damage.
- The aisles adjacent to walls or wall curbs shall be maintained neat and clean for rodent control surveillance, which should be done on a routine basis, i.e., weekly.
- Effective procedures should be adopted and implemented to provide appropriate stock rotation. Code dating is an effective means of identifying individual lots of product for recall or sampling as well as rotation of the product during distribution and marketing.
- Pallets should be stored in dry areas free of extraneous matter, birds, insects, and rodent contamination.
- Raw materials, ingredients, packaging supplies, containers and finished product should be stored under conditions that will protect them against contamination and minimize their deterioration.
- Suitable temperature monitoring and recording equipment should be utilized and monitored for all critical temperature storage areas.

<b>BUILDING AND FACILITIES</b>
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### **1 Grounds**

- The grounds about a food plant must be kept in a condition that will protect against the contamination of food. The immediate surroundings should be free of refuse, rubbish, overgrown vegetation and waste materials to prevent harborage of rodents, insects and other vermin.
- An 18" gravel, rock or paved track around the perimeter of the facility is recommended to discourage pests from entering the building.
- Roads, yards and parking lots must be maintained to be free from dust or other potential contaminants. These areas must be built to shed water easily and must be maintained in good condition to prevent the ingress of water and the possibility of subsequent frost damage. Broken and cracked surfaces will harbor dirt and pests.
- Proper drainage is necessary to keep water from stagnating in puddles, to keep insect and microorganism breeding places from forming and to keep unsanitary conditions from occurring through water seepage.
- If the plant grounds are bordered by grounds not under the operators control or hazardous conditions are created by a nearby facility, care shall be exercised in the plant by inspection, examination, or other means to exclude pests, dirt and filth that may be a source of food contamination.

## **2) Building Construction and Design**

- The building or buildings shall be of sound construction and shall be kept in good repair to prevent the entrance or harboring of rodents, birds, insects, vermin, dogs and cats.
- The building must be weatherproof to prevent the ingress of moisture and contamination of process equipment and the internal environment. Particular attention must be given to joints in ducting, service pipes, rain gutters, spouts, drains, seals between floors in multi-story buildings and the process air ducts passing through the roof.
- All service pipe openings through the outside walls shall be effectively sealed around the opening or provided with tight fitting metal collars.
- All openings to the outer air including doors, windows and skylights shall be effectively protected or screened against the entrance of flies and other insects, rodents, birds, dust or dirt.
- There should be sufficient space adjacent to equipment, product storage, and the interim holding areas for sanitary controls.
- All doors and windows should be kept clean and in good repair. All hinged, outside screen doors shall open outward.
- Outside conveyor openings and other special type outside openings shall be effectively protected to prevent the entrance of pests by use of doors, screens, flaps, fans, or tunnels.
- Loadout/receiving dock trailer and rail car doorways must have a transition seal guard or boot that minimizes the exterior opening when doors are open for loadouts and receiving. They should be maintained in good working condition and clean.
- Cardboard boxes should not be constructed in the same area where food is produced, or stored in a non-covered state.

## **3) Rooftops and Overhangs**

- Rooftops and overhangs must be designed to prevent the entrance of pests. These areas must be examined regularly for nesting and roosting spots for birds.
- Roofs over manufacturing areas should be easy to clean.
- Roof surfaces must be kept in good repair and maintained free of litter and debris. Equipment and materials cannot be stored on the rooftops.

## **4) Plant Layout**

- The plant shall allow the separation of operations in which contamination is likely to occur by the means of location, time, partition, air flow, enclosed systems, or other effective means. Physical separation, preferably by walls, must be present to prevent microbiological cross-contamination between raw materials and intermediate or finished products and the contamination of edible materials with inedible materials, i.e., boiler water treatment chemicals, engineering fluids. The design and construction of the plant must be such as to completely segregate incompatible activities.

## **5) Walls, Partitions, and Posts**

- Walls, partitions and posts in all production areas must be of waterproof, non-absorbent, non-toxic materials and their surfaces should be smooth, integral and easy to clean and disinfect. They should be light

in color. Exposed wood should be covered with an easily cleanable, approved paint, sealer, or non-porous covering.

- These areas must be refinished as often as necessary to maintain a neat and clean surface.
- For easier cleaning, the construction should have a rounded cove at the junction of the wall and the floor.
- Construction should eliminate horizontal ledges. Ledges must have a sufficient angle to allow for the runoff of moisture and be accessible for sanitation and inspection.

## **6) Floors**

- The floors of all production areas must be of waterproof, nonabsorbent, non toxic materials and their surfaces should be smooth, integral and easy to clean and disinfect. The joint material, concrete or other materials used must be equally impervious and easy to clean.
- The floors shall be smooth, kept in good repair, graded so that there will be no pools of standing water or dairy products after flushing.
- All openings to drains shall be equipped with traps properly constructed and kept in good repair.
- The plumbing shall be so installed as to prevent the back-up of sewage into the drain lines and to the floor of the plant.
- Tile brick floors must be maintained in good repair, and the finished grout depression should not exceed 1/8" to 1/4" in depth.

