

HACCP-Based Program for  
Central Coast Creamery:  
A small-scale artisan cheese production facility

A Senior Project

Presented to

The Faculty of the Dairy Science Department  
California Polytechnic State University, San Luis Obispo

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Science

By

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# **Acknowledgment**

I'd like to express my appreciation to the owner of Central Coast Creamery for allowing me to use his facility and operation information to develop a HACCP program. My senior project advisor, Dr. Yeung, is someone I'd like to extend my appreciation to as well for offering his time, guidance, and informational material.

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## **Introduction**

To begin my senior project on developing a HACCP program for Central Coast Creamery I began by requesting information from Reggie, the Creamery owner. Using that information and the help I received from attending a two-day HACCP course at the College of Marin I was able to turn it into a HACCP based program.

## HACCP Team Form

<b>Name</b>	<b>Job Title/Role on Team</b>	<b>HACCP Training</b>	<b>Experience</b>	<b>HACCP Program Development Responsibilities</b>
Reggie Jones	Owner/ Creamery Manager and cheesemaker	HACCP training and past QC Manager	25 years	1. HACCP program verification
Lindsey Mendes	Quality Supervisor	HACCP training	1 years	1. HACCP program implementation
Catherine Machado	Quality Control	HACCP training	3 years	1. HACCP program development

## Product Description for Holey Cow



<b>Product Description</b>	<b>Product:</b> Holey Cow	Issue Date:
		Supersedes:

<b>Product Name(s)</b>	Holey Cow Semi-soft
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized cow's milk cheese made from whole milk. Aged for a minimum of 2 months.
<b>Ingredient list</b>	Pasteurized cow's milk, salt, culture, and vegetable enzymes.
<b>Packaging used</b>	
<b>Labeling requirements/ instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	6 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 10 pound wheels are cased in cardboard boxes. Approximate 0.42-ounce pieces are individually vacuum-sealed, shrink wrapped, and cased in cardboard boxes – 24 units per box. Temperature of storage is ??. Sold ?? Distributed in coolers by Central Coast Creamery staff to Farmers Markets.

<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

## Product Description for Ewenique



<b>Product Description</b>	<b>Product:</b> Ewenique	Issue Date:
		Supersedes:

<b>Product Name(s)</b>	Ewenique
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized sheep's milk cheese made from 100% sheep milk. Aged for a minimum of 4 months.
<b>Ingredient list</b>	Pasteurized 100% sheep's milk, cultures, salt, and enzymes.
<b>Packaging used</b>	
<b>Labeling requirements/ instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	4 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 9 pound wheels are cased in cardboard boxes. Approximate 0.38-ounce pieces are individually vacuum-sealed, shrink wrapped, and cased in cardboard boxes – 24 units per box. Temperature of storage is ??. Sold ?? Distributed in coolers by Central Coast Creamery staff to Farmers Markets.



<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

## Product Description for Goat Gouda



<b>Product Description</b>	<b>Product:</b> Goat Gouda	Issue Date:
		Supersedes:

<b>Product Name(s)</b>	Goat Gouda Semi-hard
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized goat's milk cheese made from 100% goat milk. Aged for a minimum of 5 months.
<b>Ingredient list</b>	Pasteurized 100% goat's milk, goat cream, salt, culture, and vegetable enzymes.
<b>Packaging used</b>	
<b>Labeling requirements/ instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	12 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 10 pound wheels are cased in cardboard boxes. Approximate 0.42-ounce pieces are individually vacuum sealed, shrink wrapped, and cased in cardboard boxes – 24 units per box. Temperature of storage is ??. Sold ??. Distributed in coolers by Central Coast Creamery staff to Farmers Markets.

<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

## Product Description for Goat Cheddar



<b>Product Description</b>	<b>Product:</b> Goat Cheddar	Issue Date:
		Supersedes:

<b>Product Name(s)</b>	Goat Cheddar Semi-hard
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized goat's milk cheese made from 100% goat milk. Aged for a minimum of three months.
<b>Ingredient list</b>	Pasteurized 100% goat's milk, salt, culture, and vegetable enzymes.
<b>Packaging used</b>	
<b>Labeling requirements/ instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	12 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 10 pound wheels are cased in cardboard boxes. Approximate 0.42-ounce pieces are individually vacuum-sealed, shrink wrapped, and cased in cardboard boxes – 24 units per box. Temperature of storage is ??. Sold ?? Distributed in coolers by Central Coast Creamery staff to Farmers Markets.

