HAZARD ANALYSIS & CRITICAL CONTROL POINT

BABOCK HALL DIARY PLANT

DEPARTMENT OF FOOD SCIENCE

UNIVERSITY OF WISCONSIN – MADISON

1605 LINDEN DR, MADISON WISOCONSIN 53706

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HACCP Coordinator:

Last Plan Validation Date:	11/26/2012

Babcock Hall Dairy Plant

HACCP Team and Approval

Title	Name	Position in Company
HACCP Coordinator	Casey Whyte	QC Manager
HACCP Advisor	Bill Klein	Dairy Plant Manager
HACCP Team Member	Ray Cleve	Dairy Plant Supervisor
HACCP Team Member	Sara Ferenc	Financial Specialist

HACCP Plan Submitted By: _____

(Plant HACCP Coordinator)

HACCP Plan Approved By: _____

Date: _____11/26/2012_____

Babcock Hall Dairy

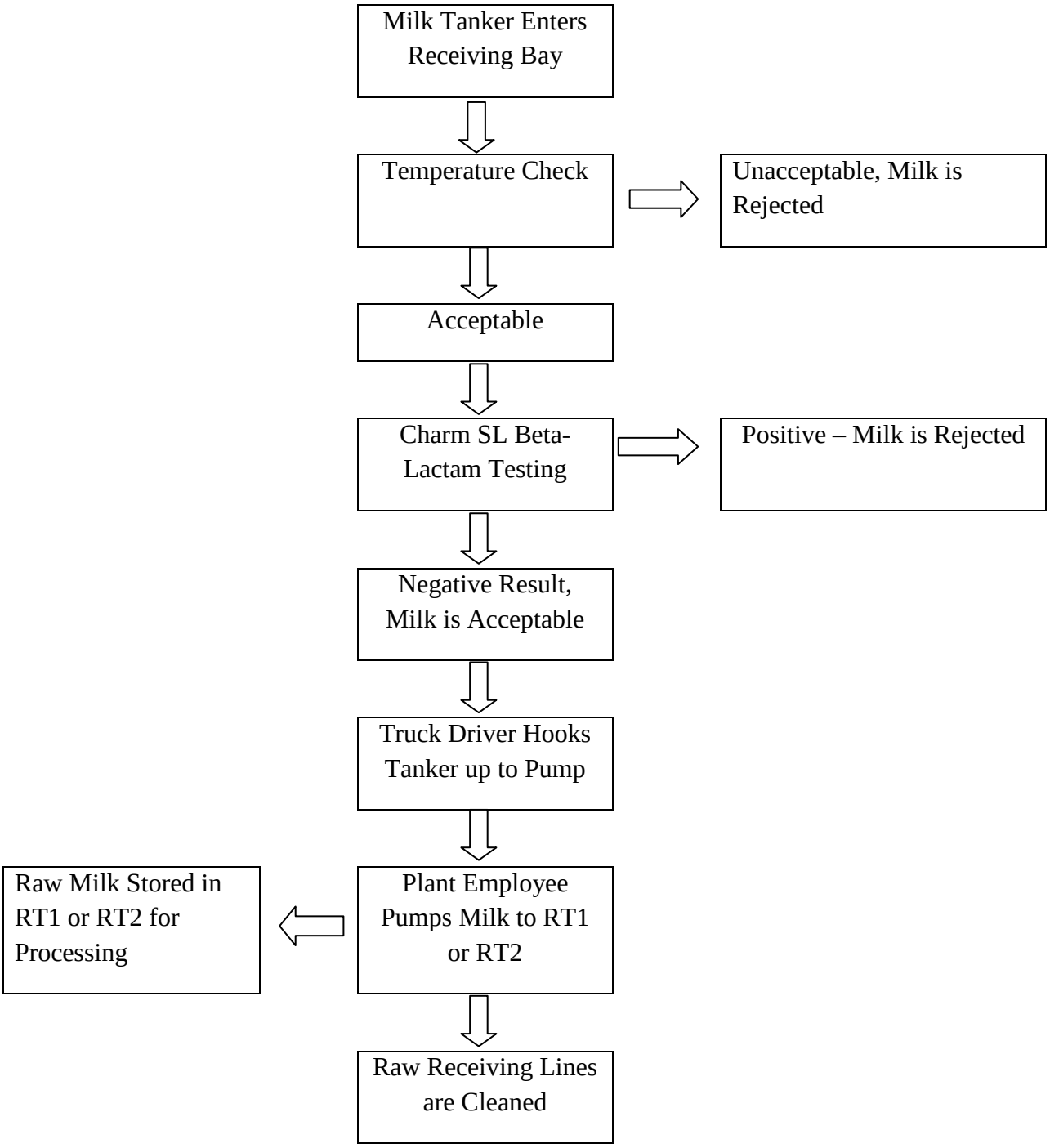
Product Description & Process Flow Diagrams

Edited October, 2012

By:

Casey Whyte

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Raw Milk Receiving**	**Prepared by: Casey Whyte**



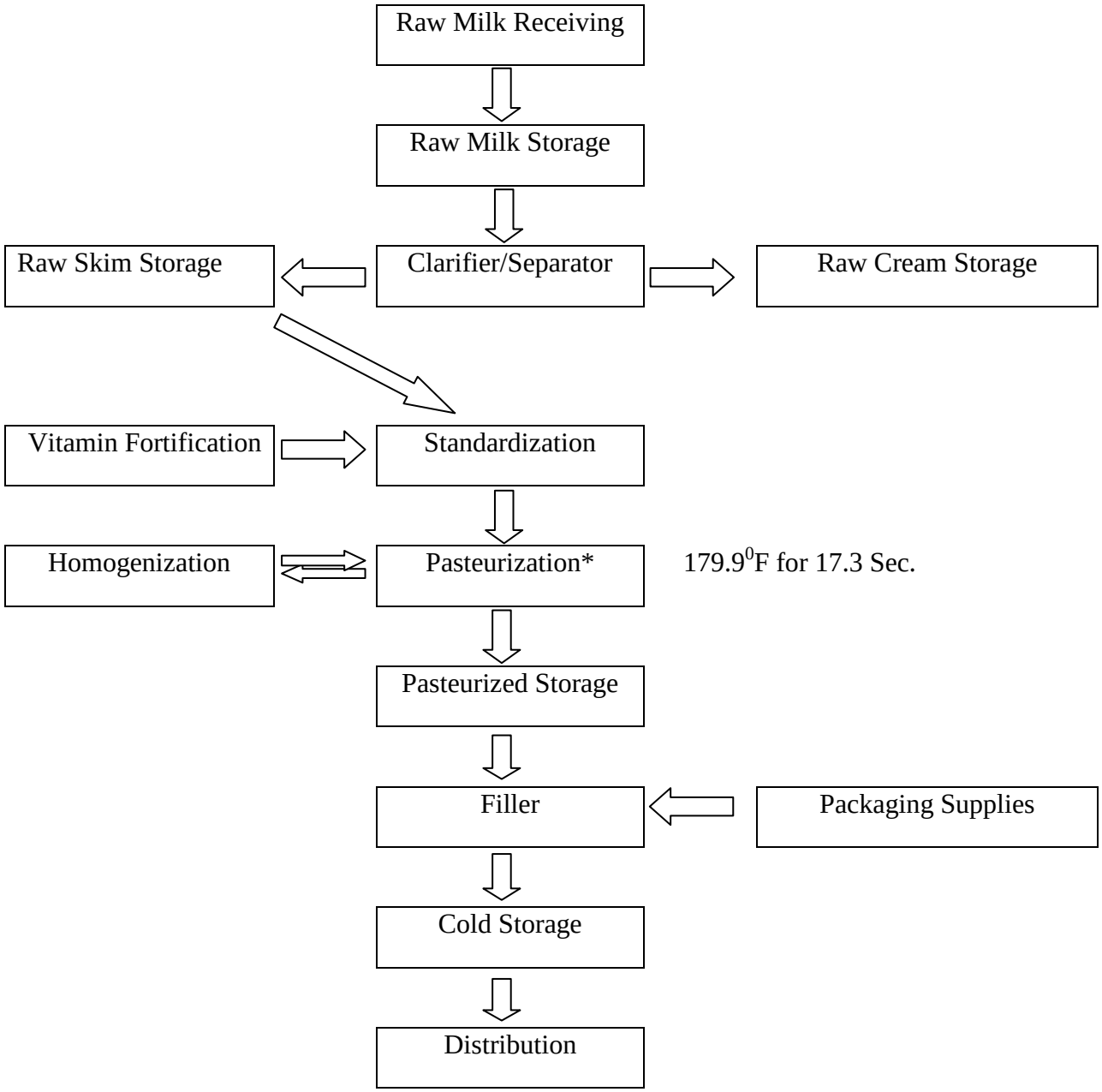
Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ---------	**Product Name: Skim Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Fat Free Milk (Skim Milk). Half Pint, Pint, Quart and Half Gallon size.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added.
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	21 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ---------	**Product Name: Skim Milk**	**Prepared by: Casey Whyte**



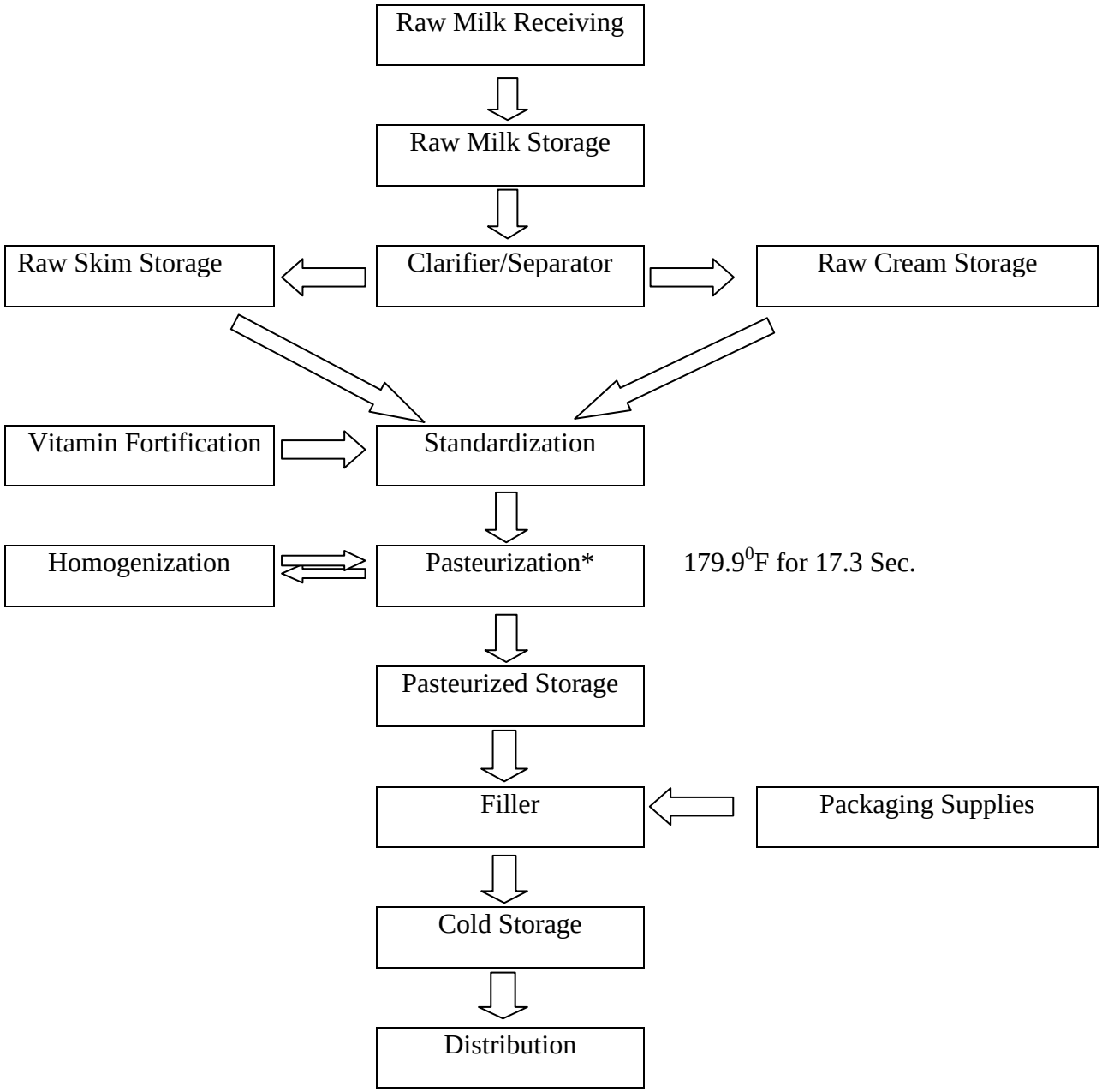
Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: 2% Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Reduced Fat Milk (2%). Half Pint, Pint, Quart and Half Gallon size.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added, 30% less fat than regular milk
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	21 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: 2% Milk**	**Prepared by: Casey Whyte**



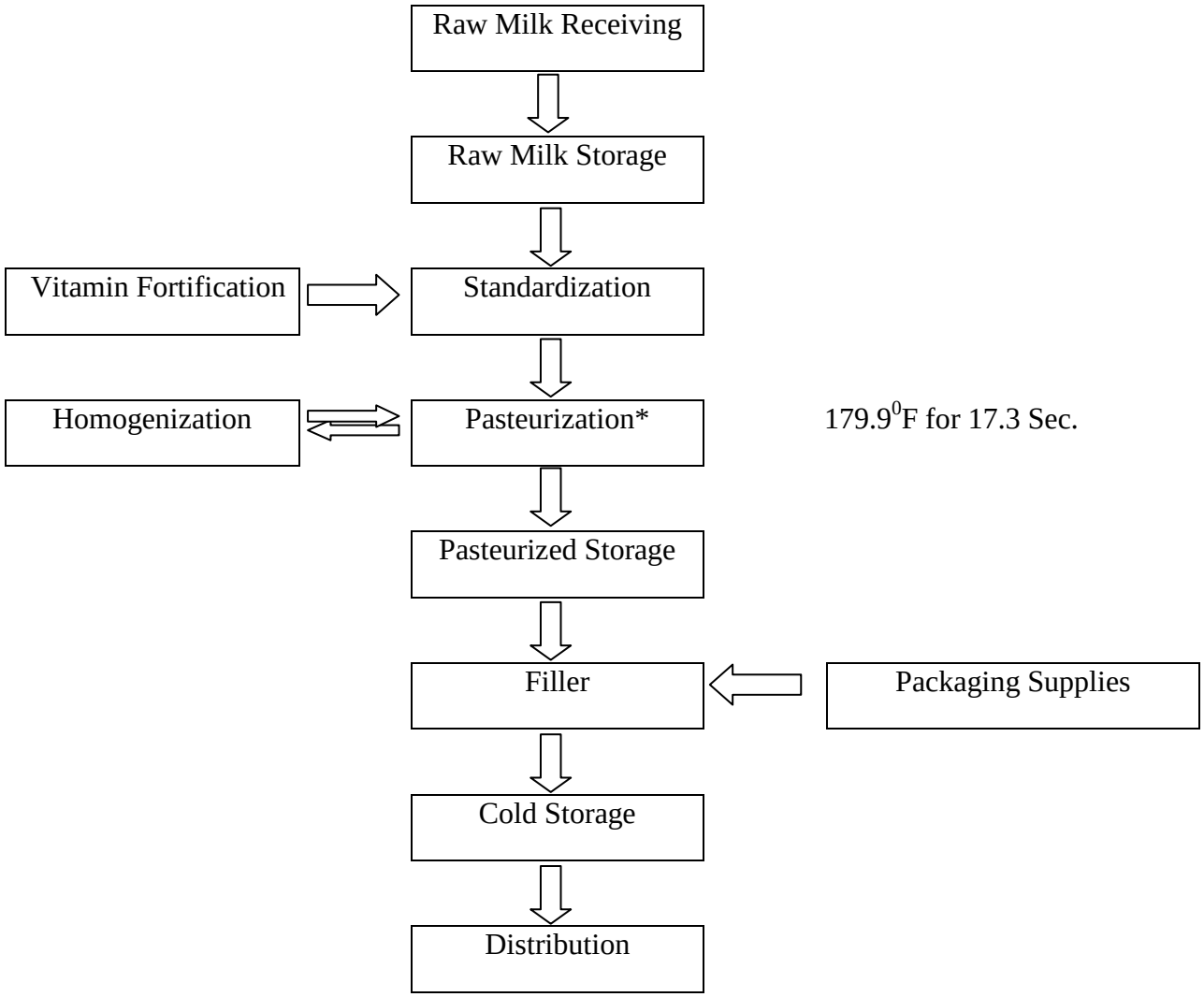
Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Whole Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Whole Milk. Half Pint.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added, 30% less fat than regular milk
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	21 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Whole Milk**	**Prepared by: Casey Whyte**



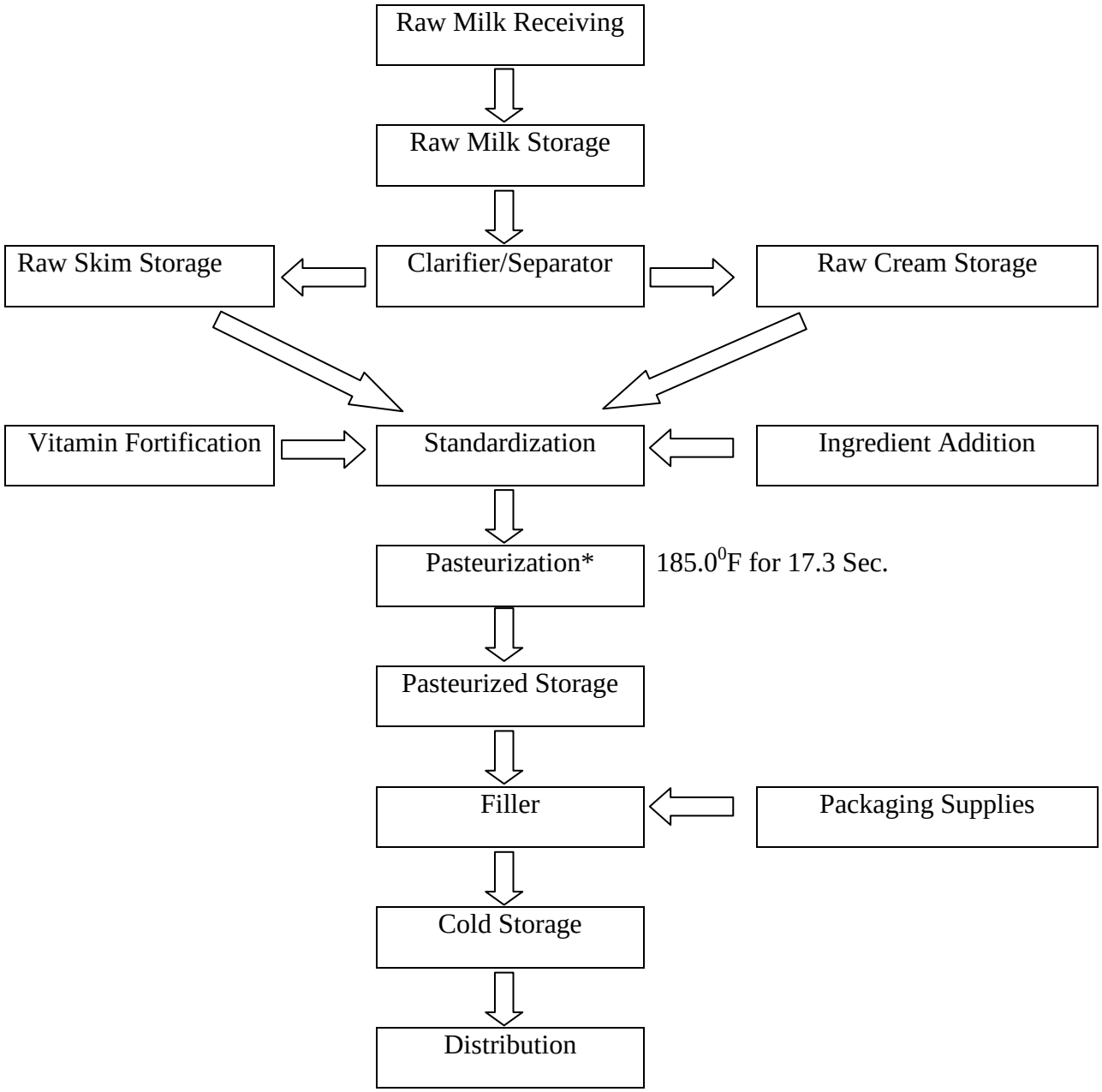
Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Choc. Milk**	**Prepared by: Bikram Upadhyaya**

Product Name (Name, Type, Size)	1% Low fat Chocolate Milk. Half Pint, Pint, Quart and Half Gallon size.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added.
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	18 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Choc. Milk**	**Prepared by: Casey Whyte**



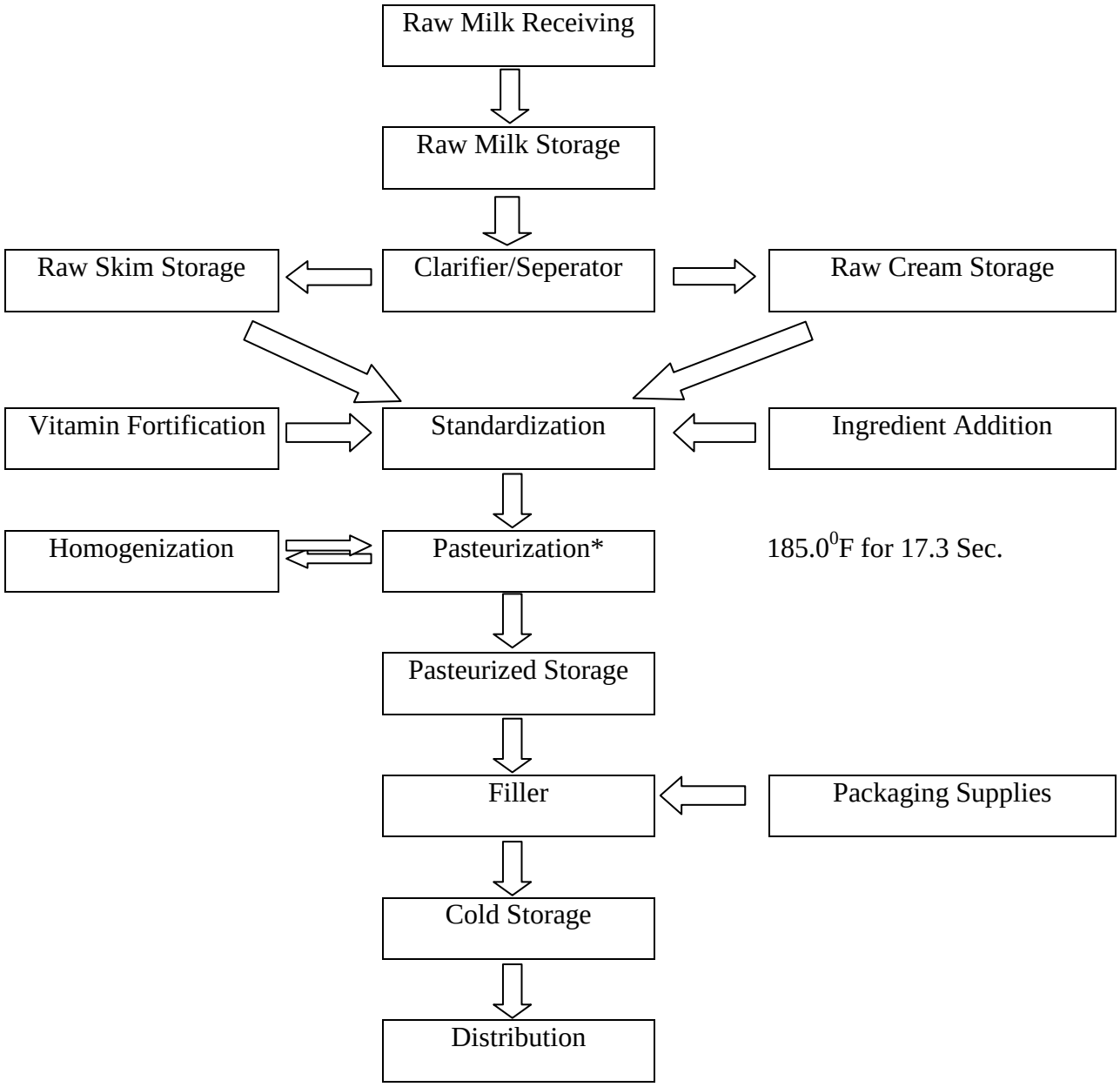
Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes:----------	**Product Name: Straw. Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Strawberry Milk (2%). Pint.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added, 30% less fat than regular milk
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	18 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Straw. Milk**	**Prepared by: Casey Whyte**