## **7) Lighting**

- Light shall be ample, natural or artificial, or both; of good quality, and well distributed, and should meet Federal lighting requirements.

### **Suggestions for lighting**

- All rooms in which products are manufactured, packaged or where utensils are cleaned must have at least 70 foot candles of light intensity on all work surfaces.
- Rooms where products are graded or examined for conditions of quality must have at least 100 foot candles of light intensity of the working surfaces.
- Rest rooms and locker rooms must have at least 30 foot candles of light intensity.
- All other rooms shall have at least 30 foot candles of light intensity when measured at a distance of 30 inches from the floor.
- When contamination of product by broken glass is possible, light bulbs and florescent tubes shall be protected against breakage by an easily cleanable shield, or be of the non-breakable, safety type construction.

## **8) HVAC Requirements**

- There shall be adequate heating, ventilation or air conditioning for all rooms and compartments to permit maintenance of sanitary conditions.
- Raw milk, HTST, CIP and finesaver areas should have negative air pressure relative to suggested air movement.

- Exhaust or inlet fans, vent hoods or temperature and humidity control equipment shall be provided where and when needed, to minimize or control room temperature's, eliminate objectionable odors, and aid in prevention of moisture condensation and mold.
- Inlet fans shall be provided with an adequate air filtering device to eliminate dirt and dust from the incoming air.
- Ventilation systems must be cleaned periodically as needed and maintained in good repair.
- Exhaust outlets shall be screened or provided with self closing louvers to prevent the entrance of pests when not in use.

### **9) Water Supply**

- There shall be an adequate supply of both hot and cold water of safe and sanitary quality, with adequate facilities for its proper distribution throughout the plant, and protected against contamination.
- Water from other facilities, when officially approved, may be used for boiler feed water and condenser water provided that such water lines are completely separated from the water lines carrying the sanitary water supply, and the equipment is so constructed and controlled as to preclude contamination of product contact surfaces.
- There shall be no cross connections between potable water and non-potable water lines or between public and private water supplies.
- The potable water supply should receive microbiological testing according to standards required by local and state government.

### **10) Steam**

- Culinary steam used in direct contact with product shall be free from harmful substances or extraneous material and only those boiler water additives which meets the requirements of 21 CFR 131.1088 shall be used, or a secondary steam generator shall be used in which soft water is converted to steam and no boiler compounds are used.
- Steam traps, strainers and condensate traps shall be used wherever applicable to insure a satisfactory and safe steam supply.
- Culinary steam shall comply with the recommended practices for "Producing Milk and Milk Products" as published by the National Association of Food and Dairy Equipment Manufacturers, Washington, DC, April 1963 or the latest revision thereof.

### **11) Air Under Pressure**

- The method for supplying air under pressure, which comes in contact with ingredients, product or any product contact surfaces must comply with the 3A Accepted Practices for Supply Air Under Pressure.

### **12) Drinking Water Facilities**

- Drinking water facilities of a sanitary type shall be provided in the plant and should be conveniently located.
- Water flow should be adjusted to prevent over-shooting the basin.



### **13) Hand Washing and Sanitizing Facilities**

- Hand washing facilities shall be adequate and convenient and be furnished with running water at a suitable temperature, hand soap/sanitizer, single service towels and a covered refuse container of sanitary design.

- These hand washing stations shall be provided in areas of the plant where good sanitary practices require employees to wash, sanitize and dry hands to prevent contamination of the food or food contact surfaces. Sinks provided for such purposes should be located inside production areas near the regular personnel door.

- Hand sanitizing solutions must be available with a sanitizing solution strength to meet regulatory and/or manufacturers recommendations.

### **14) Rest rooms and Locker Rooms**

- Appropriate and conveniently located changing facilities and toilets must be provided. These areas must be well lit, ventilated, heated when appropriate and must not open directly into the food processing areas.

- The doors must be tight and self closing and do not open into the areas where food is exposed to air borne contamination, exception being those cases in which plant layout of toilet design includes a hallway, a vestibule, double doors or other means to protect from such contamination.

- All employees shall be furnished with a locker or a suitable facility and the lockers and the dressing room shall be kept clean and orderly.

- Top of lockers shall not be used for storage. Lockers should be off the floor, bolted to the floor and caulked, or hung on the wall and caulked. Monitoring of lockers may be necessary to control pest infestation. Sloped tops are suggested.

- Hand washing facilities must be located such that they lie between the toilets and the exit.

- "Wash Hands Before Returning to Work" signs must be posted in all rest rooms, locker rooms, lunch rooms and smoking areas. Where applicable, said signs must also appear over sinks at entry ways to production.