<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

## Product Description for Seascape



<b>Product Description</b>	<b>Product:</b> Goat Cheddar	Issue Date:
		Supersedes:

<b>Product Name(s)</b>	Goat Cheddar Semi-hard
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized goat's milk cheese made from 100% goat milk. Aged for a minimum of three months.
<b>Ingredient list</b>	Pasteurized 100% goat's milk, salt, culture, and vegetable enzymes.
<b>Packaging used</b>	
<b>Labeling requirements/ instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	12 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 10 pound wheels are cased in cardboard boxes. Approximate 0.42-ounce pieces are individually vacuum-sealed, shrink wrapped, and cased in cardboard boxes – 24 units per box. Temperature of storage is ??. Sold ?? Distributed in coolers by Central Coast Creamery staff to Farmers Markets.

<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

## Product Description for Big Rock Blue



<b>Product Description</b>	<b>Product:</b> Big Rock Blue	Issue Date:
		Supersedes:

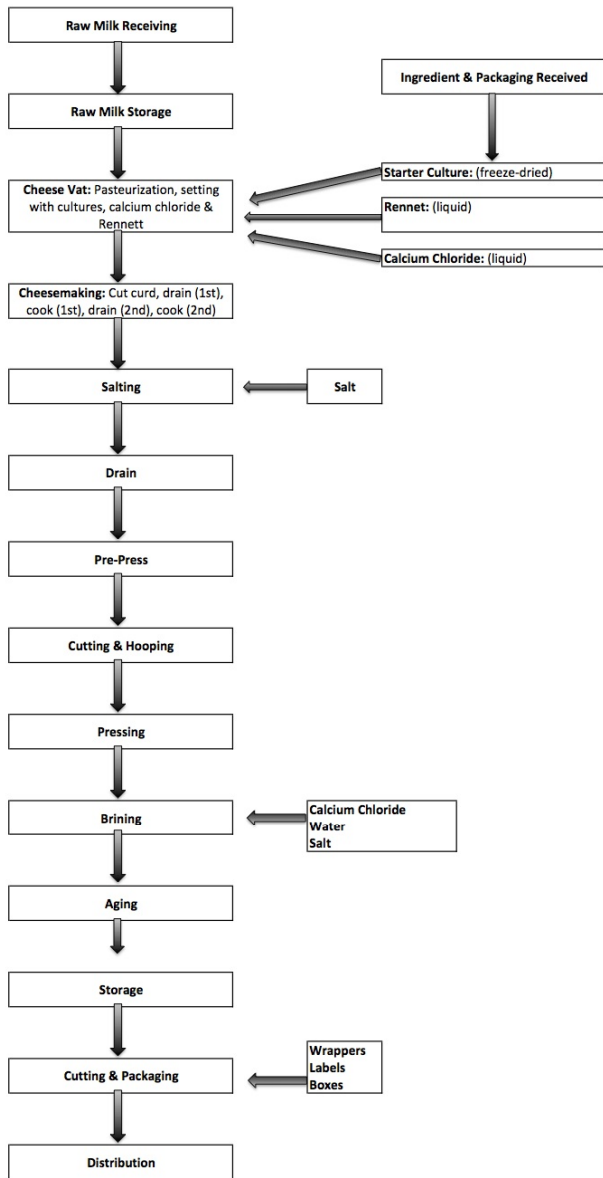
<b>Product Name(s)</b>	Big Rock Blue
<b>Important food safety characteristics</b> (pH, processing, etc)	Pasteurized cow's milk cheese made from whole milk. Aged for a minimum of 3 months. Stored at 50°F with 90%+ humidity for 5 weeks and turned daily. After 5 weeks cheese the cheese is washed and wrapped for sale. Aged at 40°F for an additional 10 weeks (certain pH?, moisture content)
<b>Ingredient list</b>	Pasteurized cow's milk, cheese cultures, salt, enzymes, calcium chloride, and mold.
<b>Packaging used</b>	
<b>Labeling requirements/instructions</b>	Ingredients Central Coast Creamery Plant Number
<b>Shelf-life</b>	4 months uncut
<b>Storage &amp; distribution handling</b>	Approximate 5 pound wheels are cased in cardboard boxes. Approximate 0.42-ounce pieces are individually vacuum-sealed, shrink wrapped, and cased in cardboard boxes – 12 units per box. Temperature of storage is ??. Sold ?? Distributed in coolers by Central Coast Creamery staff to Farmers Markets.