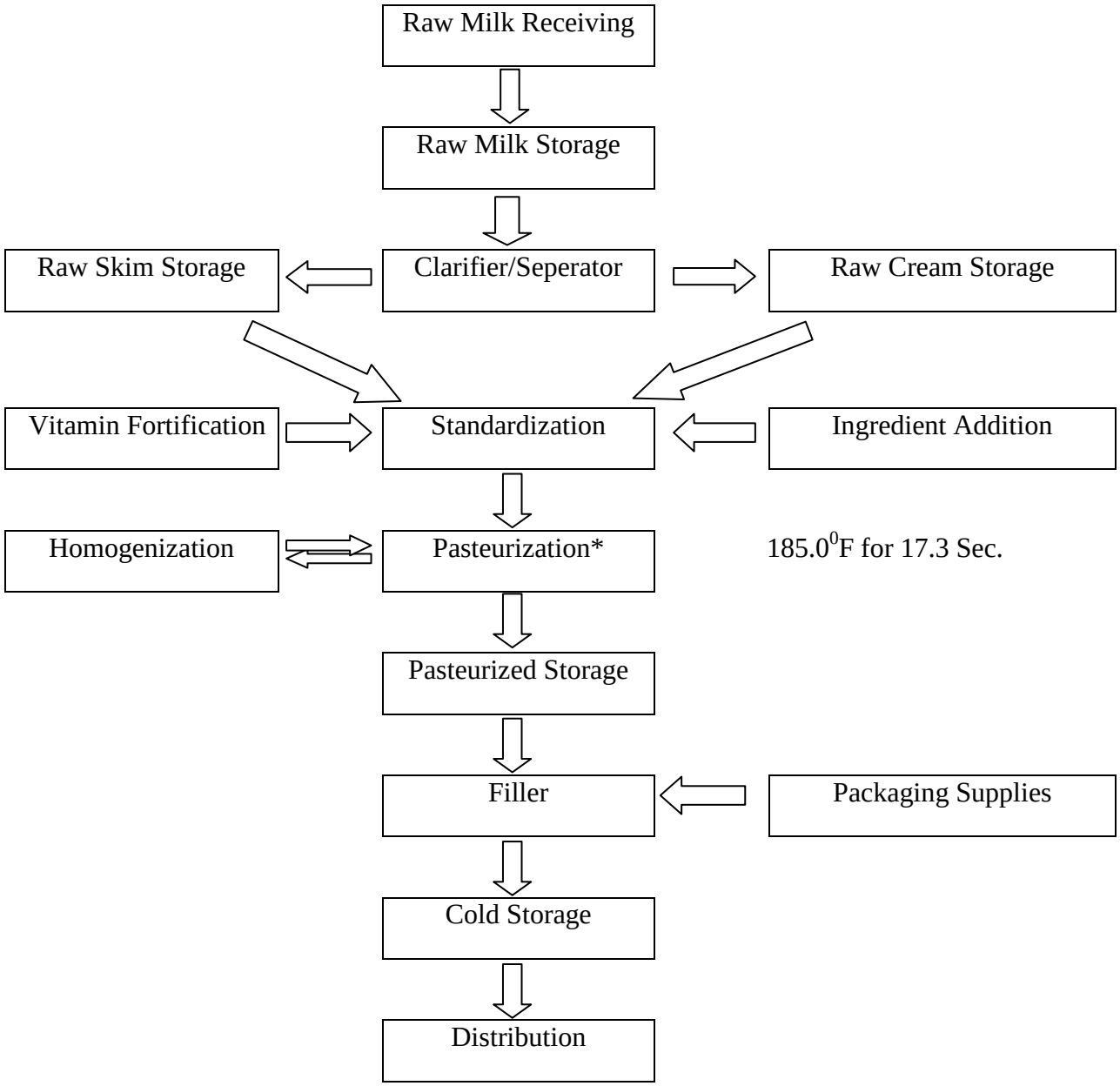
Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Coffee Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Coffee Flavored Milk. Pint.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added.
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	18 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Coffee Milk**	**Prepared by: Casey Whyte**



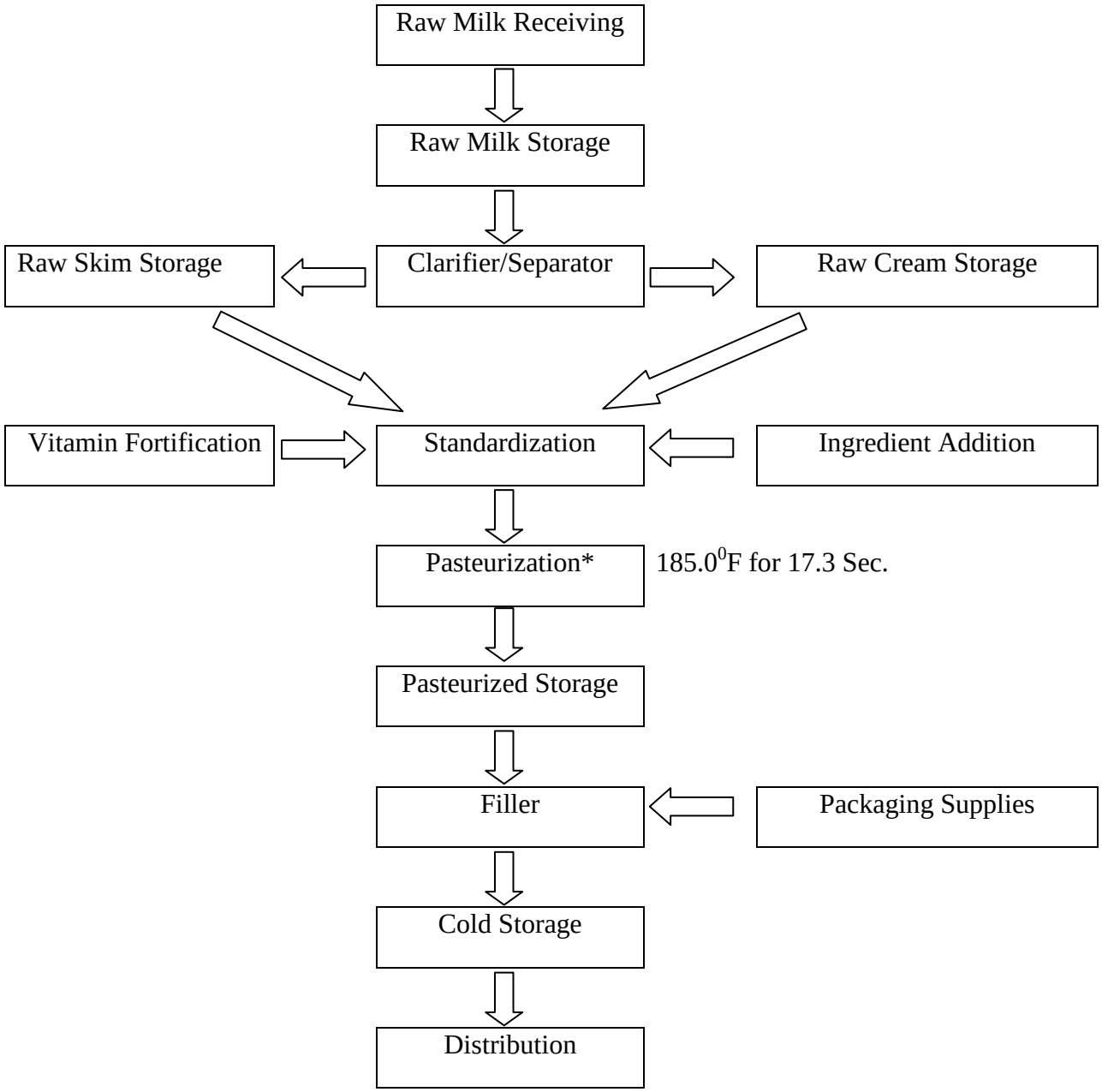
Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Mocha Milk**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Mocha Flavored Milk. Pint.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in preparing meals.
Labeling and Special Instructions	Keep refrigerated, Grade "A", Pasteurized, Homogenized, Vitamin A & D added.
Packaging (Product and Non-product Contact)	High Density Polyethylene gallon container with a polypropylene snap-on screw-off tamper evident cap. Labels are self adhesive and applied prior to filling. Code date is printed via coding equipment.
Storage and Distribution	Product is cased in standard milk cases- four units per case. Temperature of storage is ≤45°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	18 days under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Mocha Milk**	**Prepared by: Casey Whyte**



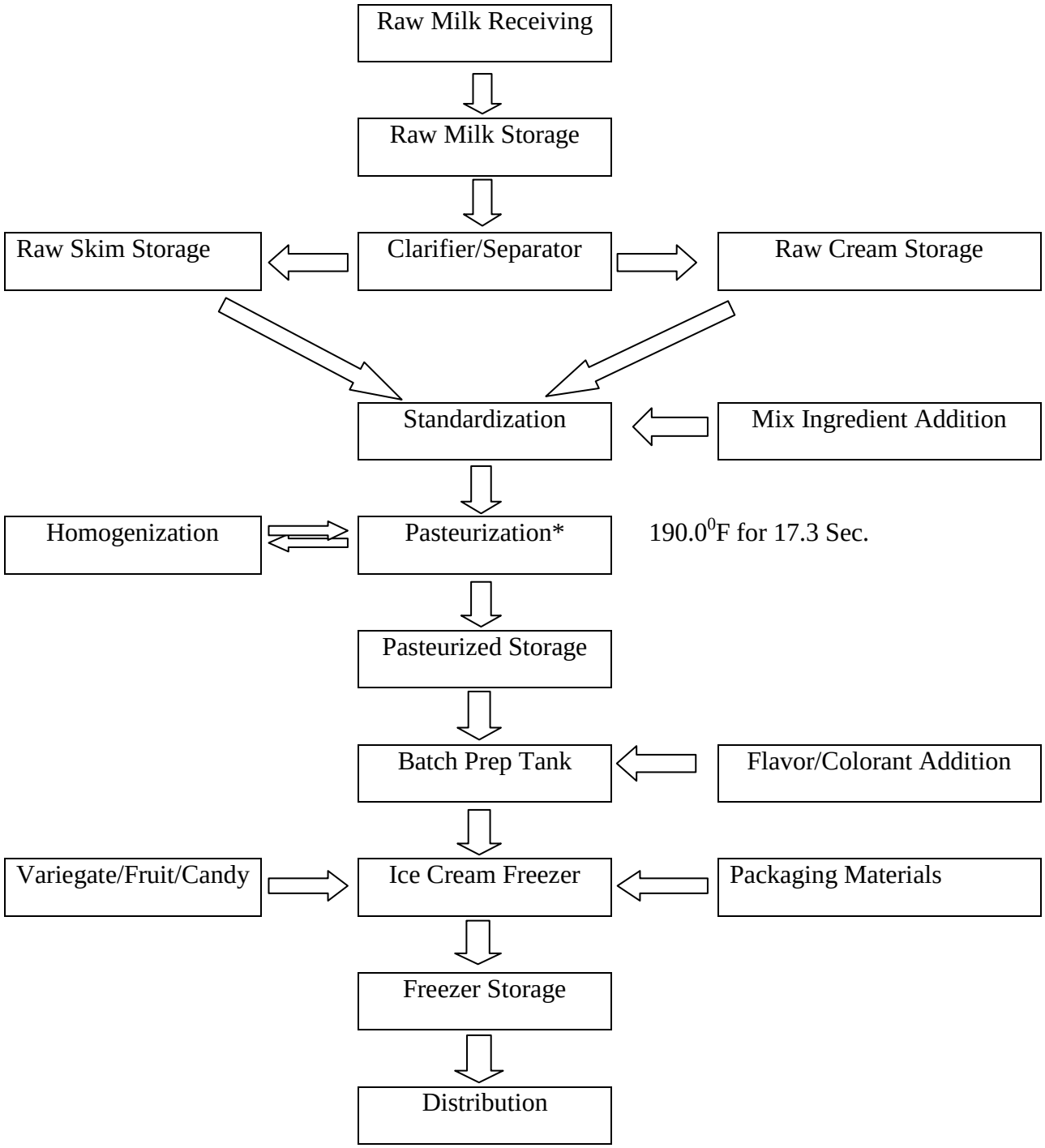
Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Ice Cream**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Ice Cream Pint, Scround, 3 Gallon.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product.
Labeling and Special Instructions	Keep Frozen
Packaging (Product and Non-product Contact)	Three size cardboard container with lid. Labels are self adhesive and applied prior to filling. Production date is printed on labels via label printer prior to labeling.
Storage and Distribution	Product is stored on carts or pallets in temperature controlled freezers. Temperature of storage is ≤-20°F. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	1 year under proper refrigeration

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Product Flow Diagram**	
Supersedes: ----------	**Product Name: Ice Cream**	**Prepared by: Casey Whyte**



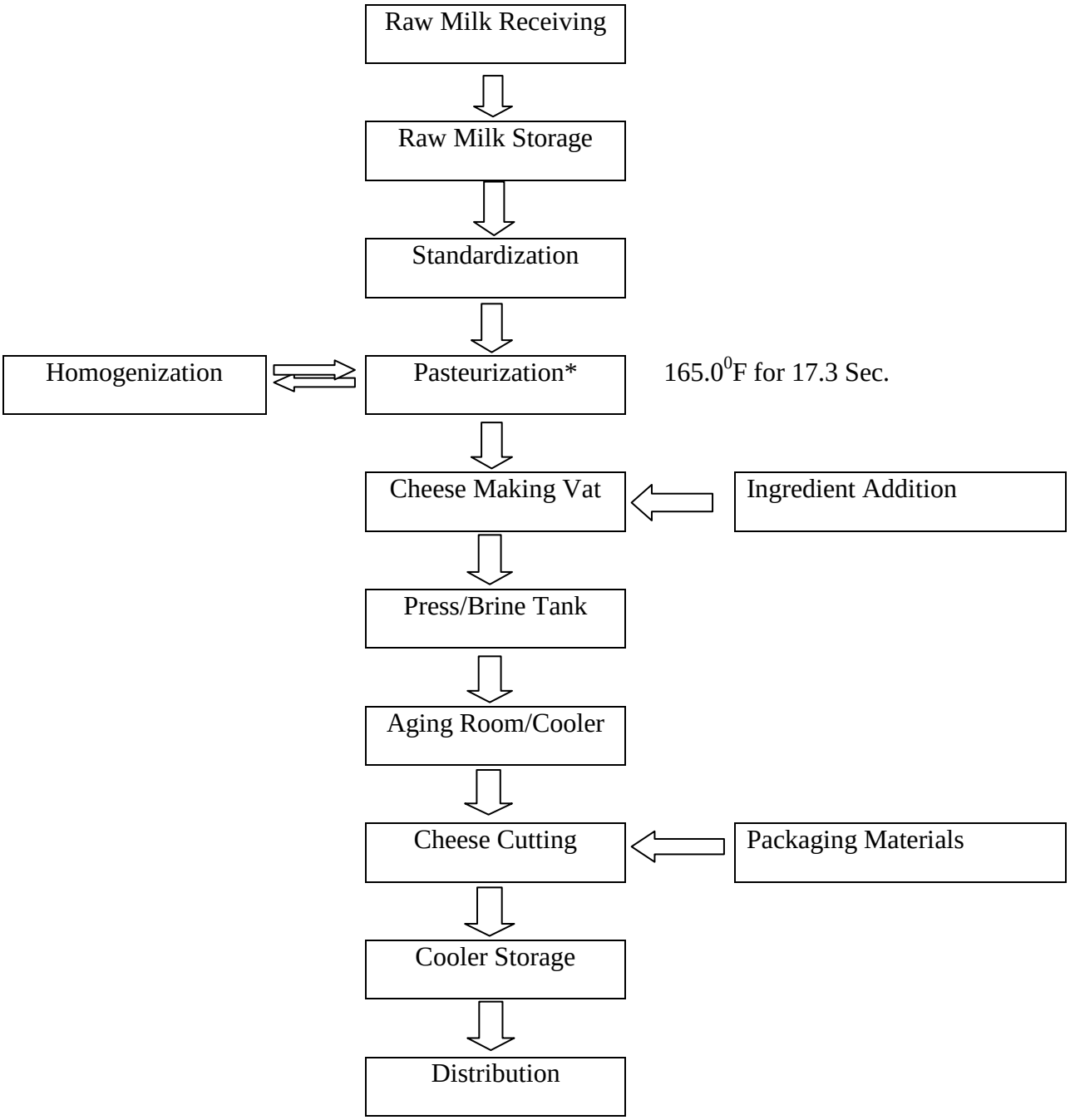
Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Product Description**	
Supersedes: ----------	**Product Name: Cheese**	**Prepared by: Casey Whyte**

Product Name (Name, Type, Size)	Cheese 1 lbs, ½ lbs, 1/3 lbs.
Process	Pasteurization (HTST)
Food Safety Characteristics	Support growth of a number of pathogens. No natural protective characteristics.
Target Market	Consumers of all ages consume this product.
Intended Use	Ready to serve product. May also be used as an ingredient in cooking.
Labeling and Special Instructions	Keep Refrigerated
Packaging (Product and Non-product Contact)	Vacuum sealed and heat shrink plastic wrapped. Labels are self adhesive and applied after packaging. Production date is labeled on cheeses via label gun during labeling.
Storage and Distribution	Product is stored in crates in temperature controlled coolers/rooms. Temperature of storage is 35-40°F or 70-75˚F depending on cheese type. Distributed using refrigerated trucks (≤45°F) to wholesale and retail outlets.
Shelf –Life	Variable dependent on cheese type.

Approved by: _____

Date: _____

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	HACCP Product Flow Diagram	
Supersedes: ----------	Product Name: Cheese	Prepared by: Casey Whyte



Babcock Hall Dairy

HACCP Plan Documentation

Edited October, 2012

By:

Casey Whyte

Babcock Hall Dairy Plant		Page 1 of 3
Issue Date:11/26/2012	**HACCP Plan: Process Hazard Analysis – Fluid Milk**	
Supersedes: ----------	**Product Name: 2%, Skim, Whole, Chocolate Milk**	**Prepared by: Bikram Upadhyaya**

Process Step	Potential Food Safety Hazard (Biological, Chemical or Physical)	Is Potentially Hazard Reasonably Likely to Occur?	Method to Prevent, Eliminate or Reduce Hazard	Is this step a CCP?
Raw Milk Receiving	B – Vegetative pathogens C – Toxins from temperature abuse C – Beta-Lactam Drug Residues	Yes No No	- None - Supplier guarantee program and incoming ingredient PP - Incoming ingredient PP following the guidelines established under Appendix No of the PMO	No
In-Line Filter	B – Vegetative pathogens P – Foreign material	Yes No	- None - Equipment cleaning and equipment maintenance PP in place to ensure foreign materials removed.	No
Raw Milk Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No

	sanitizing agents.			
Clarifier/ Separator	B – Vegetative pathogens	No	- Equipment cleaning PP	No
Raw Cream Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and sanitizing agents.	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No
Vitamin Addition	C – Vitamin Toxicity	No	- Vitamin control PP to monitor and reconcile vitamin usage and calibrate equipment.	No
Homogenization	B – Vegetative pathogens	No	- Equipment cleaning PP in place regarding cleaning, sanitizing and inspection of equipment	No
Pasteurization (HTST)	B – Vegetative pathogens C – Boiler additives	No No	- None - Water safety PP controls use of boiler additives to meet 21CFR173.310 in the water safety pre-requisite program	Yes
Pasteurized Storage	B – Vegetative pathogens C – Contamination from residual cleaning and sanitizing agents.	No No	- Temperature control and equipment cleaning PP - Equipment cleaning PP	No

Filling	B – Vegetative pathogens	No	- Equipment cleaning and equipment maintenance PP	No
	C – Contamination from residual cleaning and sanitizing agents	No	- Equipment cleaning PP	
	P – Foreign material (metal)	No	- Equipment/filter maintenance/filter PP	
Refrigerated Storage and Distribution	B – Pathogens	No	- Packaged product protected from all common hazards	No
	C – Contaminants	No		
	P – Foreign materials	No		

Babcock Hall Dairy Plant		Page 1 of 3
Issue Date:11/26/2012	**HACCP Plan: Process Hazard Analysis – Ice Cream**	
Supersedes: ----------	**Product Name: Ice Cream**	**Prepared by: Casey Whyte**

Process Step	Potential Food Safety Hazard (Biological, Chemical or Physical)	Is Potentially Hazard Reasonably Likely to Occur?	Method to Prevent, Eliminate or Reduce Hazard	Is this step a CCP?
Raw Milk Receiving	B – Vegetative pathogens C – Toxins from temperature abuse C – Beta-Lactam Drug Residues	Yes No No	- None - Supplier guarantee program and incoming ingredient PP - Incoming ingredient PP following the guidelines established under Appendix No of the PMO	No
In-Line Filter	B – Vegetative pathogens P – Foreign material	Yes No	- None - Equipment cleaning and equipment maintenance PP in place to ensure foreign materials removed.	No
Raw Milk Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No

	sanitizing agents.			
Clarifier/ Separator	B – Vegetative pathogens	No	- Equipment cleaning PP	No
Raw Cream Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and sanitizing agents.	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No
Homogenization	B – Vegetative pathogens	No	- Equipment cleaning PP in place regarding cleaning, sanitizing and inspection of equipment	No
Pasteurization (HTST)	B – Vegetative pathogens C – Boiler additives	No No	- None - Water safety PP controls use of boiler additives to meet 21CFR173.310 in the water safety pre-requisite program	Yes
Pasteurized Storage	B – Vegetative pathogens C – Contamination from residual cleaning and sanitizing agents.	No No	- Temperature control and equipment cleaning PP - Equipment cleaning PP	No
Freezing	B – Vegetative pathogens	No	- Equipment cleaning and equipment maintenance PP	No

	C – Contamination from residual cleaning and sanitizing agents	No	- Equipment cleaning PP	
	P – Foreign material (metal)	No	- Equipment/filter maintenance/filter PP	
Frozen Storage and Distribution	B – Pathogens	No	- Packaged product protected from all common hazards	No
	C – Contaminants	No		
	P – Foreign materials	No		

Babcock Hall Dairy Plant		Page 1 of 3
Issue Date:11/26/2012	**HACCP Plan: Process Hazard Analysis – Cheese**	
Supersedes: ----------	**Product Name: Cheese**	**Prepared by: Casey Whyte**

Process Step	Potential Food Safety Hazard (Biological, Chemical or Physical)	Is Potentially Hazard Reasonably Likely to Occur?	Method to Prevent, Eliminate or Reduce Hazard	Is this step a CCP?
Raw Milk Receiving	B – Vegetative pathogens C – Toxins from temperature abuse C – Beta-Lactam Drug Residues	Yes No No	- None - Supplier guarantee program and incoming ingredient PP - Incoming ingredient PP following the guidelines established under Appendix No of the PMO	No
In-Line Filter	B – Vegetative pathogens P – Foreign material	Yes No	- None - Equipment cleaning and equipment maintenance PP in place to ensure foreign materials removed.	No
Raw Milk Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No

	sanitizing agents.			
Clarifier/ Separator	B – Vegetative pathogens	No	- Equipment cleaning PP	No
Raw Cream Storage	B – Vegetative pathogens C – Toxin production C – Contamination from residual cleaning and sanitizing agents.	Yes No No	- None - Temperature control PP - Equipment cleaning PP	No
Pasteurization (HTST)	B – Vegetative pathogens C – Boiler additives	No No	- None - Water safety PP controls use of boiler additives to meet 21CFR173.310 in the water safety pre-requisite program	Yes
Cheese Making Vat	B – Vegetative pathogens C – Contamination from residual cleaning and sanitizing agents.	No No	- pH and salt concentration control PP - Equipment cleaning PP	No
Aging Room	B – Vegetative pathogens C – Contamination from residual cleaning and sanitizing agents	No No	- Environmental temperature monitoring PP - Equipment cleaning PP	No

Cutting, Packaging	B – Pathogens C – Contaminants P – Foreign materials	No No No	- Equipment cleaning PP - Equipment cleaning PP - None	No
Refrigerated Storage and Distribution	B – Pathogens C – Contaminants P – Foreign materials	No No No	- Packaged product protected from all common hazards	No

Babcock Hall Dairy Plant		Page 1 of 5
Issue Date:11/26/2012	**HACCP Plan: Ingredient and Packaging Hazard Analysis**	
Supersedes: ----------	**Product Name: 2%, Skim, Whole, Chocolate, Strawberry, Coffee, Mocha Milk, Ice Cream, Cheese**	**Prepared by: Casey Whyte**