### **15) Lunchrooms and Smoking Area**

- Lunchrooms shall be provided and maintained in a clean and sanitary condition at all times. Racks or refrigerators should be provided for lunch storage.

- Eating, drinking, chewing gum, smoking, and the use of other tobacco products are permitted in authorized areas only.

- Adequate ventilation shall be provided to prevent the buildup of odors.

- An adequate number of sanitary waste containers must be provided. Regular cleaning of these units is required.

- Beverage and vending machines shall be maintained in a clean and sanitary condition.

### **16) Rubbish Disposal Area**

- Waste disposal systems must be sufficient to handle peak waste loading, and must represent no threat of contamination to the environment, potable water supplies or the facility.

- All dumpsters, compactors, and trash bins must be covered and the area where they are located kept clean. These areas must be well ventilated and not open directly into production areas.
- Trash removal must be timely so as not to attract or allow the proliferation of pests.
- All trash containers used in the production areas must be either black or gray in color. Regular cleaning of these units is required.

<b>WAREHOUSE AREAS</b>
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### **1) Stock Location**

- All raw ingredients must be stored and utilized outside pasteurization areas. They must be on pallets and used in a first in first out rotation. Dirty and broken pallets will not be used for ingredients or food products.
- Perishable ingredients must be kept at the proper temperatures and handled in a fashion to insure the products integrity.
- Finished food products must be stored in a separate location from raw ingredients, processing chemicals and non-food supplies.
- Raw ingredients must be stored in a separate location from processing chemicals, cleaning chemicals and non-food supplies.
- All openings into the plant must remain tightly closed or screened to prevent the possible entry of insects, rodents, birds, animals, and vermin.
- Raw materials and finished products should be stacked a minimum 18 inches from the walls. Walls should have a 12 inch white stripe marking the perimeter in these areas.
- Refrigerated and frozen food storage areas shall be air tight to prevent frost or condensation.

### **2) Stock Rotation**

- All stock must be rotated in a first in, first out basis to insure the best ingredient and product quality.
- Production and expiration dates on all stored products, ingredients and chemicals should be tracked so as to prevent the use of substandard items.

### **3) Damaged Product Handling**

- Each cooler, freezer and warehouse in which finished product or ingredients are stored, must have a designated area for damaged goods.
- These areas must be clearly marked and kept clean of spilt product.
- Goods that become damaged in the facility, must be examined for extraneous contamination at the time of damage. If the product can be salvaged, the product container must be replaced or repaired so that the product will not spill or be exposed to the warehouse environment.
- All damaged items which cannot be salvaged must go to animal feed or be destroyed to prevent them from being used as a food item.

- Salvaged goods should be utilized as soon as possible.

#### **4) Perimeter Inspection Line**

- Each warehouse must have an 18" inspection line around its entire perimeter for pest control.
- The inspection line must be kept clear and clean at all times.

<b>EQUIPMENT AND UTENSIL DESIGN</b>
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#### **1) 3A, USPH/FDA, and USDA Standards**

- All new equipment should conform to the 3A sanitary standards. These standards are published by IAMFES, 502 E. Lincoln Way, Ames, Iowa 50010, (515)232-6699, (800)369-6337. Where large pieces of equipment specific to your processes are to be constructed, every effort must be taken to engineer and construct each piece to the sanitation standards described in the 3A manual.

- All equipment must also meet the requirements of the USPH/FDA which are outlined in the "Grade A Pasteurized Milk Ordinance", published by Public Health Service/Food and Drug Administration, publication number 229.

- All equipment and materials used in portions of the plant inspected by the USDA must follow the guidelines outlined in "Equipment Reviewed and Accepted use in Dairy Plants surveyed and approved for USDA Grading Service", Dairy Section, Dairy Division, Agricultural Marketing Service, United States Department of Agriculture.

#### **2) Approved Materials**

- All equipment and utensils used in food handling must be non-toxic, they must not transmit odor or taste and they should be non-absorbent. They must be resistant to corrosion, capable of withstanding repeated cleaning and disinfection. The surfaces of the equipment and utensils must be smooth and free from pits and cracks.

- Suitable materials for equipment and utensils are listed in 3A sanitary standards.

#### **3) Utensil Construction**

- Utensils must be so designed and constructed as to prevent hygiene hazards and permit easy and thorough cleaning and disinfection and also visual inspection.

- Containers for inedible materials and waste must be constructed with suitable materials which are non-corrosive, impervious to the contents, shock-proof and which represents no potential for leakage and the subsequent contamination of plant, equipment and food. The containers must be closed securely, easy to clean and disinfect, or be disposable.

<b>TRAINING GUIDELINES</b>
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- All new and/or temporary employees need to be introduced to the GMP program prior to entering the job site.

- Continual training and reinforcement of GMP's for all employees should be done on a regular basis.