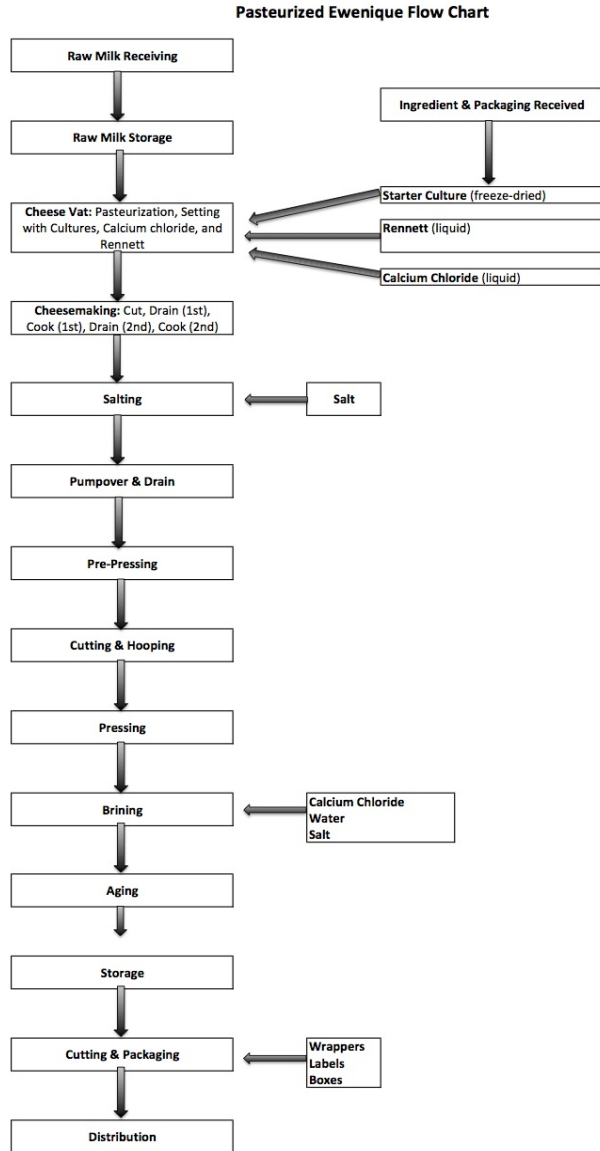
<b>Distribution area &amp; outlets</b>	Sold to various stores and at Farmers Markets in the Central Coast.
<b>Intended consumers</b>	Customers of all ages can consume this product.
<b>Intended use</b>	Ready to eat and for use in prepared foods.