Ingredient / Packaging Material	**Storage Requirement** A = Ambient F = Frozen R = Refrigerate	**Potential Food Safety Hazard** (B) = Biological VP = Vegetative Pathogens SP = Spore forming Pathogens (C) = Chemical (P) = Physical	**Significant Hazards** Is Potentially Hazard Reasonably Likely to Occur?	**Justification for Decision**	**Control Mechanisms**	**CCP or PP?** CCP = Critical Control Point PP = Prerequisite Program
Raw Milk	R	B – VP	Yes	Based on historical data vegetative pathogens may be present in raw milk.	Pasteurization	CCP #1
		B – SP	Yes	Based on historical data spore forming pathogens may be present in raw milk.	Storage temp. control	PP
		C – Beta Lactams	Yes	Historical data indicated that animal health programs actively use antibiotics.	Beta Lactam screening (Appendix N)	PP
		C – Milk Protein Allergen	Yes	Milk protein is considered an allergen.	Labeling	PP

		P – Extraneous	Yes	Based on historical experiences at the receiving plant extraneous material may be present in the raw milk.	Extraneous filtration	PP
Skim Milk	R	B – VP	Yes	Based on historical data vegetative pathogens may be present in raw skim milk.	Pasteurization	CCP #1
		B – SP	Yes	Based on historical data spore forming pathogens may be present in raw skim milk.	Storage temp. control	PP
		C – Beta Lactams	Yes	Historical data indicated that animal health programs actively use antibiotics and they may be present in dairy ingredients derived from raw milk.	Beta Lactam screening (Appendix N)	PP
		C – Milk Protein Allergen	Yes	Milk protein is considered an allergen.	Labeling	PP
Cream	R	B – VP	Yes	Based on historical data vegetative pathogens may be present in raw cream.	Pasteurization	CCP #1
		B – SP	Yes	Based on historical data spore forming pathogens may be present in raw cream.	Storage temp. control	PP
		C – Beta Lactams	Yes	Historical data indicated that animal health programs actively use antibiotics and they	Beta Lactam screening	PP

				may be present in dairy ingredients derived from raw milk.	(Appendix N)	
		C – Milk Protein Allergen	Yes	Milk protein is considered an allergen.	Labeling	PP
NFDM	A	B – VP	Yes	Based on historical data vegetative pathogens may be present in dairy ingredients derived from raw milk.	Pasteurization	CCP #1
		B – SP	Yes	Based on historical data spore forming pathogens may be present in dairy ingredients derived from raw milk.	Storage temperature control program	PP
		C – Beta Lactams	Yes	Historical data indicated that animal health programs actively use antibiotics and they may be present in dairy ingredients derived from raw milk.	COA	PP
		C – Milk Protein Allergen	Yes	Milk protein is considered an allergen.	Labeling	PP
		P – Extraneous	Yes	Based on the production process required to produce reconstituted skim, extraneous materials may be present.	Filtration	PP
Dry Sucrose	A	B – None	No	Scientific literature has concluded that there is no evidence that this material could	None	N/A

				pose a pathogen risk. COA verification is completed prior to use.		
		C – None	No	Scientific literature has concluded that there is no evidence that this material could pose a chemical risk. COA verification is completed prior to use.	None	N/A
		P – None	No	Based on historical experience and approved supplier audit requirements, extraneous materials are not likely to be present in this material.	COA and approved supplier program	PP
Chocolate, Strawberry Flavor Powder	A	B – None	No	Scientific literature has concluded that there is no evidence that this material could pose a pathogen risk. COA verification is completed prior to use.	None	N/A
		C – None	No	Scientific literature has concluded that there is no evidence that this material could pose a chemical risk. COA verification is completed prior to use.	None	N/A
		P – None	No	Based on historical experience and approved supplier audit requirements, extraneous materials are not likely to be	COA and approved supplier program	PP

				present in this material.		
Vitamin A & D	A	B – None	No	Historical experiences and products specification with COA verifications shows no evidence that the material can pose a pathogen risk.	None	N/A
		C – None	No	Based on historical experiences, approves supplier audit requirements and COA verifications chemical contamination is not likely to be present in this material.	None	N/A
		P – None	No	Based on historical experience and approved supplier audit requirements, extraneous materials are not likely to be present in this material.	None	N/A
Ice Cream Inclusions	F	B – None	No	Scientific literature has concluded that there is no evidence that this material could pose a pathogen risk. COA verification is completed prior to use.	None	N/A
		C – None	No	Scientific literature has concluded that there is no evidence that this material could pose a chemical risk. COA verification is completed prior to use.	None	N/A

		P – None	No	Based on historical experience and approved supplier audit requirements, extraneous materials are not likely to be present in this material.	COA and approved supplier program	PP
		C – Multiple Allergens	Yes	Many Inclusions contain different ingredients considered allergens.	Labeling	PP

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date: 11/26/2012	**HACCP Plan: Allergen Hazard Identification**	
Supersedes: --------	**Product Name: 2%, Skim, Whole, Chocolate Milk**	**Prepared by: Bikram Upadhyaya**

Allergen Cross-Contamination Production Assessment

Allergens that are in products produced on the manufacturing line	Allergen category	Is the allergen present in all products produced on the line?
Raw milk	Milk Protein	Yes
Skim Milk	Milk Protein	Yes
Sweet Cream	Milk Protein	Yes
Non fat dry milk	Milk Protein	Yes

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date:11/26/2012	**HACCP Plan: CCP Summary Table**	
Supersedes: ----------	**Product Name: 2%, Skim, Whole, Chocolate Milk, Ice Cream, Cheese**	**Prepared by: Casey Whyte**

Critical Control Point Summary Table									
1	**2**	**3**	**Monitoring**				**8**	**9**	**10**
			4	**5**	**6**	**7**			
Critical Control Point (CCP)	**Hazards**	**Critical Limit**	**What**	**How**	**Frequency**	**Who**	**Corrective Action(s)**	**Verification**	**Records**
Pasteurization (Properly functioning HTST)	B – Vegetative Pathogens	The temperature, as measured at the exit of the extended holding tube, must be at a minimum of 161^0F	Temperature (^{0}F)	Check and sign-off on temperature recording charts	Monitoring is done by operator every 15 min and after each product run.	Pasteurizer/ Operator	- Diversion valve divert the flow of product. - Document actions.	- Cut in – Cut out performed - Indicating vs. recording temperature comparison - Pressure difference check - Supervisory review and sign-off on recording charts - Equipment calibration - Seal checks	- Temperature recording charts - Corrective actions records - CCP verification records - Equipment calibration record

Signature: ……

Title: …….

Date: …….

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date: 11/26/2012	HACCP Plan: CCP Corrective Action Sheet	
Supersedes: ----------	Product Name:	Prepared by: Bikram Upadhyaya

Identify Lot Number (or any other identifiers)

CCP Violation and Date	Corrective Action Taken and Date	Steps to Avoid CCP Violation in Future	Product Disposition	Action Performed By

Signature: ……

Title: …….

Date: …….

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date: 11/26/2012	**HACCP Plan: Food Safety Plan Training Guidelines**	
Supersedes: ----------		**Prepared by: Bikram Upadhyaya**

Identified Training Area	Target Audience	Responsible Trainer(s)	Frequency	Documentation
HACCP general awareness	Full Time Employees	HACCP Coordinator	Annually	Quality Control Office
GMP's and prerequisites plan guidelines	Full Time Employees	Dairy Plant Supervisor	Annually	Quality Control Office
Documentation guidelines (CCP's, corrective actions and daily record sheets)	Full Time Employees	Dairy Plant Supervisor	Annually	Quality Control Office
Chemical safety	Full Time Employees	ECOLab Representative	Annually	DP Supervisors Office
Bio-security	Full Time Employees	HACCP Coordinator	Annually	Quality Control Office

Signature: ……

Title: …….

Date: …….

Babcock Hall Dairy Plant		**Page 1 of 1**
Issue Date:11/26/2012	**HACCP Plan: HACCP Training Log**	
Supersedes: ----------		**Prepared by: Casey Whyte**

It has been explained and I understand the hazards, critical limits, and verification steps outlined in the HACCP Plan.

	Date:	**Employee Name**	**Employee Signature**	**Supervisor Signature Performing the Training**
HACCP general awareness				
GMP's and prerequisites plan guidelines				
Documentation guidelines (CCP's, corrective actions and daily record sheets)				
Chemical safety				
Bio-security				

Signature: ……

Title: …….

Date: …….

Babcock Hall Dairy Plant		Page 1 of 1
Issue Date: 11/26/2012	**HACCP Plan: HACCP Documentation Summary**	
Supersedes: ----------	**Approved by: Plant Manager**	**Prepared by: Bikram Upadhyaya**

Documentation Summary

Document	Location of Document Currently in Use	Location of Documents up to Two Years	Location of Documents Archived	Length of Time Achieved Documents Kept
HACCP Plan, corrective action documentation, HACCP meeting minutes.	Quality Control Office/QC Computer	Quality Control Office/QC Computer	Quality Control Office/QC Computer	2 Years
Sanitation master schedule, SSOP's and documentation	Computer P: drive	NA	NA	NA
Preventative maintenance master schedule, maintenance SSOP's and documentation	Computer P: drive	NA	NA	NA
Training documents	Dairy Plant Supervisor Office	Dairy Plant Supervisor Office	Dairy Plant Supervisor Office	2 Years
Metal detector,	Quality Control Office	Quality Control Office	Quality Control Office	2 Years

thermometer checks, and calibration, scale verification/calibration				
Environmental monitoring locations or supporting data	Quality Control Lab	Quality Control Lab	Quality Control Lab	2 Years
MSDS sheets	Entrance of Building	NA	NA	NA
Pest control binder	Loading Dock	Dairy Plant Supervisor Office	Dairy Plant Supervisor Office	2 Years
Laboratory information	Quality Control Office	Quality Control Office	Quality Control Office	2 Years
Internal audits	Quality Control Office	Quality Control Office	Quality Control Office	2 Years
COA's/Supplier guarantee's	Dairy Plant Supervisor Office	NA	NA	NA

Signature: ……

Title: …….

Date: …….

Babcock Hall Dairy

SOP Documentation

Edited October, 2012

By:

Casey Whyte

Milk Bottling SOPs

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Receiving	Title **Raw Milk Handling**	SOP Number 04-02.02
Prepared By/Date E. Dockerty 3/09/11		Effective Date 03/17/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 10/10/05

1.0 OBJECTIVE

Raw milk is received on an as need basis. Care must be taken to ensure that the highest quality raw milk possible is received.

2.0 MATERIALS

2.1 Sample Vials.
2.2 Thermometer
2.3 White bucket for sample and temperature recording
2.4 Record materials
2.5 Cooler Bag

3.0 HAZARDS

3.1 Slippery Floors
3.2 Truck
3.3 Truck ladder

4.0 PROCEDURE

4.1 Determine which tank raw milk will go into (RT1 or RT2)
4.2 Connect elbow joint to intake valve on correct tank.
4.3 Turn switch on control panel.
4.4 Ensure that chilled water is turned on for both holding tanks.
4.5 Turn on agitator on tank raw milk is entering.
4.6 When milk truck arrives collect 2 load samples. Date each sample and place into cooler bag.
4.7 Receive all farm raw milk samples date and place in cooler bag.
4.8 Collect a small raw milk sample in white bucket. Measure and record temperature on chart 008.
4.9 Take cooler bag and samples to QC for testing.
4.10 Wait for test results from antibiotic test before pumping milk.
4.11 If a negative test result is received, proceed to step 4.13.
4.12 If a positive is received on sample. DO NOT PUMP milk into tanks. Contact a supervisor immediately.
4.13 Connect raw milk hose inside and out.
4.14 Turn on receiving pump and begin distributing raw milk into desired tank.

4.15 Record raw milk amount (gallons and pounds) on Manifest. Record date and sign your name.
4.16 Keep the #2 white copy, present the rest to the truck driver. Take #2 form to QC.
4.17 Flush lines with 5 gallons water.
4.18 Detach hoses.
4.19 Push water hose through to receiving bay and turn on water.
4.20 Wash receiving bay floor.
4.21 When finished turn off hose and wind up.
4.22 Replace hole cap.
4.23 Close and lock all doors to receiving bay.
4.24 On Monday take temperature sheet to QC.

5.0 MAINTANACE

5.1 See Chart 007
5.2 Check hose for rips, tears, and kinks. Replace yearly or as needed.
5.3 Replace pipe gaskets every 6 months
5.4 Check and replace agitator seal every 6 months.
5.5 Check 4 valves, 2 inlet and 2 outlet, replace O-rings and gaskets every 3 months.
5.6 Disassemble; check and clean parts of pump replace parts as needed. Clean pump stand, motor, inside and out.

6.0 RECORDKEEPING

6.1 Fill out temperature log 008. Deliver chart 008 to QC every Monday morning.
6.2 Fill Manifest form provide copy to QC.
6.3 Make note of the maintenance log 007.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department MANUFACTURING	Title **WESTFALIA MILK SEPARATOR/CLARIFIER #100004-1640692 RAW MILK SEPARATATION**	SOP Number 02-03.02
Prepared By/Date E.Dockerty 04/15/11		Effective Date 04/15/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 4/25/05

1.0 **OBJECTIVE**

Raw milk is transferred from the raw milk holding tanks and passes through the Westfalia milk separator/clarifier. This machine clarifies the milk as well as separates the cream from the skim portion of the milk. From this point the skim milk and cream may be recombined and sent to the staging vats for further processing.

2.0 **MATERIALS**

2.1 Production schedule.

3.0 **HAZARDS**

3.1 Care should be taken to keep machine in good operating condition.

3.2 Proper lifting technique should be used when lifting and installing bowl ring and cover.

3.3 Care should be taken to prevent pinching fingers when assembling bowl ring.

3.4 Ensure Separator/ Clarifier has been put together properly.

.1 Fast moving parts could be a hazard if not properly attached or secured.

4.0 **PROCEDURE**

4.1 Fill bowl with water and turn machine on.

4.2 Turn agitator on in raw tanks. Allow agitator to run for approximately 15 minutes to ensure milk fat is fully mixed into raw milk.

4.3 Must wait for machine to reach 6,000 rpm's before running product.

4.4 Determine what product must be made first and calculate the measurement needed to make this product.

4.5 Add sanitizer, (chlorbac @ 1 ounce) mix the sanitizer with warm water in a 5# cottage bucket and pour into top of separator.

4.6 Make all necessary connections, routing the raw milk, skim, and cream to correct destinations.

4.7 Open valve to raw tank and turn on separator feed pump. Feed pump should run at full speed (100 % output)

4.8 As milk flows through machine, adjust skim micro screw to reach 75 PSI on gauge. The first milk through after sanitizing should go down the drain.

.1 Ensure all sanitizer is drained, contamination of the milk could occur.

4.9 Turn cream 3-way valve to direct cream to cream vat.

4.10 Turn skim 3-way valve to direct skim to final destination.

4.11 Slowly adjust cream micro screw. Micro screw may be adjusted depending on the time of year, but generally left around 10.

4.12 Readjust skim screw to make sure that the PSI gauge is at 75.

.1 If set too high, separator will overflow

.2 If set too low, separator will begin to form butter.

.3 If a plug up occurs:

.1 Flush with hot water for 10 minutes.

.2 Then flush with cool water to reduce temperature

.3 Restart process.

4.13 After separating desired amount of milk, close valve to raw milk tank.

4.14 Remove end cap and flush line with warm water.

4.15 Turn 3-way valves (cream & skim) to direct water/milk down drain.

4.16 Back off cream screw to number 10 and turn in skim screw to ~75 psi on gauge. This will flush out cream and prevent the machine from plugging up.

4.17 Back off skim screw and continue to flush water till next batch.

5.0 **MAINTENANCE**

5.1 Westphalia contact is 800.509.9299 for parts and service.

5.2 Check clutch pads for excessive wear once per year. If pad is worn to rivet then it must be replace.

.1 Record date of replacement on side of separator (electrical box) and on Chart 023.

5.3 Check brake pads for excessive wear once per year. Replace as needed. Record on Chart 023.

5.4 Check oil level from sight glass daily. Should be half covered. If too full then must drain off oil.

.1 To drain off oil, loosen drain plug on west side of separator.

.2 Oil is 80 weight gear lube. Should be changed every 2-3 years.

.3 Note: An abrupt increase in oil level often indicates that water has gotten in. If this is the case, the oil must be changed.

5.5 Observe for wear on separator parts as you assemble and disassemble daily. Record any changes on chart 023.

5.6 Change bearings every 10 years as a precaution. Record date of change in separator chart 023.

5.7 Maintain spare parts inventory in room 158.

6.0 **RECORD KEEPING**

6.1 Milk separator Maintenance task chart 023.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department MANUFACTURING	Title MILK AND CHEESE MIXES	SOP Number 02-13-01
Prepared By/Date E. Dockerty 05/20/11		Effective Date 5/20/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Milk mixes are produced on an as need basis. Various milk products are made with different specifications, care should be taken to ensure the proper levels of quality are upheld. Raw milk and various materials are combined and then sent to the pasteurizer.

2.0 **MATERIALS**

- 2.1 Production Schedule
- 2.2 Dust mask
- 2.3 Step ladder
- 2.4 Calculator
- 2.5 Carts
- 2.6 Scoop
- 2.7 Buckets
- 2.8 Immersion blender
- 2.9 Scale

3.0 **HAZARDS**

- 3.1 Heavy lifting
- 3.2 Ladders
- 3.3 Steam

4.0 **PROCEDURE**

- 4.1 Determine which mix is to be made.
- 4.2 Verify available ingredients and record milk fat percentage.
- 4.3 Enter specifications of available ingredients into Easy Dairycalc with amounts and mix type to be produced.
  - .1 To use Easy Dairycalc
    - .1 Enter the P drive.
    - .2 Select Dairycalc.
    - .3 Click “Babcock milk and cheese formulas 8-20-2001”.
    - .4 Input the specifications of mix.
    - .5 Ensure accuracy of target percentages by taking into account water corrections and shortages that may occur during the transferring of liquids.
    - .6 Record any variations or changes.
    - .7 Print off formulation sheet.
    - .8 Close program without saving changes.
- 4.4 Measure milk and water

.1 Measuring liquids in the prep tank you make use the gauge on the left of the tank
.2 When measuring liquids from process tanks 1-5, use measuring stick.
.1 Measuring stick is located on process tanks 5
.2 Record current level of liquid.
.3 Use black binder (located behind LACTICHECK) to determine the number of inches required per pound or gallons needed for the mix.
.4 Use calculator to ensure accuracy.
.5 Pump desired amount of milk out of process tanks into prep tank.
.6 Ensure enough milk is transferred to account for any shortages that may occur in the transfer of liquids.
.7 Wash measuring stick according to in COP tanks and return to hanging on process tank 5.
.3 Make necessary connections to sanitize lines with CIP.
.4 Sanitize flex tubing according to SSOP 03-09.

4.5 Add cream.
.1 Use measuring methods from above (step 4.4.2).
4.6 Turn agitators on low.
4.7 Blend.
4.8 Test milk on LACTICHECK.
.1 If milk is within guidelines proceed to step 4.9.
.2 If milk is NOT within acceptable guideline. Consult a supervisor to determine proper steps before sending milk mix to pasteurizer.
4.9 Send to pasteurizer.

5.0 **MAINTENANCE**
5.1 None

6.0 **RECORD KEEPING**
6.1 Production schedule
6.2 Production book.
6.3 Formulation sheet.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 4
Department MANUFACTURING	Title **PASTEURIZER START UP AND OPERATING PROCEDURE AND PASTEURIZER MAINTENANCE**	SOP Number 02-01.02
Prepared By/Date C. Peters 03/10/11		Effective Date 03/10/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 3/21/05

1.0 OBJECTIVE

All of the dairy products produced at the Babcock Hall Dairy Plant are pasteurized through our HTST (High Temperature Short Time) pasteurizer. The facility follows guidelines set forth in Pasteurized Milk Ordinance 2007 (PMO) for pasteurization of milk. This equipment is inspected quarterly by the WDA to insure accuracy and that all product is properly processed.

2.0 MATERIALS

2.1 Parts Inventory

2.2 STLR (Safety Thermal Limit Recorder) Charts

2.3 QC Sample Syringe

3.0 HAZARDS

3.1 Steam

3.2 Hot liquids

3.3 Hot pipes

4.0 PROCEDURE

1. Check and verify all pipes and vacuum caps are installed.
2. Verify all seals are in tact and document on STLR chart. If seals are **not** in tact, inspector must be called immediately and QC must run phosphates test on all products until inspector gives approval.
3. Put on proper safety attire, such as safety glasses and gloves, if necessary.
4. Place STLR Charts into pasteurizer panel. Responsible personnel label the charts with the date, signature, plant name and location on the chart.
5. Turn on the water supply to the hot water bath to ensure that it is filled properly, then shut off valve.
6. From panel, turn pasteurizer on.
7. Turn steam valve on.

8. Run cut in and cut out temperature checks for the highest temperature and lowest temperature products that are run that day. Record the cut in/out location and digital (dart) temperature on the STLR chart. Cut in temperature must be higher than the cut out temperature. If it is lower than cut out, contact supervisor immediately, inspector must be called and QC must run phosphatase tests on all products until inspector gives approval.
9. Set panel to the proper processing mode according to the product that is being run. Each product has a predetermined pasteurization temperature and time. All times are set the same at a minimum of 15 seconds. The time is based on the inspector's test results.
10. The following are the product temperature setting/cutout (degrees F):

    Note: DO NOT adjust temperature setting without supervisor approval.

    a. Mixes/Sour Cream – 191/183
    b. Chocolate Milk – 186/167
    c. Half and Half – 181/167
    d. Skim and 2% - 181/162
    e. Strawberry – 190/183
    f. Whole – 181/162
    g. Cheese Milk – 165/162
    h. Cream for Butter – 195/187
11. If the cut in temperature is lower than cut out or if the operating point is atypical contact supervisor.
12. Adjust pressure on homogenizer.
    a. Adjust the second stage first. First number is the second stage (psi). Second number is the total of the first and second stage. 500/2600 – whole, 2%, strawberry, mixes, sour cream, 1500 first stage-half and half, 2000 first stage skim milk, and run pressure at zero for cream, cheese milk and chocolate milk.

    Note: The homogenizer rests at 350, therefore, when adjusting pressure set to appropriate number plus 350.
13. When product temperature stabilizes, record digital temperature (dart) onto indicating temperature on chart.
14. Run out sanitizer solution to filling machine and flo-verter two. Flush with water.
15. It currently takes approximately 120 seconds to flush out system. This time is checked by the inspector 4 times a year.
16. Pump in product and flush out water. Wait until Opteck meter shows correct solid amount, when water is flushed out, send pasteurized product to desired location. **Note: There may be certain order to run products.**

a. Any industry projects or allergen products must be run last, or cleaning process must take place after these runs are completed.

b. When organic products are run, they must have a cleaning process done before and after run.

17. For every batch run, the STLR chart should be labeled with the product name, the number of pounds of product, and the cut in and cut out temperatures.

18. Take QC sample on first product run using syringe, by doing the following steps:

a. Use an alcohol swab and clean needle of syringe

b. Use another alcohol swab to clean the outside of the duct where the sample is taken from

c. Look for hole that has not been used (white area)

d. Place syringe all the way in and extract sample

e. After sample is extracted, label syringe with the date, name of product, time extracted.

f. Next, fill out chart for QC sample removal, Chart 001, with date, product name, time sample is removed. (This task should be performed daily).

g. Put sample in QC lab cooler/refrigerator in Room 146.

19. At end of run flush out product with water.

20. Reversed start up procedure to shut system down.

5.0 **MAINTENANCE**

5.1 Record any tests performed, various changes of equipment, inspectors comments, oil changes, rotor change, opening of plates, etc. on appropriate chart.

5.2 Circulate acid solution through hot water bath every 3 weeks, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 002.

5.3 Circulate acid solution through chilled water plates as needed or once per year, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 004.

5.4 Change oil in timing pump and drive once per year, record on Chart 004.

5.5 Change tri clamp gaskets monthly, record on Chart 003.

5.6 Open plates up to clean and inspect monthly. Check condition on plate gaskets and record on chart 003.

5.7 Change plate gaskets every 3 or 4 years, record on Chart 004.

5.8 When tightening up plates the measurement from end to end should be 22.25 to 22.5 inches. Record measurement and date on appropriate chart. Should be just tight enough so that plates do not leak.

5.9 Open up homogenizer to clean and inspect monthly. Record on Chart 003. Replace gaskets and inspect valves and seats for wear. Record any non gasket part changes. Change homogenizer oil as needed. Check sight glass for level. Drain out water from oil as needed using valve on back of homogenizer.

5.10 Maintain parts inventory of pasteurizer and homogenizer. Order as needed.

5.11 Change air filter on blow out once per week. Record on Chart 002.

5.12 Perform leak detector/pinhole test annually. Test performed by outside contractor, reports are filed in pasteurizer maintenance file.

6.0 **RECORD KEEPING**

6.1 This SOP requires the use of Chart 001, 002, 003 and 004.

6.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in the Pasteurizer Maintenance file.

6.3 STLR charts are given to the supervisor for review that day, and filed with QC for at least duration of the shelf life for the appropriate product.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Manufacturing	Title Federal Filler- Milk Bottle Production	SOP Number 02.05.02
Prepared By/Date E. Dockerty 4/08/11		Effective Date 4/08/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 7/26/2007

1.0 OBJECTIVE

Processed milk is packaged into ½ pint, pint, quart, and ½ gallon plastic bottles. Bottles are placed into milk crates and shipped out daily to our customers.

2.0 MATERIALS

2.1 Labeled and code dated plastic bottles
2.2 Colored bottle caps
2.3 Record materials
2.4 Production schedule

3.0 HAZARDS

3.1 Keep hands and loose clothing away from moving parts while in operation.
3.2 Heavy lifting.

4.0 PROCEDURE

4.1 Set Up

.1 Every day the surge tank should be full of Octave sanitizer from the previous wash cycle.
.2 Open filler valves and allow sanitizer to drain onto floor.
.3 Ensure all of the Octave Sanitizer has been drained from balance tank.
.4 Accept milk from pasteurizer.
.5 Spray filler nozzles with Octave sanitizer after each change over and periodically in between runs. Also if nozzles are touched at any time they must be sanitized with Octave sprayer.

4.2 Production

.1 Install gray bottle adapters to match bottle size.
.2 Run the first 12 bottles through the machine without code date and dispose of immediately.
.3 Sanitize nozzles with Octave Sprayer.
.4 Put color coded caps into cap hopper.

Brown	Chocolate
Red	Homo
Blue	2%
Pink	Skim
Orange	½ and ½

.5 Start up filler and adjust speed.
.6 Turn bottle wash on if filling ½ gallons.

.7 Three samples must be collected from each product run. Two at the beginning of each run and the final bottle at the end of each run. Place all samples in dated case against the right cooler wall. QC will come get two and the last is a library sample.

.1 Library samples should be kept for 30 days and disposed of after that time period.

.8 Throughout production inspect for the following

.1 Check cap placement to ensure there are no leaks and the seal is good.

.2 Check to ensure labels, code date are clear and correctly located.

.3 Regularly sanitize with Octave sprayer

.4 If problems are occurring shut down the machine before making any adjustments.

.5 NEVER cap bottles by hand! If bottle is missing a cap, dispose of immediately.

.9 Store all full cases in cooler according to production date. Store all partial cases on right hand side of cooler for the dairy store.

.10 Record amounts packaged at end of production on Production Report chart 0019.

4.3 Change Over

.1 Switch gray bottle adapters to match bottle size.

.2 Ensure each valve is empty of previous product.

.3 Change color cap as needed, discard any used caps.

.4 Close valve to filler.

.5 Wash down filler area with Octave sprayer sanitizer.

.6 Accept milk from pasteurizer.

.7 Load 12 bottles with no date or label, run test batch, carefully monitor process for changes. Make necessary changes. Dispose of bottles.

5.0 MAINTENANCE

5.1 Perform weekly maintenance tasks as indicated on chart 016.

5.2 Check parts and order inventory as needed. Record on chart 016.

5.3 Lubricate filler according to lubrication chart. Record on chart 017

5.4 Check operation of safety switches weekly and record on chart 016.

5.5 Perform weekly maintenance cleanings to Filler and record on chart 018.

5.6 Report any mechanical problems as they occur.

6.0 RECORD KEEPING

6.1 Fill out part inventory chart 016 as needed.

6.2 Fill out lubrication chart 017 as needed.

6.3 Fill out maintenance cleaning chart 018 as needed.

6.4 Fill out production chart 019 daily.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 1
Department Storage	Title **Milk Bottle Handling and Storage**	SOP Number 07-03
Prepared By/Date M. Shuda 7/1/11		Effective Date 7/1/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 OBJECTIVE

The goal is to get the milk bottles to the Federal Filler for bottling in a sanitary manner.

2.0 MATERIALS

2.1 Pallet Jack

2.2 Plastic Skids

3.0 HAZARDS

3.1 Possible contamination of bottles or bottle caps

4.0 PROCEDURE

4.1 Check production sheet to see how many bottles are needed for the day.

4.2 Bring corresponding number of pillows (packages of bottles) to room 156 for bottling. The number of bottles per pillow are as follows:

.1 Half gallons: 108 per pillow

.2 Quarts: 117 per pillow

.3 Pints: 227 per pillow

.4 Half pints: 240 per pillow

4.3 Bottles can be found on the loading dock and downstairs in room B153.

4.4 Before dumping bottles into the hopper, CHECK TO MAKE SURE NO PILLOWS HAVE BEEN OPENED. If there are any holes in the packaging, do NOT use.

4.5 Bottle caps are also located in the load out bay. They are brought in on an as need basis.

.1 Bottle caps must always be stored on pallets on the ground.

4.6 See SOP 02-05 Federal Filler- Milk Bottle Production for further instructions on the milk bottling procedure.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department MANUFACTURING/PRODUCTION	Title **BAG IN BOX FILLER PROCEDURE**	SOP Number 02-09.02
Prepared By/Date C. Peters 03/22/11		Effective Date 03/22/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 8/23/06

1.0 OBJECTIVE

The bag in box filler uses bags supplied by Scholle. The bags are 2.5 gallon and 5 gallon. Each bag must be filled in a sanitary manor and that the proper amount of product is filled into each bag without excessive air.

2.0 MATERIALS

2.1 2.5 Gallon Bags

2.2 5 Gallon Bags

2.3 Scale

2.4 Scholle Filler

2.5 Boxes

3.0 HAZARDS

3.1 Make sure that fingers are not in or around the filler valve components when operating.

4.0 PROCEDURE

4.1 Make correct number labels using Datamax label maker for whatever products are filled that day.

4.2 Ensure that the filler and pipeline has been sanitized before use.

4.3 Set up weights for either the 2.5 or 5 gallon size.

.1 One large weight for the 2.5 gallon.

.2 Two large weights for the 5 gallon size.

4.4 Make sure all product is run up to filler surge before starting. The exception to this is when funnel is used instead of filler surge.

4.5 Turn bag in box air valve switch located on the wall behind the Federal Filler.

4.6 Apply label to bag.

4.7 Start filling bag and manually shut off after a few pounds of product is filled. Dump or rework this product.

4.8 Fill a bag and push out air before applying lid. Weigh the bag. See chart for correct weights. Adjust weight by sliding weight inside filler. Slide to the right for heavier fills.

Size	Weight (milk) in Pounds	Weight (Mix) in Pounds
2.5 gallon Bag	21.5	23.5
5 Gallon Bag	43.0	47.0

4.9 Fill sample bags set up by quality control and place these inside milk cooler.

4.10 When completed with all bag in box fills for the day turn air valve switch to close off supply.

4.11 Disassemble filler and wash in COP tank. Wash filler table and area manually.

4.12 Close and lock conveyor door leading into milk cooler.

4.13 Reassemble filler after parts ore cleaned making sure to spray lube onto moving parts.

4.14 Keep track of inventory of bags and order as needed.

5.0 **RECORD KEEPING**

5.1 None

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department Storage	Title **Temperature Controlled Rooms**	SOP Number 07-02
Prepared By/Date M. Shuda 06/01/11		Effective Date 06/01/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

The goal is to maintain the temperature controlled rooms in the plant so that finished products can be stored. Different coolers vary in temperature to allow for a variety of safe and high quality products. The organization of each cooler also depends on product, and allows for a systematic approach to efficient storing and shipping.

2.0 **MATERIALS**

2.1 Locks and keys for coolers
2.2 Gloves
2.3 Jacket
2.4 Earmuffs
2.5 Carts
2.6 Cases

3.0 **HAZARDS**

3.1 Wear proper PPE (Personal Protective Equipment) when entering coolers and freezers.
3.2 Crates and cases must be stacked at appropriate heights.

4.0 **PROCEDURE**

4.1 Upon arrival to plant, supervisor should unlock all freezers and coolers except freezer 22 and cooler 30. These two rooms are unlocked as needed.

.1 All fulltime plant employees should also have access to keys for freezers and coolers.

4.2 Temperatures of freezers and coolers are to be monitored by quality control.

.1 Temperatures are taken twice every day and recorded in Chart 033.

.2 Alert supervisor if cooler temperature is significantly outside of its desired range. (Note: Temperatures will fluctuate do to doors being opened while in use. It is not necessary to notify supervisor if this is the case.)

.3 Methods of obtaining temperatures should be standardized. This allows for consistent records and trends.

4.3 **When coolers and freezers are not in use, doors must be COMPLETELY shut. Make sure that doors are latched correctly.**

4.4 Storage procedures for cheese coolers can be found on separate SOP.

4.5 Ice cream freezers:

.1 When ice cream is first made, it is taken to freezer 162 and held overnight.

.2 The following morning, the ice cream (with the exception of scrounds which are stored in freezer 162) is transferred to freezers 22 and/or 156A.

.3 Ice cream should be stored in order of dates of production. The most recent goes to the back, the least recent in the front.

.4 Return empty carts to freezer 162 when not in use.

4.6 Milk coolers:

.1 After milk is bottled, it is loaded onto cases in cooler 152.

.2 Milk is sorted according to its type, volume, and production date. Cases of pints and quarts are stacked on the north side of the cooler; cases of half pints and half gallons are stacked on the south side. All stacks should be no higher than six cases; the bottom case must be empty.

.3 The top case of every row is labeled with a date of production tag. Similar products with different dates of production are placed in separate rows.

.4 Milk for the store is taken to cooler 144E.

4.7 All freezers and cheese cooler 25 are hooked up to an alarm system that is set off if the temperature is out of its specific range.

.1 In case of refrigeration system not working on a weekend/after hours when plant is empty, a message is sent to UW Security. They are responsible for contacting plant manager and steamfitters at UW Madison Physical Plant.

4.8 All freezer and cooler doors must be locked at the end of the day.

4.9 Complete cooler and freezer descriptions are as follows:

Freezer/Cooler No.	Description	Temperature Range (˚F)
22	Ice cream storage freezer (downstairs)	<-20
25	Cheese cooler (downstairs)	37-40
134B	Ice cream storage cooler (upstairs)	50-55
144E	Milk cooler for store	35-40
152	Milk cooler (upstairs)	35-40
156A	Ice cream storage freezer (upstairs)	<-20
162	Ice cream 24 hour holding freezer (upstairs)	<-20
164	Cheese cooler (upstairs)	35-40
166A	Cheese cooler (upstairs)	35-40
166B	Warm room (upstairs)	70-75
166D	Cheese cooler (upstairs)	35-40
166E	Cheese cooler (upstairs)	35-40
166F	Cheese cooler (upstairs)	35-40

5.0 **MAINTENANCE**

5.1 Clean coolers and freezers as needed. Document any cleaning on Chart 033.

5.2 Periodically check that seals around doors are in good condition.

5.3 Cleaning freezers requires advanced planning and complete shut-down of freezer being cleaned. This should be done during off-season.

5.4 Make use of SSOP 03-15 for cleaning evaporators in coolers.

6.0 **RECORD KEEPING**

6.1 This SOP requires the use of Chart 033. It should be located on or next to every temperature controlled room door and replaced as needed. Quality control is responsible for the maintenance of Chart 033.

Ice Cream Making SOPs

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Receiving	Title **Raw Milk Handling**	SOP Number 04-02.02
Prepared By/Date E. Dockerty 3/09/11		Effective Date 03/17/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 10/10/05

1.0 OBJECTIVE

Raw milk is received on an as need basis. Care must be taken to ensure that the highest quality raw milk possible is received.

2.0 MATERIALS

2.1 Sample Vials.
2.2 Thermometer
2.3 White bucket for sample and temperature recording
2.4 Record materials
2.5 Cooler Bag

3.0 HAZARDS

3.1 Slippery Floors
3.2 Truck
3.3 Truck ladder

4.0 PROCEDURE

4.1 Determine which tank raw milk will go into (RT1 or RT2)
4.2 Connect elbow joint to intake valve on correct tank.
4.3 Turn switch on control panel.
4.4 Ensure that chilled water is turned on for both holding tanks.
4.5 Turn on agitator on tank raw milk is entering.
4.6 When milk truck arrives collect 2 load samples. Date each sample and place into cooler bag.
4.7 Receive all farm raw milk samples date and place in cooler bag.
4.8 Collect a small raw milk sample in white bucket. Measure and record temperature on chart 008.
4.9 Take cooler bag and samples to QC for testing.
4.10 Wait for test results from antibiotic test before pumping milk.
4.11 If a negative test result is received, proceed to step 4.13.
4.12 If a positive is received on sample. DO NOT PUMP milk into tanks. Contact a supervisor immediately.
4.13 Connect raw milk hose inside and out.
4.14 Turn on receiving pump and begin distributing raw milk into desired tank.

4.15 Record raw milk amount (gallons and pounds) on Manifest. Record date and sign your name.
4.16 Keep the #2 white copy, present the rest to the truck driver. Take #2 form to QC.
4.17 Flush lines with 5 gallons water.
4.18 Detach hoses.
4.19 Push water hose through to receiving bay and turn on water.
4.20 Wash receiving bay floor.
4.21 When finished turn off hose and wind up.
4.22 Replace hole cap.
4.23 Close and lock all doors to receiving bay.
4.24 On Monday take temperature sheet to QC.

5.0 MAINTANACE

5.1 See Chart 007
5.2 Check hose for rips, tears, and kinks. Replace yearly or as needed.
5.3 Replace pipe gaskets every 6 months
5.4 Check and replace agitator seal every 6 months.
5.5 Check 4 valves, 2 inlet and 2 outlet, replace O-rings and gaskets every 3 months.
5.6 Disassemble; check and clean parts of pump replace parts as needed. Clean pump stand, motor, inside and out.

6.0 RECORDKEEPING

6.1 Fill out temperature log 008. Deliver chart 008 to QC every Monday morning.
6.2 Fill Manifest form provide copy to QC.
6.3 Make note of the maintenance log 007.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department MANUFACTURING	Title **WESTFALIA MILK SEPARATOR/CLARIFIER #100004-1640692 RAW MILK SEPARATATION**	SOP Number 02-03.02
Prepared By/Date E.Dockerty 04/15/11		Effective Date 04/15/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 4/25/05

1.0 **OBJECTIVE**

Raw milk is transferred from the raw milk holding tanks and passes through the Westfalia milk separator/clarifier. This machine clarifies the milk as well as separates the cream from the skim portion of the milk. From this point the skim milk and cream may be recombined and sent to the staging vats for further processing.

2.0 **MATERIALS**

2.1 Production schedule.

3.0 **HAZARDS**

3.1 Care should be taken to keep machine in good operating condition.

3.2 Proper lifting technique should be used when lifting and installing bowl ring and cover.

3.3 Care should be taken to prevent pinching fingers when assembling bowl ring.

3.4 Ensure Separator/ Clarifier has been put together properly.

.1 Fast moving parts could be a hazard if not properly attached or secured.

4.0 **PROCEDURE**

4.1 Fill bowl with water and turn machine on.

4.2 Turn agitator on in raw tanks. Allow agitator to run for approximately 15 minutes to ensure milk fat is fully mixed into raw milk.

4.3 Must wait for machine to reach 6,000 rpm's before running product.

4.4 Determine what product must be made first and calculate the measurement needed to make this product.

4.5 Add sanitizer, (chlorbac @ 1 ounce) mix the sanitizer with warm water in a 5# cottage bucket and pour into top of separator.

4.6 Make all necessary connections, routing the raw milk, skim, and cream to correct destinations.

4.7 Open valve to raw tank and turn on separator feed pump. Feed pump should run at full speed (100 % output)

4.8 As milk flows through machine, adjust skim micro screw to reach 75 PSI on gauge. The first milk through after sanitizing should go down the drain.

.1 Ensure all sanitizer is drained, contamination of the milk could occur.

4.9 Turn cream 3-way valve to direct cream to cream vat.

4.10 Turn skim 3-way valve to direct skim to final destination.

4.11 Slowly adjust cream micro screw. Micro screw may be adjusted depending on the time of year, but generally left around 10.

4.12 Readjust skim screw to make sure that the PSI gauge is at 75.

.1 If set too high, separator will overflow

.2 If set too low, separator will begin to form butter.

.3 If a plug up occurs:

.1 Flush with hot water for 10 minutes.

.2 Then flush with cool water to reduce temperature

.3 Restart process.

4.13 After separating desired amount of milk, close valve to raw milk tank.

4.14 Remove end cap and flush line with warm water.

4.15 Turn 3-way valves (cream & skim) to direct water/milk down drain.

4.16 Back off cream screw to number 10 and turn in skim screw to ~75 psi on gauge. This will flush out cream and prevent the machine from plugging up.

4.17 Back off skim screw and continue to flush water till next batch.

5.0 **MAINTENANCE**

5.1 Westphalia contact is 800.509.9299 for parts and service.

5.2 Check clutch pads for excessive wear once per year. If pad is worn to rivet then it must be replace.

.1 Record date of replacement on side of separator (electrical box) and on Chart 023.

5.3 Check brake pads for excessive wear once per year. Replace as needed. Record on Chart 023.

5.4 Check oil level from sight glass daily. Should be half covered. If too full then must drain off oil.

.1 To drain off oil, loosen drain plug on west side of separator.

.2 Oil is 80 weight gear lube. Should be changed every 2-3 years.

.3 Note: An abrupt increase in oil level often indicates that water has gotten in. If this is the case, the oil must be changed.

5.5 Observe for wear on separator parts as you assemble and disassemble daily. Record any changes on chart 023.

5.6 Change bearings every 10 years as a precaution. Record date of change in separator chart 023.

5.7 Maintain spare parts inventory in room 158.

6.0 **RECORD KEEPING**

6.1 Milk separator Maintenance task chart 023.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department MANUFACTURING	Title **ICE CREAM MIX**	SOP Number 02.12.02
Prepared By/Date E. Dockerty 06/22/11		Effective Date 07/21/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 04/15/05

1.0 OBJECTIVE

Mixes are prepared on an as need basis. Special care must be taken to ensure that each ingredient is accurately measured. Once finished it is sent to the pasteurizer for further processing.

2.0 MATERIALS

2.1 Production schedule
2.2 Dust mask
2.3 Step Ladder
2.4 Razor Blade
2.5 Mixing Rod
2.6 Calculator
2.7 Tri Blender
2.8 Carts
2.9 Scoop
2.10 Scale
2.11 White Bucket

3.0 HAZARDS

3.1 Ladder
3.2 Heavy lifting
3.3 Steam
3.4 Pipes

4.0 PROCEDURE

4.1 Determine which mix and the amount to be made.
4.2 Verify available ingredients and record milk fat percentages for all milk ingredients.
4.3 Enter specifications of available ingredients into Easy Dairycalc with amounts and mix type to be produced.
.1 To use Easy Dairycalc
.1 Enter the P drive.
.2 Select Dairycalc.
.3 Click “Babcock Mixes41310”.
.4 Input the specifications of mix.
.5 Ensure accuracy of target percentages by taking into account water corrections and shortages that may occur in the transferring of liquids.

.6 Record any variations or changes.
.7 Print off formulation sheet.
.8 Be sure to check lot numbers.
.9 Close program without saving changes.

4.4 Add milk and water.
.1 To measure liquids in prep tank use the gauge to the left of the tank to measure levels.
.2 To measure milk levels in vats 1-5. Use measuring stick.
.1 Measuring stick is located hanging on Vat 5.
.2 Record current level of liquid.
.3 Use white binder and the calculator to determine the number of inches for specific amount of required pounds or gallons for mix.
.4 Pump milk until desired level is achieved.
.5 Ensure enough milk is transferred to allow for any shortages that may occur in the transfer of liquids.
.6 Wash measuring stick according to SSOP and return to hanging location.
.3 Make necessary connections and sanitize lines with CIP.
.4 Sanitize flex tubing according to SSOP 03-09.

4.5 Turn agitator on high.
4.6 Measure dry ingredients into a white bucket.
.1 Use a clean bucket and scoop. Ensure that after each use the scoop and bucket are properly cleaned according to SSOP 03-13.
4.7 Make proper connections from prep tank to tri blender (2 flex hoses).
4.8 Plug in tri blender and turn on.
4.9 Open Valve and ensure flow makes a complete loop.
4.10 Blend in pre-weighed dry goods.
.1 To ensure safety always wear a dust mask when using the tri blender.
.2 To prevent tri blender from clogging, stabilizer and gelatin must not be added all at once.
.1 Blending in with dry milk helps to ensure fewer clogs.
.3 Caution: Some ingredients must NOT be used in tri blender
.1 Corn syrup
.2 Sugar
.3 The use of a mixing rod can be helpful to assist in the event of a clog.
.4 Be sure to use aids to assist with heavy lifting.
.1 Carts should be used in the transportation of dry good from room 154 to tri blender.
.2 Use the step ladder when filling the tri blender. Cut bags open before mounting the step ladder. Addition cuts may be made on the bottom of the bag to assist in the outflow.

4.11 Unplug and disassemble tri blender.
4.12 Place funnel in COP tank and wash according to SSOP 03-10.
4.13 Turn agitator to low.
4.14 Close sweet-water valves.
4.15 Open steam valves and heat milk mixture
.1 For cream 95 to 105 degrees

.2 For butter 100 to 120 degrees.

4.16 Add cream or butter

4.17 Add sugar or cornstarch.

4.18 Make necessary connections to pasteurizer and pump mix out.

4.19 Turn off agitator.

4.20 Once finished, sign the formula sheet and place into white log book.

5.0 **RECORD KEEPING**

5.1 Formulation sheet.

5.2 Production Book.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 4
Department MANUFACTURING	Title **PASTEURIZER START UP AND OPERATING PROCEDURE AND PASTEURIZER MAINTENANCE**	SOP Number 02-01.02
Prepared By/Date C. Peters 03/10/11		Effective Date 03/10/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 3/21/05

1.0 OBJECTIVE

All of the dairy products produced at the Babcock Hall Dairy Plant are pasteurized through our HTST (High Temperature Short Time) pasteurizer. The facility follows guidelines set forth in Pasteurized Milk Ordinance 2007 (PMO) for pasteurization of milk. This equipment is inspected quarterly by the WDA to insure accuracy and that all product is properly processed.

2.0 MATERIALS

2.1 Parts Inventory

2.2 STLR (Safety Thermal Limit Recorder) Charts

2.3 QC Sample Syringe

3.0 HAZARDS

3.1 Steam

3.2 Hot liquids

3.3 Hot pipes

4.0 PROCEDURE

1. Check and verify all pipes and vacuum caps are installed.
2. Verify all seals are in tact and document on STLR chart. If seals are **not** in tact, inspector must be called immediately and QC must run phosphates test on all products until inspector gives approval.
3. Put on proper safety attire, such as safety glasses and gloves, if necessary.
4. Place STLR Charts into pasteurizer panel. Responsible personnel label the charts with the date, signature, plant name and location on the chart.
5. Turn on the water supply to the hot water bath to ensure that it is filled properly, then shut off valve.
6. From panel, turn pasteurizer on.
7. Turn steam valve on.

8. Run cut in and cut out temperature checks for the highest temperature and lowest temperature products that are run that day. Record the cut in/out location and digital (dart) temperature on the STLR chart. Cut in temperature must be higher than the cut out temperature. If it is lower than cut out, contact supervisor immediately, inspector must be called and QC must run phosphatase tests on all products until inspector gives approval.
9. Set panel to the proper processing mode according to the product that is being run. Each product has a predetermined pasteurization temperature and time. All times are set the same at a minimum of 15 seconds. The time is based on the inspector's test results.
10. The following are the product temperature setting/cutout (degrees F):

    Note: DO NOT adjust temperature setting without supervisor approval.

    a. Mixes/Sour Cream – 191/183
    b. Chocolate Milk – 186/167
    c. Half and Half – 181/167
    d. Skim and 2% - 181/162
    e. Strawberry – 190/183
    f. Whole – 181/162
    g. Cheese Milk – 165/162
    h. Cream for Butter – 195/187
11. If the cut in temperature is lower than cut out or if the operating point is atypical contact supervisor.
12. Adjust pressure on homogenizer.
    a. Adjust the second stage first. First number is the second stage (psi). Second number is the total of the first and second stage. 500/2600 – whole, 2%, strawberry, mixes, sour cream, 1500 first stage-half and half, 2000 first stage skim milk, and run pressure at zero for cream, cheese milk and chocolate milk.

    Note: The homogenizer rests at 350, therefore, when adjusting pressure set to appropriate number plus 350.
13. When product temperature stabilizes, record digital temperature (dart) onto indicating temperature on chart.
14. Run out sanitizer solution to filling machine and flo-verter two. Flush with water.
15. It currently takes approximately 120 seconds to flush out system. This time is checked by the inspector 4 times a year.
16. Pump in product and flush out water. Wait until Opteck meter shows correct solid amount, when water is flushed out, send pasteurized product to desired location. **Note: There may be certain order to run products.**

a. Any industry projects or allergen products must be run last, or cleaning process must take place after these runs are completed.

b. When organic products are run, they must have a cleaning process done before and after run.

17. For every batch run, the STLR chart should be labeled with the product name, the number of pounds of product, and the cut in and cut out temperatures.

18. Take QC sample on first product run using syringe, by doing the following steps:

a. Use an alcohol swab and clean needle of syringe

b. Use another alcohol swab to clean the outside of the duct where the sample is taken from

c. Look for hole that has not been used (white area)

d. Place syringe all the way in and extract sample

e. After sample is extracted, label syringe with the date, name of product, time extracted.

f. Next, fill out chart for QC sample removal, Chart 001, with date, product name, time sample is removed. (This task should be performed daily).

g. Put sample in QC lab cooler/refrigerator in Room 146.

19. At end of run flush out product with water.

20. Reversed start up procedure to shut system down.

5.0 **MAINTENANCE**

5.1 Record any tests performed, various changes of equipment, inspectors comments, oil changes, rotor change, opening of plates, etc. on appropriate chart.

5.2 Circulate acid solution through hot water bath every 3 weeks, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 002.

5.3 Circulate acid solution through chilled water plates as needed or once per year, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 004.

5.4 Change oil in timing pump and drive once per year, record on Chart 004.

5.5 Change tri clamp gaskets monthly, record on Chart 003.

5.6 Open plates up to clean and inspect monthly. Check condition on plate gaskets and record on chart 003.

5.7 Change plate gaskets every 3 or 4 years, record on Chart 004.

5.8 When tightening up plates the measurement from end to end should be 22.25 to 22.5 inches. Record measurement and date on appropriate chart. Should be just tight enough so that plates do not leak.

5.9 Open up homogenizer to clean and inspect monthly. Record on Chart 003. Replace gaskets and inspect valves and seats for wear. Record any non gasket part changes. Change homogenizer oil as needed. Check sight glass for level. Drain out water from oil as needed using valve on back of homogenizer.

5.10 Maintain parts inventory of pasteurizer and homogenizer. Order as needed.

5.11 Change air filter on blow out once per week. Record on Chart 002.

5.12 Perform leak detector/pinhole test annually. Test performed by outside contractor, reports are filed in pasteurizer maintenance file.

6.0 **RECORD KEEPING**

6.1 This SOP requires the use of Chart 001, 002, 003 and 004.

6.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in the Pasteurizer Maintenance file.

6.3 STLR charts are given to the supervisor for review that day, and filed with QC for at least duration of the shelf life for the appropriate product.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 1
Department STORAGE	Title **PROCESS TANKS STORAGE DOCUMENTATION PROCEDURE**	SOP Number 07-01.01
Prepared By/Date E. Dockerty 05/27/11		Effective Date 5/27/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Process tanks are used for mix making and storage. Often process tanks are filled with milk, cream, or mixes and held for further use. To ensure freshness special steps must be taken to ensure proper documentation of each substance to be stored.

2.0 **MATERIALS**

2.1 Log book

2.2 Manila Tags

3.0 **HAZARDS**

3.1

4.0 **PROCEDURE**

4.1 Each product must be properly labeled for storage.

4.2 Every tank must have a label tag.

4.3 Each label tag must include:

.1 Name of storage container.

.2 Raw milk receiving date.

.3 Product type.

4.4 Quality Control will also label each tag with

.1 Milk fat percentages

.2 Non Fat solid percentages.

4.5 At the end of the working day the contents of each tag must be documented in the log book according to date received.

5.0 **MAINTENANCE**

6.0 **RECORD KEEPING**

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 5
Department MANUFACTURING/PRODUCTION	Title **ICE CREAM PRODUCTION PROCEDURE AND MACHINE MAINTENANCE**	SOP Number 02-02.02
Prepared By/Date C. Peters 4/18/11		Effective Date 418/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 4/15/05

1.0 OBJECTIVE

The ice cream mix is transformed from a liquid to a solid. Part of this process entails adding liquid ingredients on the front end and solid and liquid flavor ingredients on the back end. In the ice cream maker the mix temperature is drawn down to form ice crystals and air is pumped into the mix to cause overrun. The ice cream is packaged into various size containers and hardened.

2.0 MATERIALS

2.1 Flavors

2.2 Mix

2.3 Colors

2.4 Packaging supplies

2.5 Tools

2.6 Spare parts and gaskets

2.7 Scale

2.8 Carts

3.0 HAZARDS

3.1 **Freezer** - When changing dasher blades care should be taken to prevent contact with sharp edge. Removing dasher requires two people to prevent injury.

3.2 **Ingredient Feeder** - Pinch points include the two augers, and agitator. If augers or agitator become obstructed, turn off machine before unclogging.

3.3 Must unplug all machines (variegate pump, ingredient feeder) before servicing or cleaning.

3.4 If pumps or blades need to be taken apart, emergency stop should be hit.

3.5 **Do not run more than one allergenic ice cream flavor per day unless pre-approved by supervisor.**

4.0 **PROCEDURE**

4.1 Assemble positive front and rear pumps on freezer (if not already pre-assembled from the previous day).

4.2 Connect CIP pipelines and set up for washing.

4.3 To run CIP.

4.4 Determine what flavors and amount (package size) to run previous day. This is determined by the following:

.1 Look in freezer inventory.

.2 Discuss with Load out person.

.3 Check inventory from Excel file (under P: drive)

.4 Or as determined by supervisor.

4.5 Print off formula sheets for each flavor from appropriate excel file, Ice Cream Formulas Old (under P: drive). In an attempt to eliminate partial flavor containers, match up mix amounts with flavor container size whenever possible.

4.6 Print off all labels from Word file (Ice Cream Labels, under P: drive) as required from formula sheet. See quality control department for any label changes or for new labels.

.1 When printing change the date to the production date.

4.7 Sanitize pipe line from mix vat to flavor vat

.1 For sanitizer formula refer to SSOP 03-04

4.8 Sanitize outlet on mix storage tank.

.1 For sanitizer formula refer to SSOP 03-04

4.9 Hook up piping on freezer from CIP to production.

4.10 Hook up ingredient feeder and variegate pump as needed.

4.11 Sanitize flavor vats, lines, freezer, and ingredient feeder and variegate pump.

4.12 Sanitize tools from stainless sanitizer pail.

4.13 If vat has yellow tag, may proceed with production.

.1 If vat has a red tag

.1 Vat is out of spec, so vat must be adjusted and standardized by before any product is run.

.2 Determine how the vat is to be standardized.

A. If water is added. Operator must sign back of tag before continuing.

B. If mix needs to be sent back for solids. QC must release vat with a yellow tag.

4.14 After sanitizing, assure all sanitizer is drained from vat. Production may now proceed.

4.15 Pump required amount (from step 4.5) of mix to flavor vat from mix holding tanks. To measure mix use measuring stick relative to Ice Cream Mix Amount Chart (Chart 021) on wall.

4.16 Add required amount of flavors and colors to mix and blend in. Weigh the larger items (pails) and measure the smaller items.

4.17 Place flavor mix in both flavor vats (round and grey).

4.18 Flavor processing order is based on the following:

.1 Light flavors to stronger flavors (ex. vanilla to mint)

.2 Light colors to stronger colors (ex. vanilla to red).

.3 **Do not run more than one allergenic ice cream flavor per day unless pre-approved by supervisor** (Refer to SOP 02-11 – Allergens in Ice Cream Production).

4.19 Bring up all needed packaging supplies for the days run. Record all packaging material lot numbers used for production on formulation sheet.

4.20 Bring out all needed flavor ingredients for the ingredient feeder and variegate.

4.21 Consult flavor formulation sheet for correct variegate and flavor settings. Match up appropriate item numbers of ingredients and record lot numbers.

4.22 Label all ice cream containers and cases for that days run.

.1 Wash hands before handling the containers to avoid cross-contamination.

.2 Assure that the labels are placed on the container in clean manner (straight and even).

.1 3 Gallon Tubs: Labeled on the top and on the side

.2 Pints: Labeled on opposite sides for label and nutritional information.

.3 Scrounds: Labeled on front and right side of container.

4.23 Open vat valve and turn on centrifugal force pump.

.1 Press “Quick fill Select”

.2 Run out water.

.3 Push “Start”

4.24 See ingredient feeder setting chart to determine correct ingredient speed for each flavor (see Chart 025).

4.25 Add ingredients to ingredient feeder hopper.

4.26 Add variegate to funnel. See chart for variegate pump speed setting for each flavor (see Chart 025).

4.27 Begin rotor setting at 35-42 then reduce to 14 when the ice cream is no longer visible from infeed shoot.

4.28 When non-dilute ice cream starts coming out of hose, turn on ingredient auger and/or variegate to correct setting (depending on product being run).

.1 Turn variegate pump on and turn three way valve to send variegate to ice cream.

.2 The dilute ice cream is placed in a bucket and dumped (not reworked).

4.29 As soon as you start seeing ingredients and/or variegate come out end of hose, start packaging the ice cream.

4.30 Weigh 3 gallon tubs for overrun control.

.1 See Ice Cream Overrun Weight Chart (Chart 022) located on cabinet door.

4.31 Place packaged ice cream in freezing tunnel. When tunnel is full unload on shelves and carts.

.1 Place one flavor per cart.

.2 Rotate pints, scrounds, and 3 gallon tubs into previous inventory according to dates.

.3 Ice cream hardening takes place over night and in the morning the carts are moved to the appropriate area.

4.32 To ensure quality 2 samples must be taken.

.1 One scround should be packaged and set aside in hardening room for QC.

.2 A spatula test must be taken and placed in an aseptic bag for testing.

4.33 At end of run, push mix from lines with water. From time water is added to flavor vat you will get ~ 2.5 tubs ice cream. At this point run diluted ice cream onto floor.

4.34 On control panel, press “Purge Select”, then press “Hot Gas” five times separately, waiting a few seconds in between each selection for the hot gas to go into the machine.

4.35 Stop machine, and press “Flush” on control panel. Wait five minutes for system to flush, then press “Stop”.

4.36 Turn off mix feed pump (centrifugal).

4.37 Record production numbers and file formulation sheets. Update Ice Cream Processing Report (located on P: drive **and** hard copies). Record product run, date, and production numbers in the order that the products are run that day.

4.38 Count 3 gallon production.

4.39 On any partial containers of flavor ingredients, wash outside of pails, relid and tape any partial boxes.

4.40 Wash stainless trays once weekly or as needed.

4.41 Disassemble positive freezer pumps and manually wash. Leave disassembled till next production day (or reassemble after wash if time permits).

4.42 Check inventory of finished product to determine next production run. Assemble necessary flavor ingredients.

4.43 Communicate with mix maker what type of mix to produce next and how much.

4.44 Assemble ingredient feeder and variegate pump for next day's production.

5.0 MAINTENANCE

5.1 Sharpen freezer blades after every 165 hours in use, record in Chart 014.

5.2 Change gaskets and seals every two weeks or as needed, record in Chart 014.

5.3 Lubricate freezer, pumps and bearings as required, record in Chart 014.

5.4 Check Freon level in compressor room. Notify maintenance if low.

5.5 Keep inventory of all parts and order as needed

6.0 RECORD KEEPING

6.1 Update Ice Cream Processing Report daily (located on P: drive **and** hard copy). Record product run, date, and production numbers in the order that the products are run that day.

6.2 Update and file formulation sheets for products run that day.

6.3 Record any comments, equipment changes, etc. on Chart 014. All completed charts are located in the Ice Cream Machine Maintenance file.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department MANUFACTURING/PRODUCTION	Title **ALLERGENS IN ICE CREAM PRODUCTION**	SOP Number 02-11.02
Prepared By/Date C. Peters 4/14/11		Effective Date 4/14/2011
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 2/19/10

1.0 OBJECTIVE

On production days where more than one flavor is produced, we must be sure to run any product containing allergens(s) last, or there must be a complete clean up between production runs where non-allergenic containing foods are run after allergen containing foods. This, along with GMP compliance, will prevent possible carry over or cross-contamination of these ingredients into the next batch. After the last batch, the equipment must be cleaned according to proper sanitation procedures. There are 8 major food allergens: egg, milk, soy, wheat, fish or shellfish, peanuts and tree nuts. The law requires that any product containing these allergens must clearly identify the food source on the label for consumer safety.

2.0 MATERIALS

2.1 Flavors

2.2 Mix

2.3 Colors

2.4 Packaging supplies

2.5 Tools

3.0 HAZARDS

3.1 Cross-contamination of products containing food allergens

4.0 PROCEDURE

4.1 Determine production needs for days run.

4.2 Determine whether or not an ice cream flavor is considered an allergen. The formula sheet for the specific flavor will state if the product contains any type of allergen. This can be identified on the “Ice Cream Formula” spreadsheet located on the P: drive.

.1 Match up the appropriate item numbers of the ingredients, and record lot numbers onto formulation sheet.

.2 Only ingredients stated on ice cream flavor spreadsheet identified by item number are allowed in formulation.

4.3 If a flavor is identified as an allergen it must be scheduled as the last run of the day before cleanup.

4.4 **Do not** run more than one allergenic ice cream flavor per day unless pre-approved by supervisor.

4.5 Rework ice cream containing allergens may be placed into the same batch, otherwise it should be dumped.

4.6 All allergenic ice cream flavors produced for sale must contain a label showing ingredient statement and nutritional information. Label information regarding allergens is dictated by quality control.

4.7 After the last run of the day, ice cream machine and designated utensils shall be cleaned according to the sanitation procedure to avoid contamination from any type of food allergen.

5.0 MAINTENANCE

5.1 None

6.0 RECORD KEEPING

6.1 Update Ice Cream Processing Report daily (located on P: drive **and** hard copy). Record any product run, date, and production numbers in the order that the products are run that day. **Note the importance of recording the products run in the correct order.**

6.2 Update and file formulation sheets for products run that day.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department MANUFACTURING/PRODUCTION	Title **3 GALLON TUB CONSTRUCTION PROCEDURE AND MAINTENANCE**	SOP Number 02-10.02
Prepared By/Date C. Peters 03/22/11		Effective Date 03/22/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 4/15/05

1.0 OBJECTIVE

The 3 gallon ice cream tubs are assembled in the Dairy Plant as needed. The components for the 3 gallon ice cream tubs are purchased separately.

2.0 MATERIALS

2.1 Sidewalls

2.2 Bottoms

2.3 Top Rings

2.4 Lids

2.5 Tub Assembly Machine

2.6 Plastic Pallets

3.0 HAZARDS

3.1 Top and bottom rings have sharp edges – be careful not to cut your hand

4.0 PROCEDURE

4.1 Turn on radio.

4.2 Place side wall on assembler.

4.3 Put top ring on.

4.4 Press foot petal with enough pressure to pinch ring onto sidewall.

Note: Be sure this step is correct! Must use enough pressure to ensure a tight seal.

4.5 Pull out sidewall and flip over on assembler.

4.6 Add bottom and seal on sidewall using foot petal. Again, must use enough pressure. Look for a deep indentation on tub just below ring.

4.7 Place tubs (open end facing down) into plastic pallets (with walls). Each pallet will hold 100 tubs.

4.8 Try to keep a 4 production day inventory on hand.

4.9 Bring to plant as needed. Return to inventory at the end of day.

5.0 MAINTENANCE

5.1 Grease bearings (zerk) on assembler every three months, record changes in Chart 013.

6.0 RECORD KEEPING

6.1 Record any various changes of equipment, and any additional comments on Chart 013.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department Storage	Title **Temperature Controlled Rooms**	SOP Number 07-02
Prepared By/Date M. Shuda 06/01/11		Effective Date 06/01/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

The goal is to maintain the temperature controlled rooms in the plant so that finished products can be stored. Different coolers vary in temperature to allow for a variety of safe and high quality products. The organization of each cooler also depends on product, and allows for a systematic approach to efficient storing and shipping.

2.0 **MATERIALS**

2.1 Locks and keys for coolers
2.2 Gloves
2.3 Jacket
2.4 Earmuffs
2.5 Carts
2.6 Cases

3.0 **HAZARDS**

3.1 Wear proper PPE (Personal Protective Equipment) when entering coolers and freezers.
3.2 Crates and cases must be stacked at appropriate heights.

4.0 **PROCEDURE**

4.1 Upon arrival to plant, supervisor should unlock all freezers and coolers except freezer 22 and cooler 30. These two rooms are unlocked as needed.

.1 All fulltime plant employees should also have access to keys for freezers and coolers.

4.2 Temperatures of freezers and coolers are to be monitored by quality control.

.1 Temperatures are taken twice every day and recorded in Chart 033.

.2 Alert supervisor if cooler temperature is significantly outside of its desired range. (Note: Temperatures will fluctuate do to doors being opened while in use. It is not necessary to notify supervisor if this is the case.)

.3 Methods of obtaining temperatures should be standardized. This allows for consistent records and trends.

4.3 **When coolers and freezers are not in use, doors must be COMPLETELY shut. Make sure that doors are latched correctly.**

4.4 Storage procedures for cheese coolers can be found on separate SOP.

4.5 Ice cream freezers:

.1 When ice cream is first made, it is taken to freezer 162 and held overnight.

.2 The following morning, the ice cream (with the exception of scrounds which are stored in freezer 162) is transferred to freezers 22 and/or 156A.

.3 Ice cream should be stored in order of dates of production. The most recent goes to the back, the least recent in the front.

.4 Return empty carts to freezer 162 when not in use.

4.6 Milk coolers:

.1 After milk is bottled, it is loaded onto cases in cooler 152.

.2 Milk is sorted according to its type, volume, and production date. Cases of pints and quarts are stacked on the north side of the cooler; cases of half pints and half gallons are stacked on the south side. All stacks should be no higher than six cases; the bottom case must be empty.

.3 The top case of every row is labeled with a date of production tag. Similar products with different dates of production are placed in separate rows.

.4 Milk for the store is taken to cooler 144E.

4.7 All freezers and cheese cooler 25 are hooked up to an alarm system that is set off if the temperature is out of its specific range.

.1 In case of refrigeration system not working on a weekend/after hours when plant is empty, a message is sent to UW Security. They are responsible for contacting plant manager and steamfitters at UW Madison Physical Plant.

4.8 All freezer and cooler doors must be locked at the end of the day.

4.9 Complete cooler and freezer descriptions are as follows:

Freezer/Cooler No.	Description	Temperature Range (˚F)
22	Ice cream storage freezer (downstairs)	<-20
25	Cheese cooler (downstairs)	37-40
134B	Ice cream storage cooler (upstairs)	50-55
144E	Milk cooler for store	35-40
152	Milk cooler (upstairs)	35-40
156A	Ice cream storage freezer (upstairs)	<-20
162	Ice cream 24 hour holding freezer (upstairs)	<-20
164	Cheese cooler (upstairs)	35-40
166A	Cheese cooler (upstairs)	35-40
166B	Warm room (upstairs)	70-75
166D	Cheese cooler (upstairs)	35-40
166E	Cheese cooler (upstairs)	35-40
166F	Cheese cooler (upstairs)	35-40

5.0 **MAINTENANCE**

5.1 Clean coolers and freezers as needed. Document any cleaning on Chart 033.

5.2 Periodically check that seals around doors are in good condition.

5.3 Cleaning freezers requires advanced planning and complete shut-down of freezer being cleaned. This should be done during off-season.

5.4 Make use of SSOP 03-15 for cleaning evaporators in coolers.

6.0 **RECORD KEEPING**

6.1 This SOP requires the use of Chart 033. It should be located on or next to every temperature controlled room door and replaced as needed. Quality control is responsible for the maintenance of Chart 033.

Cheese Making SOPs

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Receiving	Title **Raw Milk Handling**	SOP Number 04-02.02
Prepared By/Date E. Dockerty 3/09/11		Effective Date 03/17/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 10/10/05

1.0 OBJECTIVE

Raw milk is received on an as need basis. Care must be taken to ensure that the highest quality raw milk possible is received.

2.0 MATERIALS

2.1 Sample Vials.
2.2 Thermometer
2.3 White bucket for sample and temperature recording
2.4 Record materials
2.5 Cooler Bag

3.0 HAZARDS

3.1 Slippery Floors
3.2 Truck
3.3 Truck ladder

4.0 PROCEDURE

4.1 Determine which tank raw milk will go into (RT1 or RT2)
4.2 Connect elbow joint to intake valve on correct tank.
4.3 Turn switch on control panel.
4.4 Ensure that chilled water is turned on for both holding tanks.
4.5 Turn on agitator on tank raw milk is entering.
4.6 When milk truck arrives collect 2 load samples. Date each sample and place into cooler bag.
4.7 Receive all farm raw milk samples date and place in cooler bag.
4.8 Collect a small raw milk sample in white bucket. Measure and record temperature on chart 008.
4.9 Take cooler bag and samples to QC for testing.
4.10 Wait for test results from antibiotic test before pumping milk.
4.11 If a negative test result is received, proceed to step 4.13.
4.12 If a positive is received on sample. DO NOT PUMP milk into tanks. Contact a supervisor immediately.
4.13 Connect raw milk hose inside and out.
4.14 Turn on receiving pump and begin distributing raw milk into desired tank.

4.15 Record raw milk amount (gallons and pounds) on Manifest. Record date and sign your name.
4.16 Keep the #2 white copy, present the rest to the truck driver. Take #2 form to QC.
4.17 Flush lines with 5 gallons water.
4.18 Detach hoses.
4.19 Push water hose through to receiving bay and turn on water.
4.20 Wash receiving bay floor.
4.21 When finished turn off hose and wind up.
4.22 Replace hole cap.
4.23 Close and lock all doors to receiving bay.
4.24 On Monday take temperature sheet to QC.

5.0 MAINTANACE

5.1 See Chart 007
5.2 Check hose for rips, tears, and kinks. Replace yearly or as needed.
5.3 Replace pipe gaskets every 6 months
5.4 Check and replace agitator seal every 6 months.
5.5 Check 4 valves, 2 inlet and 2 outlet, replace O-rings and gaskets every 3 months.
5.6 Disassemble; check and clean parts of pump replace parts as needed. Clean pump stand, motor, inside and out.

6.0 RECORDKEEPING

6.1 Fill out temperature log 008. Deliver chart 008 to QC every Monday morning.
6.2 Fill Manifest form provide copy to QC.
6.3 Make note of the maintenance log 007.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department MANUFACTURING	Title **WESTFALIA MILK SEPARATOR/CLARIFIER #100004-1640692 RAW MILK SEPARATATION**	SOP Number 02-03.02
Prepared By/Date E.Dockerty 04/15/11		Effective Date 04/15/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 4/25/05

1.0 **OBJECTIVE**

Raw milk is transferred from the raw milk holding tanks and passes through the Westfalia milk separator/clarifier. This machine clarifies the milk as well as separates the cream from the skim portion of the milk. From this point the skim milk and cream may be recombined and sent to the staging vats for further processing.

2.0 **MATERIALS**

2.1 Production schedule.

3.0 **HAZARDS**

3.1 Care should be taken to keep machine in good operating condition.

3.2 Proper lifting technique should be used when lifting and installing bowl ring and cover.

3.3 Care should be taken to prevent pinching fingers when assembling bowl ring.

3.4 Ensure Separator/ Clarifier has been put together properly.

.1 Fast moving parts could be a hazard if not properly attached or secured.

4.0 **PROCEDURE**

4.1 Fill bowl with water and turn machine on.

4.2 Turn agitator on in raw tanks. Allow agitator to run for approximately 15 minutes to ensure milk fat is fully mixed into raw milk.

4.3 Must wait for machine to reach 6,000 rpm's before running product.

4.4 Determine what product must be made first and calculate the measurement needed to make this product.

4.5 Add sanitizer, (chlorbac @ 1 ounce) mix the sanitizer with warm water in a 5# cottage bucket and pour into top of separator.

4.6 Make all necessary connections, routing the raw milk, skim, and cream to correct destinations.

4.7 Open valve to raw tank and turn on separator feed pump. Feed pump should run at full speed (100 % output)

4.8 As milk flows through machine, adjust skim micro screw to reach 75 PSI on gauge. The first milk through after sanitizing should go down the drain.

.1 Ensure all sanitizer is drained, contamination of the milk could occur.

4.9 Turn cream 3-way valve to direct cream to cream vat.

4.10 Turn skim 3-way valve to direct skim to final destination.

4.11 Slowly adjust cream micro screw. Micro screw may be adjusted depending on the time of year, but generally left around 10.

4.12 Readjust skim screw to make sure that the PSI gauge is at 75.

.1 If set too high, separator will overflow

.2 If set too low, separator will begin to form butter.

.3 If a plug up occurs:

.1 Flush with hot water for 10 minutes.

.2 Then flush with cool water to reduce temperature

.3 Restart process.

4.13 After separating desired amount of milk, close valve to raw milk tank.

4.14 Remove end cap and flush line with warm water.

4.15 Turn 3-way valves (cream & skim) to direct water/milk down drain.

4.16 Back off cream screw to number 10 and turn in skim screw to ~75 psi on gauge. This will flush out cream and prevent the machine from plugging up.

4.17 Back off skim screw and continue to flush water till next batch.

5.0 **MAINTENANCE**

5.1 Westphalia contact is 800.509.9299 for parts and service.

5.2 Check clutch pads for excessive wear once per year. If pad is worn to rivet then it must be replace.

.1 Record date of replacement on side of separator (electrical box) and on Chart 023.

5.3 Check brake pads for excessive wear once per year. Replace as needed. Record on Chart 023.

5.4 Check oil level from sight glass daily. Should be half covered. If too full then must drain off oil.

.1 To drain off oil, loosen drain plug on west side of separator.

.2 Oil is 80 weight gear lube. Should be changed every 2-3 years.

.3 Note: An abrupt increase in oil level often indicates that water has gotten in. If this is the case, the oil must be changed.

5.5 Observe for wear on separator parts as you assemble and disassemble daily. Record any changes on chart 023.

5.6 Change bearings every 10 years as a precaution. Record date of change in separator chart 023.

5.7 Maintain spare parts inventory in room 158.

6.0 **RECORD KEEPING**

6.1 Milk separator Maintenance task chart 023.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department MANUFACTURING	Title MILK AND CHEESE MIXES	SOP Number 02-13-01
Prepared By/Date E. Dockerty 05/20/11		Effective Date 5/20/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Milk mixes are produced on an as need basis. Various milk products are made with different specifications, care should be taken to ensure the proper levels of quality are upheld. Raw milk and various materials are combined and then sent to the pasteurizer.

2.0 **MATERIALS**

- 2.1 Production Schedule
- 2.2 Dust mask
- 2.3 Step ladder
- 2.4 Calculator
- 2.5 Carts
- 2.6 Scoop
- 2.7 Buckets
- 2.8 Immersion blender
- 2.9 Scale

3.0 **HAZARDS**

- 3.1 Heavy lifting
- 3.2 Ladders
- 3.3 Steam

4.0 **PROCEDURE**

- 4.1 Determine which mix is to be made.
- 4.2 Verify available ingredients and record milk fat percentage.
- 4.3 Enter specifications of available ingredients into Easy Dairycalc with amounts and mix type to be produced.
  - .1 To use Easy Dairycalc
    - .1 Enter the P drive.
    - .2 Select Dairycalc.
    - .3 Click “Babcock milk and cheese formulas 8-20-2001”.
    - .4 Input the specifications of mix.
    - .5 Ensure accuracy of target percentages by taking into account water corrections and shortages that may occur during the transferring of liquids.
    - .6 Record any variations or changes.
    - .7 Print off formulation sheet.
    - .8 Close program without saving changes.
- 4.4 Measure milk and water

.1 Measuring liquids in the prep tank you make use the gauge on the left of the tank
.2 When measuring liquids from process tanks 1-5, use measuring stick.
.1 Measuring stick is located on process tanks 5
.2 Record current level of liquid.
.3 Use black binder (located behind LACTICHECK) to determine the number of inches required per pound or gallons needed for the mix.
.4 Use calculator to ensure accuracy.
.5 Pump desired amount of milk out of process tanks into prep tank.
.6 Ensure enough milk is transferred to account for any shortages that may occur in the transfer of liquids.
.7 Wash measuring stick according to in COP tanks and return to hanging on process tank 5.
.3 Make necessary connections to sanitize lines with CIP.
.4 Sanitize flex tubing according to SSOP 03-09.

4.5 Add cream.
.1 Use measuring methods from above (step 4.4.2).
4.6 Turn agitators on low.
4.7 Blend.
4.8 Test milk on LACTICHECK.
.1 If milk is within guidelines proceed to step 4.9.
.2 If milk is NOT within acceptable guideline. Consult a supervisor to determine proper steps before sending milk mix to pasteurizer.
4.9 Send to pasteurizer.

5.0 **MAINTENANCE**
5.1 None

6.0 **RECORD KEEPING**
6.1 Production schedule
6.2 Production book.
6.3 Formulation sheet.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 4
Department MANUFACTURING	Title **PASTEURIZER START UP AND OPERATING PROCEDURE AND PASTEURIZER MAINTENANCE**	SOP Number 02-01.02
Prepared By/Date C. Peters 03/10/11		Effective Date 03/10/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 3/21/05

1.0 OBJECTIVE

All of the dairy products produced at the Babcock Hall Dairy Plant are pasteurized through our HTST (High Temperature Short Time) pasteurizer. The facility follows guidelines set forth in Pasteurized Milk Ordinance 2007 (PMO) for pasteurization of milk. This equipment is inspected quarterly by the WDA to insure accuracy and that all product is properly processed.

2.0 MATERIALS

2.1 Parts Inventory

2.2 STLR (Safety Thermal Limit Recorder) Charts

2.3 QC Sample Syringe

3.0 HAZARDS

3.1 Steam

3.2 Hot liquids

3.3 Hot pipes

4.0 PROCEDURE

1. Check and verify all pipes and vacuum caps are installed.
2. Verify all seals are in tact and document on STLR chart. If seals are **not** in tact, inspector must be called immediately and QC must run phosphates test on all products until inspector gives approval.
3. Put on proper safety attire, such as safety glasses and gloves, if necessary.
4. Place STLR Charts into pasteurizer panel. Responsible personnel label the charts with the date, signature, plant name and location on the chart.
5. Turn on the water supply to the hot water bath to ensure that it is filled properly, then shut off valve.
6. From panel, turn pasteurizer on.
7. Turn steam valve on.

8. Run cut in and cut out temperature checks for the highest temperature and lowest temperature products that are run that day. Record the cut in/out location and digital (dart) temperature on the STLR chart. Cut in temperature must be higher than the cut out temperature. If it is lower than cut out, contact supervisor immediately, inspector must be called and QC must run phosphatase tests on all products until inspector gives approval.
9. Set panel to the proper processing mode according to the product that is being run. Each product has a predetermined pasteurization temperature and time. All times are set the same at a minimum of 15 seconds. The time is based on the inspector's test results.
10. The following are the product temperature setting/cutout (degrees F):

    Note: DO NOT adjust temperature setting without supervisor approval.

    a. Mixes/Sour Cream – 191/183
    b. Chocolate Milk – 186/167
    c. Half and Half – 181/167
    d. Skim and 2% - 181/162
    e. Strawberry – 190/183
    f. Whole – 181/162
    g. Cheese Milk – 165/162
    h. Cream for Butter – 195/187
11. If the cut in temperature is lower than cut out or if the operating point is atypical contact supervisor.
12. Adjust pressure on homogenizer.
    a. Adjust the second stage first. First number is the second stage (psi). Second number is the total of the first and second stage. 500/2600 – whole, 2%, strawberry, mixes, sour cream, 1500 first stage-half and half, 2000 first stage skim milk, and run pressure at zero for cream, cheese milk and chocolate milk.

    Note: The homogenizer rests at 350, therefore, when adjusting pressure set to appropriate number plus 350.
13. When product temperature stabilizes, record digital temperature (dart) onto indicating temperature on chart.
14. Run out sanitizer solution to filling machine and flo-verter two. Flush with water.
15. It currently takes approximately 120 seconds to flush out system. This time is checked by the inspector 4 times a year.
16. Pump in product and flush out water. Wait until Opteck meter shows correct solid amount, when water is flushed out, send pasteurized product to desired location. **Note: There may be certain order to run products.**

a. Any industry projects or allergen products must be run last, or cleaning process must take place after these runs are completed.

b. When organic products are run, they must have a cleaning process done before and after run.

17. For every batch run, the STLR chart should be labeled with the product name, the number of pounds of product, and the cut in and cut out temperatures.

18. Take QC sample on first product run using syringe, by doing the following steps:

a. Use an alcohol swab and clean needle of syringe

b. Use another alcohol swab to clean the outside of the duct where the sample is taken from

c. Look for hole that has not been used (white area)

d. Place syringe all the way in and extract sample

e. After sample is extracted, label syringe with the date, name of product, time extracted.

f. Next, fill out chart for QC sample removal, Chart 001, with date, product name, time sample is removed. (This task should be performed daily).

g. Put sample in QC lab cooler/refrigerator in Room 146.

19. At end of run flush out product with water.

20. Reversed start up procedure to shut system down.

5.0 **MAINTENANCE**

5.1 Record any tests performed, various changes of equipment, inspectors comments, oil changes, rotor change, opening of plates, etc. on appropriate chart.

5.2 Circulate acid solution through hot water bath every 3 weeks, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 002.

5.3 Circulate acid solution through chilled water plates as needed or once per year, see SSOP 03-01 (Pasteurizer Sanitation). Record on Chart 004.

5.4 Change oil in timing pump and drive once per year, record on Chart 004.

5.5 Change tri clamp gaskets monthly, record on Chart 003.

5.6 Open plates up to clean and inspect monthly. Check condition on plate gaskets and record on chart 003.

5.7 Change plate gaskets every 3 or 4 years, record on Chart 004.

5.8 When tightening up plates the measurement from end to end should be 22.25 to 22.5 inches. Record measurement and date on appropriate chart. Should be just tight enough so that plates do not leak.

5.9 Open up homogenizer to clean and inspect monthly. Record on Chart 003. Replace gaskets and inspect valves and seats for wear. Record any non gasket part changes. Change homogenizer oil as needed. Check sight glass for level. Drain out water from oil as needed using valve on back of homogenizer.

5.10 Maintain parts inventory of pasteurizer and homogenizer. Order as needed.

5.11 Change air filter on blow out once per week. Record on Chart 002.

5.12 Perform leak detector/pinhole test annually. Test performed by outside contractor, reports are filed in pasteurizer maintenance file.

6.0 **RECORD KEEPING**

6.1 This SOP requires the use of Chart 001, 002, 003 and 004.

6.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in the Pasteurizer Maintenance file.

6.3 STLR charts are given to the supervisor for review that day, and filed with QC for at least duration of the shelf life for the appropriate product.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 3
Department Manufacturing/Production	Title **CHEESE MAKING**	SOP Number 02-22
Prepared By/Date M. Shuda 1/12/2012		Effective Date 01/20/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 OBJECTIVE

To make different cheese to sell to customers.

2.0 MATERIALS

2.1 Ladder
2.2 Stir shovel
2.3 Thermometer
2.4 Agitator paddles
2.5 Sanitizer: XY-12 (200 ppm)
2.6 Sample tubes (to test pH)
2.7 Sample bags (for quality control testing)
2.8 Cutters
2.9 Rake
2.10 Squeegee

3.0 HAZARDS

3.1 Do not lean on/over the vat.
3.2 All windows must be closed
3.3 Sanitize EVERYTHING before use in vat.
3.4 The first yard of the white hoses must never touch the ground. If it does, it must be properly sanitized before being re-hung.
3.5 Heavy lifting: Be sure to use proper lifting techniques.

4.0 PROCEDURE

4.1 Ensure that all equipment was sanitized and rinsed the day prior to use. If it is a Monday morning, re-rinse the vat. This information can be found in Chart 052 Daily Cheese-Making Sanitation Record.

4.2 Remix Ecolab XY-12 sanitizer with water in stand so that its concentration is 200 ppm.

.1 Record in Chart 052.

4.3 Lube vat valve and place in vat.

4.4 Secure filter sock on the end of the fill pipe. Move fill pipe so that it is over the vat.

4.5 Pasteurized milk should come into the vat at 88-90ºF. Take the temperature of the milk and a tube for pH testing. (The pH will be close to 6.55-6.60.) Record in the Cheese Production Record.

.1 Ensure that the pH meter is calibrated before use.

.2 Titrate acidity (TA) measurements can be used with or instead of pH measurements.

.1 The TA of pasteurized milk will be about 16-18.

4.6 Take sample of milk directly from filler pipe for QC in a sanitized bag.

4.7 Turn agitator on (with two paddles).

4.8 Measure culture in sanitized cup. Use the scale located on the back table.

.1 Note: Do NOT use the same culture two days in a row.

.2 Record the lot numbers of culture under “comments” on the Cheese Production Report.

.3 Add culture to the vat slowly.

4.9 Measure and add calcium.

.1 Record lot number. The lot number can be found on the original container.

4.10 Measure and add color if needed.

4.11 Once vat is full, place filler pipe over the bucket again and allow for the milk to be chased with water. Dump bucket of run-off down the drain and remove filter sock from the pipe.

4.12 Add rennet once the milk reaches desired pH.

.1 Record lot number found on original container.

.2 Allow mixture to stir only up to 3 minutes once rennet is added.

4.13 Turn agitator OFF.

4.14 Record milk temperature on Cheese Production Record.

4.15 Remove paddles from agitator and sanitize.

4.16 Sanitize cutters while mix is resting.

4.17 Check firmness after allowing to set for given amount of time.

4.18 Cut when proper firmness.

.1 Across the width of the vat: use a cross cut.

.2 Down the length of the vat: two people must each pull one cutter down each side, one is horizontal and the other is vertical. Once to the end of the vat, switch sides and cut back down the length of the back.

.3 The size of cutters used depends on the desired moisture content of the cheese.

.4 Cutting may be done in any order.

4.19 Allow to heal for a given amount of time.

4.20 Put four paddles back onto the agitator and turn on low.

4.21 Use the squeegee to scrape curds off of the sides and corners of the vat.

.1 This keeps the curds from forming lumps and cooking on the sides and corners.

4.22 Check the temperature and run a pH test on the whey and record in the Cheese Production Record.

Cooking the Cheese

4.23 Connect white hose to side of vat and fill with water. Turn on steam.

4.24 General Rule for cooking cheese: Bring the temperature up 1°F every five minutes for the first 15 minutes.

4.25 While cooking, rake the bottom and sides of the vat.

4.26 Remove any curd that may be caught in the vat drain with strainer and put back into vat.

4.27 The final temperature depends on the type of cheese. Record the time, temperature, and pH of the whey.

4.28 Remove paddles and sanitize.

4.29 Hoop or pump into desired forms/hoops depending on type of cheese.

5.0 MAINTENANCE

5.1 As needed:

.1 Visually check moving parts for wear (including rings and s-hooks).

.2 Use Haynes spray to lubricate agitator rod to avoid wear/breakage of rings.

5.2 Every three months:

.1 Wipe the pan of the agitator with damp towel.

.2 Wipe the top of the agitator with damp towel.

5.3 Twice a year:

.1 Circulate acid in side of vat to avoid lime buildup on the pipes.

.1 See plant manager for specific acid to use.

5.4 Every year:

.1 Check gear oil level in gear box.

.2 Grease fitting must be greased with food-grade grease.

6.0 RECORD KEEPING

6.1 Fill out Cheese Production Record with necessary information. Place in binder according to type of cheese. Store in cheese making cabinet in the plant.

6.2 Record any vat maintenance performed on Chart 050 Cheese Vat Maintenance.

6.3 Record that vat and equipment sanitation was completed in Chart 052.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 1
Department Manufacturing/Production	Title **CHEESE BRINING**	SOP Number 02-23
Prepared By/Date M.Shuda 1/19/2012		Effective Date 01/20/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 OBJECTIVE

Brining is a salting process serves many purposes in cheese making. Brining adds flavor to the cheese, reduces moisture, acts as a preservative, and slows the growth of bacteria.

2.0 MATERIALS

2.1 Cart
2.2 Salt bin
2.3 Salt brine
2.4 Plastic shovel
2.5 Delvocid Salt

3.0 PROCEDURE

3.1 Take cheese out of form.

3.2 Put cheese in brine. Brining room should be 52º F.

.1 Note: All spiced cheeses must go in the small vat.

3.3 Salt top of cheese.

3.4 Leave cheese in salt brine for a certain amount of time depending on type of cheese.

3.5 The next morning, take cheese out and put onto cart. Allow it to dry for 15-20 minutes.

3.6 Skim brine with strainer.

3.7 Bring out and seal.

3.8 Take down to cheese cellar for aging.

4.0 MAINTENANCE

4.1 Every week, use plastic shovel to rake salt of the bottom of the brine. Stir to incorporate salt back into the solution as much as possible.

4.2 Add Delvocid Salt to inhibit mold. Add 3g to small vat and 6g to large vat.

4.3 Twice a year, obtain sample of brine solution for QC to test for yeast and mold.

4.4 Change water in salt brine on a yearly basis.

5.0 RECORD KEEPING

5.1 Record any maintenance performed on salt brine.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Manufacturing/Production	Title **CHEESE POLYCOATING**	SOP Number 02-27
Prepared By/Date M.Shuda 1/19/2012		Effective Date 01/20/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

The objective is to seal Gouda and Romano cheeses with polycoating after the brining process is complete.

2.0 **MATERIALS**

2.1 Freezer paper
2.2 Cart
2.3 Small white bucket (item # 328 sencient)
2.4 Paracoat Natural 0.0.70
2.5 Delvocid Salt
2.6 Sunflower yellow color (for gouda only)
2.7 Towel

3.0 **HAZARDS**

3.1 **Everything MUST be sanitized before use.**

4.0 **PROCEDURE**

4.1 When brining process is complete, cover a cart with two layers of freezer paper. The top layer should be paper side up.

4.2 Remove cheese from brining tank and place onto cart. Allow to dry about 10 minutes.

4.3 In a white bucket mix:

.1 5 lbs. Paracoat Natural 0.0.70 (located in brining room)

.2 2 g Delvocid salt (located in cooler 166C)

.3 85 drops sunflower yellow coloring (located in computer room)

.1 NOTE: Coloring is only used for Gouda cheese polycoat.

4.4 Right the date on the lid of the polycoat bucket.

4.5 Take cheese back to cooler (38-40ºF).

4.6 Use towel to apply polycoat to one side of the cheese. Pay close attention to detail.

.1 **Allow to dry completely before doing other side. This will take approximately one day.**

4.7 Each cheese should receive 3-4 coats.

.1 This process will usually take 4-5 days.

4.8 Once dry and completely coated, take to brining room for 3 weeks.

.1 Cheese should be stored on a cart with two layers of freezing paper.

4.9 Take cheese downstairs to cheese cooler.

4.10 Turn on shelves every 3 weeks.

4.11 Wipe coating down with Delvocid salt and water mixture as needed. Also wipe down the wood shelf underneath the cheese.

.1 One side must be done at a time, allowing to each side to dry in between.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Manufacturing/Production	Title **CHEESE CUTTING**	SOP Number 02-26
Prepared By/Date M.Shuda 1/13/2012		Effective Date 01/20/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

To cut cheese into units that can be sold.

2.0 **MATERIALS**

2.1 Cutting wires and matching blocks
2.2 Cheese cutter
2.3 Double-bladed hand knife

3.0 **HAZARDS**

3.1 All surfaces and equipment must be sanitized before use.
3.2 Be cautious of sharp, moving parts.
3.3 When using hand knife, always keep hands on handle.

4.0 **PROCEDURE**

4.1 Sanitize hands before beginning and throughout the process when needed.

4.2 Always cut non-flavored cheese first.

4.3 Clean or shave off any mold or lactose crystals on surface of cheese blocks/wheels.

4.4 Set up cheese cutter:

.1 Choose cutting wire according to the shape of the cheese and the desired size. Find its matching block.

.2 Screw block onto the cheese cutter. Slide the cutting wire into place directly above the block.

.1 The wires must directly match up with the cutting block, or the wires will break.

4.5 Turn machine ON.

4.6 Take the cheese out of its packaging and place on cutting block.

4.7 Pull white lever on right side of machine down to cut the cheese.

4.8 When finished, turn machine OFF and take parts directly to sink to be washed and sanitized. Wash and sanitize machine surface with Ecolab wipes.

4.9 Hand cut pieces with double-bladed hand knife if needed.

4.10 Note: Some cheeses must be allowed to warm slightly before cutting.

5.0 MAINTENANCE

5.1 Watch hydraulic oil levels and change as needed. Record date of change in maintenance book (located in cabinet in cheese production area).

5.2 Fix any wire cutters that may break.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Manufacturing/Production	Title **CHEESE SEALER**	SOP Number 02-24
Prepared By/Date M.Shuda 1/13/2012		Effective Date 01/20/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

To seal cheese in a sanitary manner, so that it can be either sold or stored.

2.0 **MATERIALS**

2.1 Cheese sealer
2.2 Bags
2.3 Ecolab Wipes
2.4 Lids
2.5 Multivac Manual

3.0 **HAZARDS**

3.1 All surfaces and equipment must be sanitized before use.
3.2 DO NOT attempt to make repairs to the electrical equipment.
3.3 DO NOT touch voltage-carrying parts.
3.4 DO NOT touch the sealing bar while machine is on. It can be extremely hot.

4.0 **PROCEDURE**

4.1 Wipe down entire machine with Ecolab wipes before use.

4.2 Place as many sanitized lids into the sealer as needed, depending on the size of the cheese.

4.3 Turn main switch to ON position. (This is the big red knob.)

4.4 Turn power ON.

4.5 Use setting P1.

4.6 Take cheese out of mold and place into bag.

4.7 Open the lid and place bagged cheese into the sealer. **The open end of the bag must be flat across the seal bar.**

.1 Ensure that the bag is straight to avoid wrinkles.

.2 Do not let the bag hit the nozzles on the seal bar. This could rip the bag.

4.8 Close the lid on the sealer.

4.9 When sealing is completed the lid with automatically open. Remove cheese and ensure that the seal is tight.

4.10 Wipe off packaging and label cheeses.

4.11 Remove lids from sealer and clean with Ecolab wipes.

4.12 Wipe down the sealer first with a warm, damp rag, then with Ecolab wipes.

.1 Remember to clean and sanitize the inside lid and outside of the sealer.

5.0 MAINTENANCE

5.1 Refer to Mulivac Manual if needed.

5.2 Change Teflon tape on seal bars as needed.

5.3 Watch oil levels. Change as needed.

5.4 Holly Sales and Services must service yearly. Filters and oil must be changed.

5.5 Some extra parts are located in the cabinet.

6.0 RECORD KEEPING

6.1 Record date and description of any maintenance performed on the sealer in Chart 51 Cheese Sealer Maintenance.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Manufacturing/Production	Title **CHEESE SHRINK TANK**	SOP Number 02-25
Prepared By/Date M.Shuda 1/13/2012		Effective Date 01/20/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

To shrink bag around cheeses that are ready to be sold.

2.0 **MATERIALS**

2.1 Shrink tank
2.2 Protective gloves
2.3 Bags
2.4 Hose
2.5 Citric Acid (only when cleaning)
2.6 Multivac Manual

3.0 **HAZARDS**

3.1 All surfaces and equipment must be sanitized before use.
3.2 Ensure the correct water level: DO NOT OVER-FILL.
3.3 Keep head and limbs out of the danger zone in the back of the machine.
3.4 Do not touch any voltage-carrying parts of the machine.
3.5 Turn the main switch to 0 and lock it before opening the machine. Disconnect the power plug.
3.6 During operation: Do not remove back panel and always keep the control cabinet closed.
3.7 Do not turn on without water.
3.8 Hot water: Wear gloves while using shrink tank.

4.0 **PROCEDURE**

4.1 Place cheese in proper bags.

4.2 Fill tank approximately ¾ full with water.

4.3 Turn ON and allow to heat to at least 185-190ºF.

4.4 Select setting #1.

4.5 Put on protective gloves and place bag in tank.

4.6 Press foot pedal.

4.7 Once shrink wrap process is completed, turn the shrink tank OFF.

4.8 Open valve in the back to drain the water.

5.0 MAINTENANCE

5.1 Refer to Mulitvac Manual if needed.

5.2 Dissemble shrink tank and clean with citric acid as needed to remove lime from heating elements.

5.3 Some extra parts are located in the cabinet.

6.0 RECORD KEEPING

6.1 Record date and description of any maintenance performed on shrink tank in manual.

Babcock Hall Dairy

SSOP Documentation

Edited October, 2012

By:

Casey Whyte

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 4
Department SANITATION	Title **PASTEURIZER SANITATION PROCEDURES**	SOP Number 03-01.01
Prepared By/Date C. Peters 3/31/11		Effective Date 02/05/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated NEW

1.0 OBJECTIVE

All of the ice cream products produced at Babcock Hall Dairy Plant are processed in the ice cream machine. It is important to clean the machine on a regular basis to insure peak performance and to help keep the product as safe as possible and avoid cross contamination.

2.0 MATERIALS

2.1 Water

2.2 Goggles

2.3 Rubber Gloves

2.4 AC 55-5 Red – Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion

2.5 Conquest – Heavy duty alkaline detergent for use in recirculation cleaning (CIP) in the dairy and food industry

2.6 Octave – Acid sanitizer/disinfectant and antimicrobial agent for use in sanitizing applications in the dairy and food industry

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system

3.2 Pumps

3.3 Steam

Note: Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 PROCEDURE

4.1 Internal Sanitation

.1 Put on proper safety attire; such as rubber gloves and goggles.

.2 Place safety sign (“Danger Caustic”) on the floor near machine.

.3 Turn off the machine and make sure everything is shut down.

.4 Change piping so that the raw inlet and the outlet are connected as CIP.

.5 Ice Cream machine should now be a closed loop.

.6 On panel, select CIP mode.

.1 Select the CIP temperature setting

.2 Press enter.

.3 Within 10 minutes the machine's CIP system will turn on.

.7 Fill both caustic and acid tanks using charged switches

.1 Assure that the level of chemicals in each tank is correct.

.8 The operator should verify that the flow rate is approximately 18 ft/s (this number can be seen on the control panel).

.9 Revert piping and parts to operation mode.

4.2 **External Sanitation**

.1 Clean the outside of the pasteurizer and homogenizer as needed (daily/weekly).

5.0 MAINTENANCE

5.1 Record any tests performed, various changes of equipment, etc. on appropriate chart. All completed charts are located in the Ice Cream Maintenance file.

5.2 Test concentration of the Conquest, AC 55-5 Red and Octave to verify chemicals are up to product standards, record on Chart 006.

6.0 CHEMICALS

6.1 Alkaline Wash

Conquest	2.4-3.2 oz/gal	9000-12000 ppm	Temp: 190-195ºF	Time: 45-60 min

6.2 Acid Wash

AC 55-5 Red	2.4-3.2 oz/gal	8000-12000 ppm	Temp: 160ºF	Time: 20 min

6.3 Sanitizer

Octave	1.0 oz/ 4.5-6 gal water	1300-1740 ppm	Temp: Cold	Time: >1 minute

7.0 RECORD KEEPING

7.1 This SOP requires the use of Chart .

7.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in the Ice Cream Maintenance file.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 4
Department SANITATION	**Westfalia Separator/Clarifier #100004-1640692**	SOP Number 03-02.02
Prepared By/Date E. Dockerty 05/17/11		Effective Date 02/06/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 09/08/09

1.0 OBJECTIVE

Raw milk is separated in the Westfalia milk separator/ clarifier model number 100004-1640692. This machine separates as well as clarifies the cream from the skim portion of the milk. From this point the cream and skim milk may be recombined and sent to staging vats for further processing. Steps need to be taken to ensure optimal clean up and sanitation of the separator/ clarifier to ensure safety new batches of raw milk.

2.0 MATERIALS

2.1 COP Tank

2.2 Eco Lab Exelerate CIP - Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment

2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion

2.4 Water

2.5 Goggles

2.6 Rubber Gloves

2.7 Apron

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system

.1 **Note:** Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

3.2 Pumps

3.3 Electricity

4.0 PROCEDURE

4.1 Completely disassemble all parts to be placed in COP tank, remove any gaskets, O-rings, and small fittings. All pipes over 4 feet must be brush washed.

4.2 Pre-rinse parts with Hot water.

4.3 Place parts in stainless steel basket and short pipes in COP vat for good circulation.

4.4 Fill tank with hot water (approximately145-160ºF) to cover parts and fittings. Be sure to position hose to prevent from coming out.

4.5 Turn on circulation pump.

4.6 Put on goggles, apron, and gloves.

4.7 Add 50 ounces of Exxelerate CIP. Circulate for 40 minutes at 145-160 degrees F.

.1 Test chemical concentrations weekly. Refer to CIP SSOP, for procedure and documentation.

4.8 Overflow COP vat to floor by turning on hot water until free of soil

4.9 Drain tank and rinse parts with fresh water

Perform below steps only as needed to prevent the formation of mineral deposits:

4.10 Fill COP vat with enough water to cover parts and fittings

4.11 Turn on circulation pump.

4.12 Put on goggles, apron, and gloves.

4.13 Add 32 ounces of AC 55-5 Red and circulate for 30 minutes at 135-150 degrees F.

4.14 Overflow COP vat to floor by turning on hot water until free of soil.

4.15 Drain tank and rinse parts with fresh water.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department SANITATION	Title **FLOOR CLEANING SANITATION PROCEDURE**	SOP Number 03-03.02
Prepared By/Date M. Shuda 7/13/2011		Effective Date 7/18/2011
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 09/08/09

1.0 OBJECTIVE

The tile floor in the dairy plant including (freezers and coolers) needs to be cleaned with the use of a manual brush and/or mechanical rotating floor scrubber.

2.0 MATERIALS

2.1 Hand Brush
2.2 Mechanical Scrubber
2.3 Oakrite 92 – Alkaline Cleaner
2.4 Water
2.5 Goggles
2.6 Rubber Gloves
2.7 Apron

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system
3.2 Scrubber

Note: Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 PROCEDURE

4.1 Clear away area to be cleaned including carts, ladders, supplies, and mobile equipment

4.2 Spray floor with warm water.

4.3 Put on gloves, goggles, apron.

4.4 Sprinkle on powdered floor cleaner in amount of approximately 1 cup per 100 square feet.

4.5 Adjust mechanical scrubber so that handle is about waist high.

4.6 Using mechanical scrubber or manual brush scrub designated area.

4.7 Rinse with warm water until all cleaner is flushed down drain.

5.0 MAINTENANCE

5.1 Replace scrubbing brush when signs of wear are showing

5.2 Record the date of floor cleaning along with initials, other various changes of equipment, etc. on Chart 041.

6.0 CHEMICALS

Oakrite 92	50 ounces	4000-6000 ppm	Temp: 145-160ºF	Time: 40 min

Chemicals

Chemetall US- Oakrite 92 (tetrasodium pyrophosphate, sodium hydroxide)

7.0 RECORD KEEPING

7.1 This SOP requires the use of Chart 041.

7.2 This SOP and Chart 041 are to be located in room 156.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 4
Department SANITATION	Title **ICE CREAM MACHINE SANITATION PROCEDURES**	SOP Number 03-04.02
Prepared By/Date C. Peters 4/25/11		Effective Date 04/25/11
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated NEW

1.0 OBJECTIVE

All of the ice cream products produced at Babcock Hall Dairy Plant are processed in the ice cream machine. It is important to clean the machine on a regular basis to insure peak performance and to help keep the product as safe as possible and avoid cross contamination.

2.0 MATERIALS

2.1 Water

2.2 Goggles

2.3 Rubber Gloves

2.4 Eco Lab Exelerate CIP – Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment

2.5 Trichlor-O-Cide – Powdered, chlorinated, multi-purpose sanitizer used in the dairy and food industry

2.6 Octave – Acid sanitizer/disinfectant and antimicrobial agent for use in sanitizing applications in the dairy and food industry

2.7 Enforce LP – Foaming, chlorinated alkaline detergent for foam, spray and soak cleaning of stainless steel equipment and environmental surfaces encountered in the food industry

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system

3.2 Pumps

3.3 Steam

Note: Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 PROCEDURE

4.1 Internal Sanitation

.1 Put on proper safety attire; such as rubber gloves and goggles.

.2 Turn off the machine and make sure everything is shut down.

.3 Manually sanitize lines with CIP.

.4 When complete, drain acid water onto floor.

.5 Ice Cream maker/freezer should **not** be connected during acid sanitation process due to Nickel coating on dasher and barrels.

.6 Hook up the centrifugal pump and line to balance tank for chlorinated sanitation of ice cream maker.

.7 Next, run the Chlorine Sanitizer (Trichlor-O-Cide).

.8 Add 50 gallons of water and approximately half of a scoop of the alkaline sanitizer to balance tank.

.9 Open valve and turn on centrifugal force.

.10 On panel, select CIP mode.

.1 Select the 'CIP Select'.

.2 Press 'Start'.

.3 Run chlorinated sanitizer through lines, machines and other apparatuses (ingredient feeder, variegate feeder and funnel).

.11 When sanitizing the ingredient feeder, variegate feeder and funnel:

.1 Pour chlorinated sanitizer solution into inclusion feeders to thoroughly cover the surface area.

.12 Once completed, drain sanitizer and do not reassemble machine until next production day.

4.2 **External Sanitation**

.1 Clean the outside of the ice cream production machines as needed (daily/weekly). Use Enforce to hand wash the outside of tanks tables and large equipment.

5.0 MAINTENANCE

5.1 Record any tests performed, various changes of equipment, etc. on appropriate chart. All completed charts are located in the Ice Cream Maintenance file.

5.2 Test concentration of chemicals to verify they are up to product standards, record on Chart 026.

6.0 CHEMICALS

6.1 Alkaline Sanitizer

Trichlor-O-Cide	~1 oz/ 12 gal	100 ppm	Temp:	Time: 2 min

6.2 Chlorinated CIP Cleaner

Excelerate CIP	1 oz/ 2 gal	4000-6000 ppm	Temp: 140ºF-150ºF	Time: 20 min

6.3 Foaming Chlorinated Alkaline

Enforce LP	2-4 oz/gal	15000-30000 ppm	Temp: Cold or Hot	Time: 5-15min

6.4 Acid Sanitizer

Octave	1 oz/ 4.5-6 gal	1300-1740 ppm	Temp: Cold	Time: > 1 min

7.0 RECORD KEEPING

7.1 This SOP requires the use of Chart 026.

7.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in the Ice Cream Maintenance file.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department SANITATION	Title **ICE CREAM CLEAN OUT OF PLACE TANK SANITATION PROCEDURE (75 GALLONS)**	SOP Number 03-05.02
Prepared By/Date C. Peters 5/2/11		Effective Date 02/05/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 09/08/09

1.0 **OBJECTIVE**

The COP tanks are use to wash external parts and equipment which cannot be washed in "clean in place" system. This COP tank is located next to the ice cream machine and processing equipment.

2.0 **MATERIALS**

2.1 COP Tank
2.2 Eco Lab Exxelerate CIP - Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment
2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion
2.4 Water
2.5 Goggles
2.6 Rubber Gloves
2.7 Apron

3.0 **HAZARDS**

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system.
.1 **Note:** Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals
3.2 Electricity
3.3 Pumps

.

4.0 **PROCEDURE**

4.1 Completely disassemble all parts to be placed in COP tank, remove any gaskets, O-rings, hoses and small fittings. All pipes over 4 feet must be brush washed.
4.2 Pre-rinse parts with cold water.
4.3 Place parts in stainless steel basket and short pipes in COP vat for good circulation.
4.4 Fill tank with hot water to cover parts and fittings.
4.5 Turn on circulation pump.
4.6 Put on goggles, apron, and gloves.
4.7 Add 38 ounces of Exxelerate CIP. Circulate for 40 minutes at 140-150 degrees F.
4.8 Overflow COP vat to floor by turning on hot water until free of soil.
4.9 Drain tank and rinse parts with fresh water.

Perform below steps weekly or as needed to prevent the formation of mineral deposits:

4.10 Fill COP vat with enough water to cover parts and fittings
4.11 Turn on circulation pump.

4.12 Put on goggles, apron, and gloves.
4.13 Add 22 ounces of AC 55-5 Red and circulate for 30 minutes at 135-150 degrees F.
4.14 Overflow COP vat to floor by turning on cold water until free of soil.
4.15 Drain tank and rinse parts with fresh water.

5.0 MAINTENANCE

5.1 Replace any scrubbing brushes when signs of wear are showing.
5.2 Record any tests performed various changes of equipment, etc. on appropriate chart. All completed charts are located in Chart 026.
5.3 Test concentration of the Exxelerate CIP and AC 55-5 Red to verify chemicals are up to product standards, record on Chart 026.

6.0 RECORD KEEPING

6.1 Record any comments, equipment and chemical changes, etc. on Chart 026.

6.2 Record any maintenance to pumps or machinery on chart 031.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 4
Department SANITATION	Title **WEST CLEAN OUT OF PLACE TANK PROCEDURE (100 Gallon)**	SOP Number 03-06.02
Prepared By/Date E. Dockerty 05/27/11		Effective Date 02/06/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 09/08/09

1.0 OBJECTIVE

The Clean out of Place tanks are use to wash external parts and equipment which cannot be washed with "clean in place" system. Small parts are disassembled from the machine and washed in a bath of hot circulation water with cleaner to ensure the cleanest possible outcome.

2.0 MATERIALS

2.1 COP Tank

2.2 Eco Lab Exxelerate CIP - Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment

2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion

2.4 Water

2.5 Goggles

2.6 Rubber Gloves

2.7 Apron

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system

.1 **Note:** Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

3.2 Pumps

3.3 Electricity

4.0 PROCEDURE

4.1 Completely disassemble all parts to be placed in COP tank, remove any gaskets, O-rings, and small fittings. All pipes over 4 feet must be brush washed.

4.2 Pre-rinse parts with Hot water.

4.3 Place parts in stainless steel basket and short pipes in COP vat for good circulation.

4.4 Fill tank with hot water to cover parts and fittings. Put on goggles, apron, and gloves.

4.5 Turn on circulation pump.

4.6 Add 50 ounces of Exxelerate CIP. Circulate for 40 minutes at 145-160 degrees F.

4.7 Overflow COP vat to floor by turning on Hot water until free of soil.
4.8 Drain tank and rinse parts with fresh water.

Perform below steps only as needed to prevent the formation of mineral deposits:

4.9 Fill COP vat with enough water to cover parts and fittings
4.10 Turn on circulation pump.
4.11 Put on goggles, apron, and gloves.
4.12 Add 32 ounces of AC 55-5 Red and circulate for 30 minutes at 135-150 degrees F.
4.13 Overflow COP vat to floor by turning on Hot water until free of soil.
4.14 Drain tank and rinse parts with fresh water.

5.0 MAINTENANCE

5.1 Record any changes of equipment, etc. on appropriate chart 031. Test concentration of the Exxelerate CIP and AC 55-5 Red to verify chemicals are up to product standards, record on Chart 031.

5.2 Pump must be maintained every 6 months.

.1 Take apart all pump seals. Manually clean and replace any worn parts as needed. Record all cleaning and any changes to Chart 031.

6.0 RECORD KEEPING

6.1 This SOP requires the use of Chart 031

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 3
Department SANITATION	Title **FEDERAL FILLER WASH PROCEDURE**	SOP Number 03-07.02
Prepared By/Date E.Dockerty 04/08/11		Effective Date 02/06/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated 02/16/06

1.0 OBJECTIVE

Care must be taken to ensure Federal Filler is cleaned thoroughly everyday and then filled with octave sanitizer overnight before the next day of production.

2.0 MATERIALS

2.1 CIP System (Exxelerate CIP) Wash
2.2 CIP System (Mandate Plus) Sanitizer
2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion.
2.4 Enforce LP
2.5 Octave Sprayer Sanitizer
2.6 Warm or hot water
2.7 Goggles
2.8 Rubber gloves
2.9 Apron

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system.
.1 Dairy Plant student employees are NOT allowed to handle undiluted cleaning chemicals.
3.2 Keep hands and loose clothing away from moving parts while in operation.
3.3 Ladder

4.0 PROCEDURE

4.1 Start washing the filler by first rinsing all parts and bowl.

4.2 Remove cap and attach hose to CIP return line.

4.3 Raise the bowl up and remove the red spacer rings and gray rings. Place in wash basket.

4.4 Place the metal loops on platform and lower the bowl.

4.5 Connect 2 CIP return line hoses #2 & #3 to metal loops. Ensure gaskets are in place and clamps are tightly sealed.

4.6 The top of the bowl needs to be dismantled and rinsed thoroughly, replacing the large O-Ring with an alternate one.

4.7 Connect CIP return line #4 hose to top of tank.

4.8 Reassemble parts

4.9 On Flow Verter 1.

.1 Connect Flow Verter 2 to CIP supply.

4.10 On Flow Verter 2.

.1 Connect CIP from vats 1-5

.2 CIP return to HTST.

4.11 Turn the switch on the filler panel to CIP mode.

4.12 Turn Bag filler valve and filler valve on gray air switch panel to CIP mode.

4.13 Check to ensure

.1 HTST discharge is in off position.

.2 HTST discharge pipe is connected properly.

.3 HTST connection at end of lines 1-5 is correctly assembled.

4.14 On the CIP panel turn the dial to HTST (B), this is a 45 min wash.

4.15 Record # 6 on CIP chart and push start.

4.16 When the wash is complete the bowl needs to be flooded with sanitizer from the CIP supply line. To do this turn the switch on gray air switch for the Bag-n-Box to filler process & the product valve on the filler to open.

4.17 On Flow Verter 2 disconnect CIP return line and cap.

4.18 The switch on CIP panel needs to be turned to Filler Surge.

4.19 On the CIP panel turn the dial to Proc Tks C (sanitize cycle) push start, 10 seconds into the program put it on hold for 20 sec to give you enough sanitizer to flood the bowl.

4.20 Leave the bowl flooded till the next day of use. Make sure all opened ports are capped off.

4.21 Ensure all small parts are put in a wash basket and put in the COP tank to be cleaned.

4.22 When finished put parts in white pail and fill with Octave solution.

4.23 Wash the exterior of the filler every day with AC 55-5 Red. Record on Chart 018.

4.24 Wash the gray bottle adapters once a week in the COP tanks with Exxelerate CIP. Record on chart 018.

4.25 The filler ports (valve heads) should be disassembled and washed once a week in the COP tank with Exxelerate CIP cleaner. Record on chart 018.

4.26 Be sure to use Octave sanitize sprayer on shelving rack.

4.27 Always observe for worn parts and gaskets. Replace as necessary.

5.0 **MAINTENANCE**

5.1 Record any tests or maintenance performed on Chart 024.

5.2 Perform weekly maintenance cleaning tasks. Chart 018

6.0 RECORD KEEPING

6.1 Weekly maintenance cleaning. Chart 018.

6.2 Maintenance task chart 024.

6.3 CIP circle charts.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 4
Department SANITATION	Title **CHEESE CLEAN OUT OF PLACE TANK SANITATION PROCEDURE (150 GALLONS)**	SOP Number 03-09.03
Prepared By/Date E. Dockerty 07/11/11		Effective Date 07/11/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 09/08/09

1.0 OBJECTIVE

The COP tanks are use to wash external parts and equipment which cannot be washed in "clean in place" system. Small parts are disassembled from the machine and washed in a bath of hot circulation water with sanitizer to ensure the cleanest possible outcome.

2.0 MATERIALS

2.1 COP Tank

2.2 Eco Lab Exxelerate CIP - Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment

2.3 Eco Lab MP-2 Acid Cleaner - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion

2.4 Water

2.5 Goggles

2.6 Rubber Gloves

2.7 Apron

3.0 HAZARDS

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system

3.2 Electricity

3.3 Pumps

Note: Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 PROCEDURE

4.1 Completely disassemble all parts to be placed in COP tank, remove any gaskets, O-rings, and small fittings. All pipes over 4 feet must be brush washed.

4.2 Pre-rinse parts with hot water.

4.3 Place parts in stainless steel basket and short pipes in COP vat for good circulation.

4.4 Fill tank with warm or hot water to cover parts and fittings. Be sure to position hose to prevent from coming out.

4.5 Turn on circulation pump.

4.6 Put on goggles, apron, and gloves.

4.7 Add 75 ounces of Exxelerate CIP. Circulate for 40 minutes at 145-160 degrees F.

4.8 Overflow COP vat to floor by turning on cold water until free of soil.

4.9 Drain tank and rinse parts with fresh water.

Perform below steps only as needed to prevent the formation of mineral deposits:

4.10 Fill COP vat with enough water to cover parts and fittings

4.11 Turn on circulation pump.

4.12 Put on goggles, apron, and gloves.

4.13 Add 64 ounces of MP-2 Acid and circulate for 30 minutes@ 135-150 degrees F.

4.14 Overflow COP vat to floor by turning on Hot water until free of soil.

4.15 Drain tank and rinse parts with fresh water.

5.0 MAINTENANCE

5.1 Replace scrubbing brush when signs of wear are showing

5.2 Record any tests performed various changes of equipment, etc. on chart 031.

5.3 Test concentration of the Exxelerate CIP and MP-2 Acid to verify chemicals are up to product standards, record on Chart 031.

6.0 RECORD KEEPING

6.1 This SOP requires the use of Chart 031.

6.2 Record any comments, equipment and chemical changes, tests performed, etc. on the appropriate chart. All completed charts are located in room 129.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitization Standard Operating Procedure**	Page 1 of 2
Department SANITATION	Title **FEDERAL FILLER SURGE TANK WASH PROCEDURE**	SOP Number 03.08.01
Prepared By/Date E. Dockerty 04/18/11		Effective Date 02/06/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Care must be taken to ensure Federal Filler is cleaned thoroughly everyday and then filled with octave sanitizer overnight before the next day of production.

2.0 **MATERIALS**

2.1 CIP System (Exxelerate CIP) Wash
2.2 CIP System (Mandate Plus) Sanitizer
2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion.
2.4 Enforce LP
2.5 Octave Sprayer Sanitizer
2.6 Warm or hot water
2.7 Goggles
2.8 Rubber gloves
2.9 Apron

3.0 **HAZARDS**

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system.
.1 Dairy Plant student employees are NOT allowed to handle undiluted cleaning chemicals.
3.2 Keep hands and loose clothing away from moving parts while in operation.
3.3 Ladder.

4.0 **PROCEDURE**

4.1 At the end of the day thoroughly rinse surge tank.

4.2 Make all the connections to wash the surge tank with CIP.

.1 Remove and cap discharge pipe.

.2 Attach CIP curved pipe to port at bottom of filler surge tank to CIP return line.

.3 On Flow Verter 1 switch CIP supply to Verter 2

.4 On Flow Verter 2 move CIP supply to Prep tank.

.5 Adjust CIP wash supply from prep tank towards filler surge tank.

.6 Label CIP chart with #7.

.7 Turn dial on CIP panel to Proc Tks B

.1 If using Bag in the box. Run the Long cycle. Proc Tks C.

.8 Push start.

4.3 When finished, unhook surge tank.

.1 Remove cap and return pipe fitting.

4.4 If using bag in the box. Run the long cycle, Proc Tks C.

4.5 Return pipe fitting on bottom of Filler surge tank.

5.0 MAINTENANCE

5.1 Outside of filler surge tank should be washed weekly with AC 55-5 Red and rinsed thoroughly. Record on Chart 018.

.1 Ensure safety of other workers in plant by blocking off area under filler surge tank and alerting fellow employees to the use of AC 55-5 Red.

5.2 Always observe for warn parts and gaskets. Replace as necessary. Record on Chart 024.

6.0 RECORD KEEPING

6.1 Weekly cleaning of outside of filler on Chart 018.

6.2 Replacement parts and services performed on Chart 024.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Sanitization Operating Procedure**	Page 1 of 1
Department SANITATION	Title FLEX TUBING SANITATION PROCEDURE	SOP Number 03.09.01
Prepared By/Date E. Dockerty 05/24/11		Effective Date 06/30/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Flex tubing is used in various locations around the plant when using the in place lines is not possible. Flex tubing must be cleaned with a special procedure to ensure cleanliness and safety. Flex tubing should be sanitized after each use.

2.0 **MATERIALS**

2.1 Matrix sanitizer sprayer
2.2 Flex tubing.
2.3 Hot water hose.
2.4 COP tank

3.0 **HAZARDS**

3.1 Hot water.
3.2 Slippery floors.
3.3 Chemicals - May be corrosive to the skin, eyes and respiratory system

.1 **Note:** Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 **PROCEDURE**

4.1 After use disassemble flex tubing from machine or pipe.
4.2 Rinse with hot water.
4.3 Connect flex tubing to West COP tank, near separator.
4.4 Fill COP tank according to SSOP 03-06.
4.5 Turn on circulation pump to COP tank.
4.6 Allow to run for at least 30 minutes.
4.7 Turn off circulation pump.
4.8 Disconnect flex tubing from COP tank.
4.9 Once cleaned in COP hose must be sanitized. Flush flex tubing with matrix sanitizer sprayer for no less than 15 seconds.
4.10 Place tubing on rack located near West COP tank.

5.0 **MAINTENANCE**

5.1 Check hoses for kinks, leaks, abrasions, wear, and tears. Replace as needed.

6.0 **RECORD KEEPING**

6.1 None

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department **SANITATION**	Title **TRI BLENDER SANTITATION PROCEDURE AND MAINTENANCE**	SOP Number 03-10.01
Prepared By/Date E. Dockerty 06/22/11		Effective Date 02/06/2012
Approved By/Date _____ Supervisor _____ Operator		Supersedes SOP Dated

1.0 OBJECTIVE

The tri blender is used to blend dry ingredients before adding to liquid ingredients. Special steps must be taken to ensure that the tri blender is properly cleaned after each use to ensure the highest level of quality and sanitation.

2.0 MATERIALS

2.1 Flex tubing
2.2 Mixing rod
2.3 COP Tank
2.4 Eco Lab Exxelerate CIP - Chlorinated alkaline cleaner formulated for circulation, spray and soak cleaning of food processing equipment
2.5 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion
2.6 Hot Water
2.7 Goggles
2.8 Rubber Gloves
2.9 Apron
2.10 Ladder

3.0 HAZARDS

3.1 Electricity
3.2 Hot water
3.3 Slippery floors
3.4 Heavy lifting
3.5 Chemicals - May be corrosive to the skin, eyes and respiratory system

.1 **Note:** Dairy Plant student employees are not allowed to handle undiluted cleaning chemicals.

4.0 PROCEDURE

4.1 Once finished with the tri blender for the day, remove the funnel and place in COP tank.

4.2 Unplug Tri blender.

4.3 Fill COP tank. Follow steps from SSOP 03-06 for COP tank.

4.4 Make necessary connections with flex tubing from COP tank to Tri blender.

.1 Flex tubing from bottom of tri blender should be connected to bottom of COP tank.

.2 Attach elbow adaptor to top valve.

.3 Flex tubing should be connected to the top of the tri blender and the hooked end into the COP tank.

.4 Tubing must make a complete circuit in COP to ensure optimal cleaning.

4.5 Turn circulation pump on for COP tank.

4.6 Turn tri blender on.

4.7 Allow COP tank to run for no less than 30 minutes.

4.8 Turn tri blender off.

4.9 Drain COP tank.

4.10 Rinse all parts and run warm water from hose through the tri blender.

4.11 Disassemble flex tubing and store in proper place to air dry.

4.12 Continue cleaning tri blender by hand washing the funnel.

4.13 Special care must be taken to clean all external surfaces of the tri blender.

.1 Make sure to clean the pump housing, electrical boxes, etc.

4.14 Use AC 55-5 Red and brush on all external surfaces on tri blender. Be sure to use gloves, goggles and an apron.

Monthly Cleaning

4.15 The following tri blender parts must be disassembled once a month and cleaned to ensure optimal machine performance.

.1 Butterfly valve

.2 Mixing Chamber

.3 Pumps (2)

4.16 Wash parts by hand or in COP tank. Refer to SSOP 03-06.

4.17 Record monthly cleaning on Chart 013.

5.0 MAINTENANCE

5.1 As needed, record any maintenance performed on tri blender on chart 013.

6.0 RECORD KEEPING

6.1 This SOP requires the use of charts 013.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department SANITATION	Title **TANK SANITATION PROCEDURE**	SOP Number 03-11.01
Prepared By/Date E.Dockerty 6/22/11		Effective Date 02/06/2012
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Tanks are used for storage and mixing. Care must be taken to ensure these tanks are properly cleaned and sanitized before use.

2.0 **MATERIALS**

2.1 CIP System (Exxelerate CIP) Wash
2.2 CIP System (Mandate Plus) Sanitizer
2.3 AC 55-5 Red - Highly concentrated blended acid specially formulated for CIP cleaning of dairy processing equipment and helps reduce corrosion.
2.4 Octave Sprayer Sanitizer
2.5 Warm or hot water
2.6 Goggles
2.7 Rubber gloves
2.8 Apron

3.0 **HAZARDS**

3.1 Chemicals - May be corrosive to the skin, eyes and respiratory system.
.1 Dairy Plant student employees are NOT allowed to handle undiluted cleaning chemicals.
3.2 Ladder.
3.3 Hot Water.

4.0 **PROCEDURE**

4.1 At the end of the day thoroughly rinse tank with water.
4.2 Make all the connections to wash the tank with CIP.
4.3 In chemical room, mark circle chart with appropriate number to verify cleaning cycle.
.1 Process Tank1
.2 Process Tank2
.3 Process Tank3
.4 Process Tank4
.5 Process Tank5
.6 Carton Filler
.7 Filler Surge Tank
.8 Raw1
.9 Raw2
.10 Churn Vat
.11 Ice Cream Mix Vat
.12 Ice Cream Storage
.13 Evaporator

.14 N Process Tank1
.15 N Process Tank2
.16 Yogurt Vat
.17 Ice Cream Flavor1
.18 Ice Cream Flavor2
.19 Condenser Vat
.20 Skim Tank
.21 Lines, Etc.
.22 Ice Cream Freezer
.23 Cheese Line CDR
.24 Raw Receive
.25 Bag in a Box
.26 Separator Feed Line

4.4 Turn dial on CIP panel to Proc Tks B.
.1 Proc Tks C may be used if longer cycle is needed.
4.5 Push start.
4.6 When finished, unhook Tank from CIP line.
4.7 Return pipe fitting on bottom of tank.

5.0 MAINTENANCE

5.1 Outside of tanks should be washed weekly with AC 55-5 Red and rinsed thoroughly. Record on Chart 020.
5.2 Always observe for warn parts and gaskets. Replace as necessary. Record on Chart 032.

6.0 RECORD KEEPING

6.1 Record any maintenance performs on tanks on Chart 032.
6.2 Record weekly sanitation of outside tanks on Chart 020.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department SANITATION	Title **WHITE 5 GALLON BUCKET AND MILK CAN WASHING**	SOP Number 03- 13.02
Prepared By/Date E. Dockerty 06/22/11		Effective Date 06/22/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 08/22/08

1.0 **OBJECTIVE**

White 5 gallon buckets and milk cans are used in various places in the dairy plant. Care should be taken to ensure each bucket is properly cleansed, sanitized, and stored for the next use.

2.0 **MATERIALS**

2.1 Can Washer
2.2 Buckets
2.3 Brush
2.4 Gloves
2.5 Apron
2.6 Goggles

3.0 **HAZARDS**

3.1 Hot water
3.2 Steam
3.3 Slippery floors
3.4 Chemicals - May be corrosive to the skin, eyes and respiratory system.
.1 Dairy Plant student employees are NOT allowed to handle undiluted cleaning chemicals.

4.0 **PROCEDURE**

4.1 Use can washer located in room 150.
4.2 Place bucket or can upside down on top of spindle.
4.3 Open hot water valves (2).
4.4 Push down right foot lever to start spray of water.
4.5 While water is running, turn on air valve to run the soap solution with the water. (Approximately 20 seconds).
4.6 Turn soap valve off.
4.7 Keep water running for another 30 seconds.
4.8 To wash lids an exterior of cans and buckets use the brush located near the can washer. Dip brush into soapy water and scrub. Replace brush when finished.
4.9 Turn water off, both valves.
4.10 Remove bucket or can.
4.11 Store clean containers in appropriate location to air dry.
.1 Can storage located along outside wall in room 150.
.2 White 5 Gallon buckets are stored upside down on metal rack near homogenizer.

5.0 **MAINTENANCE**

5.1 Maintain can washer as needed. Record any maintenance on chart 036.
5.2 Always observe for worn parts and gaskets. Replace as necessary.

5.3 Check soap pump operation and valve leaks. Record any changes on Chart 036.

6.0 RECORD KEEPING

6.1 This SOP requires the use of chart 036.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 2
Department Sanitation	Title **Evaporator Cleaning**	SOP Number 03-15.02
Prepared By/Date M. Shuda 06/07/11		Effective Date 06/14/11
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated 05/23/06

1.0 OBJECTIVE

It is important to clean the evaporator on an annual basis to ensure peak performance and to keep the air in the coolers as clean as possible.

2.0 MATERIALS

2.1 Hand sprayer.
2.2 Virginia Acti Klean
2.3 Goggles
2.4 Apron
2.5 Rubber Gloves

3.0 HAZARDS

3.1 Chemicals
3.2 Electricity
3.3 Fans
3.4 Ladders

4.0 PROCEDURE

4.1 Clear away any product below evaporator.
4.2 Identify evaporator by room and unit number.
4.3 Turn off power to fan. See directions below for specific evaporator.
4.4 Turn off coolant to evaporator. See directions below for specific evaporator.
4.5 Set up ladder below evaporator.
4.6 Rinse evaporator fins, fan, and catch pan using warm water.
4.7 Put on goggles, apron and gloves.
4.8 Mix up evaporator cleaner in dedicated (labeled) hand pump sprayer.
4.9 Use 1 part Acti Klean to 3 parts cold water.
4.10 Spray mixture liberally on fan, catch pan and air fins. Let stand for 15 minutes.
4.11 Rinse off mixture with warm water.
4.12 Turn fans and coolant lines back on.
4.13 Check to make sure everything is running correctly before exiting cooler.

Cooler Room Numbers:

- 152 (Milk Cooler): In this room there are 2 sets of 2 evaporators. The fans for the gray set are controlled in the small electrical panel across from the churn. The circuit numbers are 25 and 26. Flip these off. The coolant valve must also be closed. These round valves are located behind the evaporators. Turn clockwise to close. The other set of white evaporators are closer to the north wall. The fans are controlled in the same electrical panel as the first set. The circuit numbers are 21 and 30. Flip these off. Shutting off these circuits also shuts off the coolant lines.

- 164 A (Upstairs Cheese Cooler): Unplug and flip switch off. Shut off compressor located in room 22. This compressor is labeled # 134A and is located on the top shelf of the compressor bank just to the east of the hot water heater. Pull the lever labeled 134A (left side) down to shut off.

- 166 B (Warm Room): The warm room is usually set at ~75˚F. To shut off this unit pull plug and raise thermostat setting to about 100˚F.

- 134 B (Ice Cream Storage Cooler): To turn off, flip switch located on north wall just to the left of the door as you enter.

- 166F (Upstairs Cheese Cooler): This is our cut cheese storage room. There are 2 evaporators in this room. Turn off both switches located next to each evaporator.

- 25 (Downstairs Cheese Cooler): Turn off each switch for the fan control. To turn off coolant you must shut down compressor which is located in room # 22. This compressor is labeled #25 and is located just to the south of the store compressor bank. Pull down lever to shut off.

5.0 **MAINTENANCE**

5.1 Notify supervisor for additional maintenance observed.

6.0 **RECORD KEEPING**

6.1 Record all evaporator cleanings in Chart 035. Turn in to supervisor as needed.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Sanitation Standard Operating Procedure**	Page 1 of 1
Department SANITATION	Title **Pest Control**	SOP Number 03-16
Prepared By/Date M. Shuda 7/18/2011		Effective Date 7/19/2011
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

The goal is to eliminate conditions that may allow pests into the plant. Regularly scheduled visits from local pest control programs can help keep pest intrusions under control.

2.0 **MATERIALS**

2.1 Anderson book (located on shelving unit in loading dock)

2.2 Anderson Pest Control: 608.222.4400

3.0 **HAZARDS**

3.1 Chemical treatments are located throughout Babcock Hall. Plant personnel are not responsible for handling them, but should be aware of their presence.

4.0 **PROCEDURE**

4.1 A representative from Anderson Pest Solutions comes to the plant on a weekly basis to inspect for pests. He or she should also be noting any conditions that are conducive to pest infestation.

.1 The inspection includes the interior and exterior of the building; in areas that are prone to pest infestation.

.2 He or she must also inspect any areas noted in the Pest Sighting Log (in the Anderson book).

4.2 A report is filled out for every visit and kept in the Anderson book. The Anderson representative must notify the plant supervisor of inspection results and obtain their signature.

4.3 It is the Anderson personnel's responsibility to follow through with any treatment that may be necessary. The plant should utilize their suggestions on preventing pest infestation.

4.4 In the case that a plant employee should notice any pests, he or she should:

.1 Record what pest was seen, where it was seen, and the date in the Pest Sighting Log.

.2 Notify supervisor.

5.0 **RECORD KEEPING**

5.1 All visits and treatments from pest control must be documented in the Anderson book.

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Sanitation Operating Procedure**	Page 1 of 1
Department Sanitation	Title **Water Hoses**	SOP Number 03-18
Prepared By/Date M. Shuda 7/28/2011		Effective Date 7/28/2011
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 OBJECTIVE

2.0 MATERIALS

3.0 HAZARDS

4.0 PROCEDURE

5.0 MAINTENANCE

6.0 RECORD KEEPING

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Sanitation Operating Procedure**	Page 1 of 1
Department Sanitation	Title **Drain Sanitation and Maintenance**	SOP Number 03-19
Prepared By/Date M. Shuda 8/02/2011		Effective Date 8/02/2011
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

Drains must be cleaned monthly to decrease the amount of scum and bacteria build-up. This will decrease the risk of contamination in the plant.

2.0 **MATERIALS**

- 2.1 Apron
- 2.2 Gloves
- 2.3 Goggles/glasses
- 2.4 Long handled scrubbing brush
- 2.5 Short handled scrubbing brush
  - .1 Brushes are located behind door of milk bottling room.
- 2.6 Octave sanitizer
- 2.7 Water/water hose

3.0 **HAZARDS**

- 3.1 Use of chemicals-Always wear proper PPE while handling.

4.0 **PROCEDURE**

5.0 **MAINTENANCE**

6.0 **RECORD KEEPING**

University of Wisconsin-Madison Babcock Hall Dairy Plant 1605 Linden Drive Madison, WI 53706	**Standard Operating Procedure**	Page 1 of 2
Department Sanitation	Title **CIP System**	SOP Number 03-20
Prepared By/Date M. Shuda 8/02/2011		Effective Date 8/03/2011
Approved By/Date _____ _____ Supervisor Operator		Supersedes SOP Dated

1.0 **OBJECTIVE**

The goal is to wash and sanitize all equipment that is soiled throughout the day. By day's end, all equipment must be ready for the next production day.

2.0 **MATERIALS**

2.1 MSDS sheets
2.2 Exxelerate CIP solution
2.3 Proper PPE (i.e. gloves, goggles, etc.)

3.0 **HAZARDS**

3.1 Chemicals- Exxelerate CIP solution
.1 Note: Student employees are not allowed to handle undiluted chemicals.
3.2 Hot water

4.0 **PROCEDURE**

4.1 Determine first process (area) for cleaning. Start immediately.

4.2 Hook up pipe work for that area to receive CIP solution.

4.3 Hook up return lines.

.1 **When connections are complete, there should be a complete loop for the CIP solution to flow through, beginning and ending at the CIP tank.**

4.4 Double-check to make sure all CIP connections are correct. (I.e. The loop is complete and connected to the correct machines.)

4.5 Make sure all air valves are in correct position.

4.6 Chill water flow must be shut OFF to the process being cleaned.

4.7 If applicable, turn agitator ON.

4.8 Make sure all return lines that are not in use are capped off and tightened.

.1 This allows CIP solution to flow effectively through desired path.

4.9 Go to CIP room:

4.10 Check to make sure there is enough chemical solution in drum.

.1 Check sanitizer.

.2 Check Exxelerate CIP solution-needs replacement about once every two weeks.

4.11 Record on CIP Recording Chart the process number at the tip of the green pointer.

.1 Each area corresponds to a specific process number.

4.12 Turn the dial and toggle switch (on panel) to correct settings.

4.13 Be sure that display panel corresponds to system that is to be washed.

4.14 Push green button to start the CIP system.

4.15 Immediately go into the plant to check that CIP solution went to the correct area that the return lines are sealed.

4.16 After wash is complete:

4.17 Verify that system is done washing by viewing the panel in the CIP room.

4.18 Visually inspect equipment.

.1 If results are satisfactory, continue on with procedure.

.2 If any soil is observed, repeat process. Manual cleaning may be necessary before second CIP process.

4.19 Disconnect and cap-off return line.

4.20 Determine which wash cycle is next and plan new connections accordingly.

5.0 MAINTENANCE

5.1 Daily, inspect CIP Recording Chart and check for any abnormalities. Sign chart.

5.2 Every week, inspect chemical pumps for leaks or other damage. Record in Chart 048.

5.3 Test chemical concentrations every week. Record in Chart 043. Make use of SOP 01-08.

5.4 Once a month, drain and flush CIP tanks. Clean outside of tanks. Record in Chart 048.

5.5 Once every three months, take apart spray-balls and inspect. Take care of any necessary maintenance. Record in Chart 048.

5.6 Every six months, disassemble and hand-wash CIP valves.

6.0 RECORD KEEPING

6.1 This SOP requires the use of Chart 048. Turn into supervisor and replace as needed.

6.2 Maintain the CIP Recording Chart in CIP room.

Babcock Hall Dairy

GMP Documentation

Edited October, 2012

By:

Casey Whyte

Babcock Hall Dairy Plant
2/28/11

Good Manufacturing Practices

Good manufacturing practices (GMP's) specify many of the production and process controls to prevent contamination of products. The objective of GMPs is to prevent adulteration (or contamination). Adulterated products are defined as products that "are manufactured under such conditions that are unfit" or products that "have been prepared, packed, or held under unsanitary conditions whereby they have become contaminated with filth, or whereby they may have been rendered injurious to health".

Two main categories of GMPs:

- Employee practices and good personal hygiene
- Equipment and plant cleanliness.

Employee practices and good personal hygiene include:

1. Hair
2. Jewelry
3. Fingernail
4. Uniform and clothing
5. Hand washing , hand sanitation and glove use
6. Footwear
7. Health practices
8. Food, drink, gum, cough drops

A: Employee Practices

1.0 Hair:

Hairnets and beard snoods should be kept at all production entrances allowing easy access by all employees and visitors. Everyone, employees and visitors, will wear-head covering restraints to contain their hair in the manufacturing plant.

Hairnets must be worn over your ears. Hairnets are to cover the entire head (front, back, and sides) and include all hair: Often bangs or hair in the back of the head is excluded from coverage within the hairnet. This practice is to be avoided. Caps or

hats can be worn over hairnets if they are clean. All employees in production, packaging or other plant areas should be trained on proper hairnet usage:

- Hair restraints are required by Wisconsin law (ATCP 80.10(2)(a) and should be worn at all times in production areas or all areas where product may be exposed within the plant. Hair itself and its microorganisms may contribute to product contamination.

Beard snoods are to be worn by those employees or visitors with sideburns, mustaches and beards at a length greater than ¼ inch.

2.0 Jewelry

- Employees are not allowed to wear jewelry or watches in the production areas with the following exceptions: medical alerts and hand rings as long as gloves are worn.

- Visitors are not allowed to wear jewelry or watches in the production areas with the exception of hand rings (as long as gloves are worn), medical alerts and ear rings that do not hang below the bottom of ear lobe.

Medical alert bracelets / necklaces:

- By no means should and employee stop wearing this type of life saving jewelry.
- Necklaces are a better alternative than bracelets and should always be kept underneath clothing. Shirts should be tucked in to prevent the necklace from being lost if it falls from around the neck.

3.0. Fingernails

Recent scientific studies have proven that fingernails are a common source of contamination. Dirt and bacteria build up underneath fingernails. The longer the fingernails, the greater the concentration of dirt and bacteria. Men and women both

should keep their fingernails short (no longer than ¼ inch) to help prevent bacterial contamination.

Employees:

- Short fingernails facilitate washing and reducing dirt accumulation.
- Fingernails should be kept clean and trimmed (no longer than 1/4") at all times.
- Longer fingernails cause holes in gloves.
- Fingernails should remain free from fingernail polish, decals or false fingernails:
- Polish or decals may chip off and fall into the product and may lead to bacterial or physical contamination.

Visitors entering the production area who are wearing fingernail polish or artificial nails should wear gloves.

4.0 Uniforms and Clothing

Uniforms and clothing are a common way to introduce contamination into the plant and the product. Contamination can be of both a biological and physical nature. Outside clothing can introduce hair, bacteria, dirt, buttons, or other contaminants. To reduce clothing from cross-contaminating products, management will provide laundered uniforms and designated footwear for all employees, particularly those involved in production areas. Additional measures of food safety protection are provided when the uniforms are professionally laundered and otherwise not allowed to leave the premises. A locker is provided for changing and uniform storage. Under no circumstances are uniforms to be stored in bathrooms. The plant will provide an area for uniform storage.

- White pants and shirts are for production personnel. When maintenance on equipment is performed during production, there is a greater opportunity for other employees to notice and follow up with sanitation procedures prior to restarting production on that piece of equipment. **Maintenance personnel must wear lab coats when working in production areas.**
- Lab coats are required for all **visitors** and contractors.

Uniforms should be cleaned daily:

- A clean uniform shall be worn at the start of each production day and placed in a designated container at the end of production day.

Locker rooms are provided:

- Employees shall change into their clothes and footwear upon arriving at work.
- Clothing should remain at work.

5.0 Hand Washing, Hand Sanitation and Glove Use

People normally carry 150 different types of bacteria on their bodies and over 400 different types of bacteria within their bodies. Many of these bacteria cause food borne diseases if transferred to food. When bacteria are not washed off the hands after using restrooms, they have the potential to make not only that person sick, but others sick as well.

Therefore, when a person touches food, any bacteria on the skin will be transferred to the food. People who eat that food may become quite ill and in some cases die depending on the type of bacteria that are transferred (cross contamination). To avoid illness due to cross contamination, proper hand washing is essential. Gloves are required when touching finished products that are not yet packaged.

It is important to remember that gloves are meant to protect the food from the employee and <u>not</u> protect the employee from the product. Because hands can so easily transfer pathogens, it is necessary to properly wash hands:

- Experiments have shown that hands need to be washed for at least <u>20 seconds</u> to see a significant decrease in microorganisms on the surface of the hand.
- When washing, hands need to be scrubbed vigorously in the crevices of the hand, fingertips, under fingernails and the space between the fingers with warm water and soap.

Wash and sanitize hands at the following times (this is not an all inclusive list):

- Upon entering production area hands must be washed and sanitized.
- Before handling exposed products.
- After visiting the restroom.
- After touching nose, mouth, face, or hair.
- After eating, drinking, using tobacco.
- After sneezing or coughing, after blowing or wiping nose.
- After any absence from work area or any other reason for leaving the workstation.
- After handling garbage, soiled equipment/parts.
- After performing any maintenance tasks on equipment.

- After handling personal belongings (street clothing, purses, cosmetics, etc.).

6.0 Footwear

Proper footwear and properly maintained footfoamers are important aspects of employee, food, and environment safety. Appropriate footwear reduces worker injury due to slipping on wet floors or damage to toes. Footbaths/footfoamers reduce potential cross contamination by removing dirt and debris that would otherwise be tracked throughout the plant. Footfoamers should be checked for proper operation daily. Footfoamers should be turned on first thing daily.

No open toed footwear or sandals worn by visitors or employees are allowed:

- For employee and visitor safety, open toed footwear or sandals is prohibited. They do not protect against hot liquids, acids, and caustics used in the facility. Such footwear does not protect the facility from contamination due to feet or against heavy or sharp objects that may accidentally drop on an employee's foot.

Shoes worn by employees are to have a slip resistant sole:

- Sole grooves should be kept at a maximum of a quarter of an inch. The greater the groove depth, the more dirt and other debris that may become trapped and end up in product or on equipment.

Dedicated Plant footwear:

- Plant supplied footwear should not leave the building.
- If plant does not provide footwear, employee should carry in footwear and leave footwear at plant. These should not be worn outside of building.

Shoe covers will need to be worn over outside footwear:

- Shoe covers are available at the plant entrances.
- Visitors entering the plant should wear "in house" footwear or shoe covers.

7.0 Health Practices

Employee health and hygiene, directly or indirectly, play an important role in food safety and sanitation. Sick employees and poor hygienic practices rank second in the causes of food borne disease outbreaks.

To avoid the possibility of foods becoming contaminated with pathogenic microorganisms associated with employees who are ill, the following personal hygiene practices should be strictly enforced:

- Supervisor notification is required when employees report to work with any type of illness including head colds and sinus infections.
- The following conditions will strictly prohibit persons from handling products. Special attention should be paid to those employees who handle products after they have been through a heat treatment. This includes those who handle product contact surfaces such as maintenance or sanitation employees.
    - Persons experiencing diarrhea or vomiting.
    - Persons with contagious diseases, severe colds or conditions that result in runny noses.
    - Persons with wounds, boils or sores on hands, arms or face.
- Minor cuts on hands or arms should be treated promptly by washing with warm water and soap.
- Band aid use must be reported to management.
- After washing, cover hands with gloves. Minor cuts on arms should be covered with band-aids. Band aids must be removed at night to allow for the wound to heal.
- Injuries on the hands and the lower portions of the arms such as cuts, abrasions, burns and even a hangnail must be cleaned and treated immediately. Often these injuries become infected. As a result, they can contribute to the contamination of food and equipment with disease causing bacteria.
- Supervisor notification should be required for those handling finished products with a rash or sore to determine alternate duties that can be performed until the rash or sore is healed.

8.0 Food, Drink, Gum, Cough Drops

The presence of food brought into the plant by employees can be a source of bacterial contamination. Food and crumbs attract rodents and insects that can spread disease

causing bacteria, rodent droppings and hair to all parts of the manufacturing facility. Food and beverages are to be consumed in the lunchroom, offices, conference room or other authorized break areas. After breaks, employees need to wash and sanitize their hands when returning to process area.

- Food and beverages are absolutely prohibited in production areas.
- Food and beverages are not to be kept in toolboxes.
- Food is not to be kept in plant coolers or freezers.
- Candy, gum, toothpicks, all tobacco products, and cough drops should only be consumed / used on break and disposed of properly before returning to work. These types of items require hand to mouth action and increase the potential for bacterial contamination.