# Flow Chart for Holey Cow

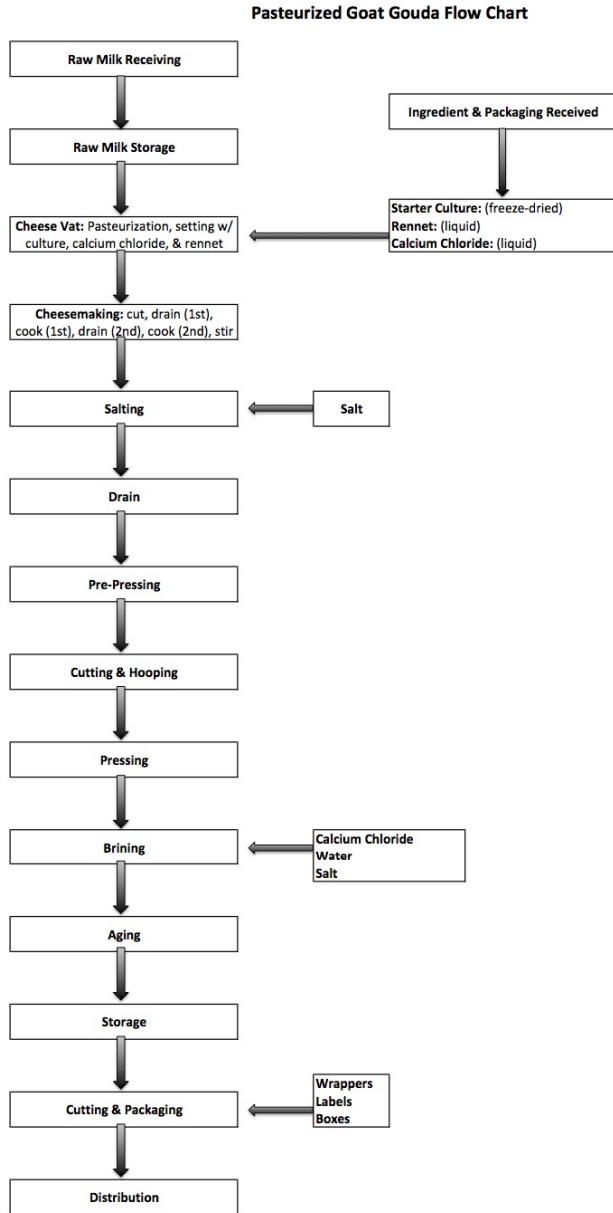
Pasteurized Holey Cow Flow Chart



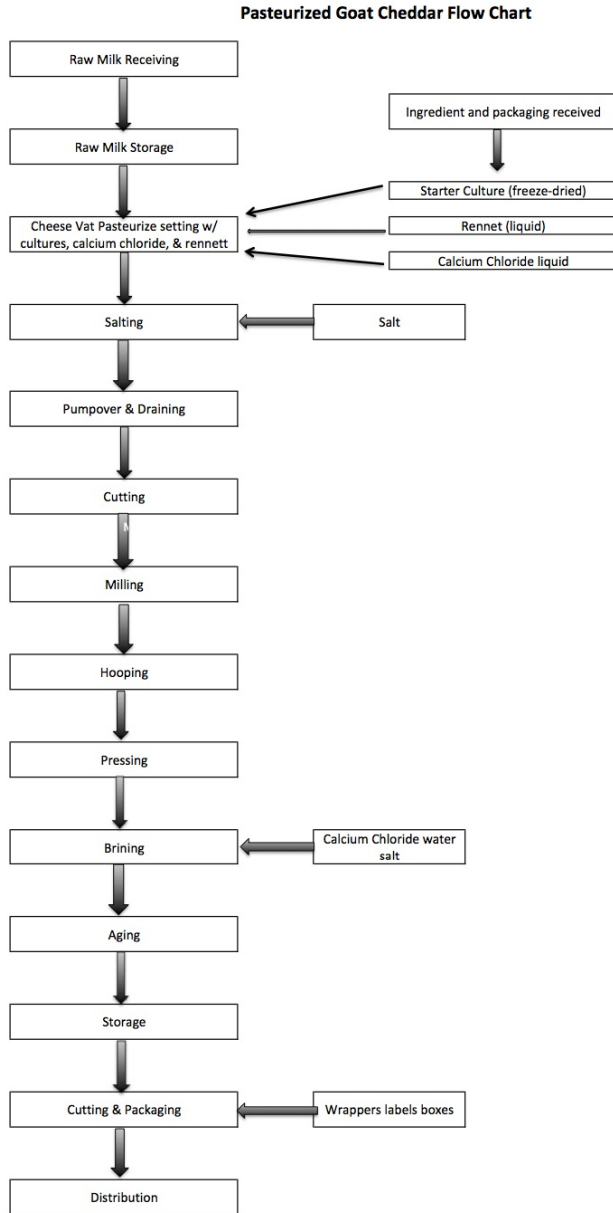
# Flow Chart for Ewenique



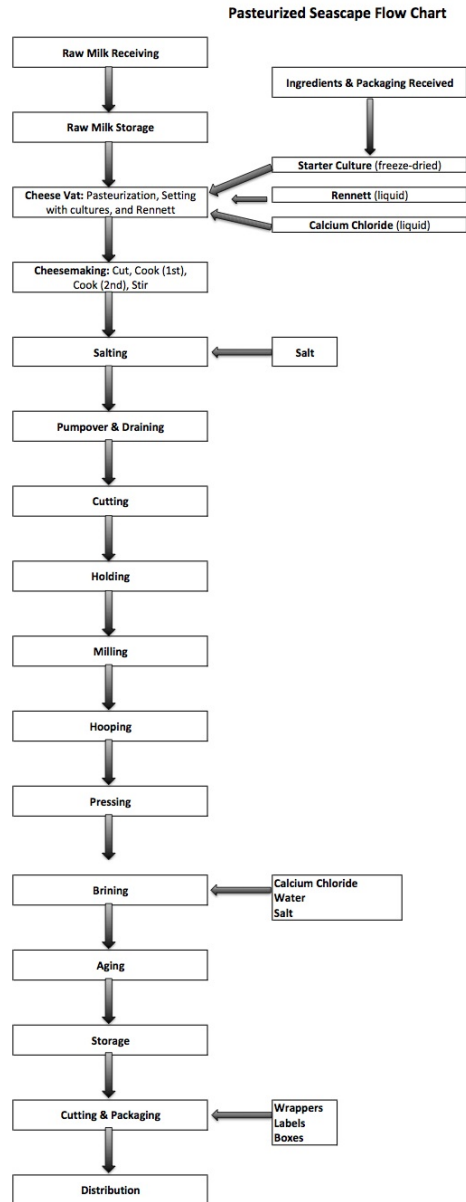
# Flow Chart for Goat Gouda



# Flow Chart for Goat Cheddar

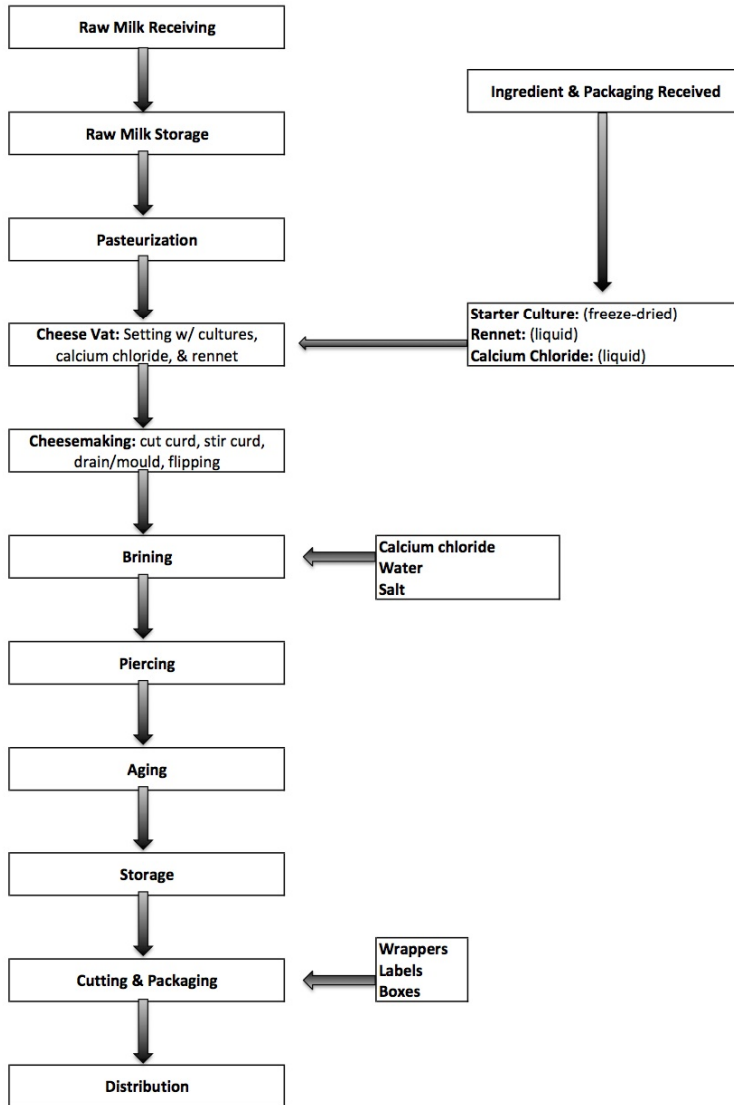


# Flow Chart for Seascap



# Flow Chart for Big Rock Blue

Pasteurized Big Rock Blue Flow Chart





Central Coast Creamery  
Paso Roble, CA

Date:

Batch #:

**Make Sheet:**  
**Holey Cow**

Type:

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
1 <sup>st</sup> Draining						
1 <sup>st</sup> Cooking						
Scalding						
2 <sup>nd</sup> Draining						
2 <sup>nd</sup> Cooking						
Salting						
Pre- Pressing						



Cutting & Hooping						
Pressing						
Flipping						
Brining						
Out of Brine						
To Storage						
To Distribution						



Central Coast Creamery  
Paso Roble, CA

Date:

Batch #:

**Make Sheet:**  
**Ewenique**

Type:

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
1 <sup>st</sup> Draining						
1 <sup>st</sup> Cooking						
Scalding						
2 <sup>nd</sup> Draining						
2 <sup>nd</sup> Cooking						
Salting						
Pre- Pressing						

Cutting & Hooping						
Pressing						
Flipping						
Brining						
Out of Brine						
To Storage						
To Distribution						



Central Coast Creamery  
Paso Roble, CA

Date:


Batch #:

**Make Sheet:**  
**Goat Gouda**

Type:

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
1 <sup>st</sup> Draining						
1 <sup>st</sup> Cooking						
Scalding						
2 <sup>nd</sup> Draining						
2 <sup>nd</sup> Cooking						
Salting						
Pre- Pressing						
Cutting & Hooping						

Pressing						
Flipping						
Brining						
Out of Brine						
To Storage						
To Distribution						

	<p style="text-align: center;">Central Coast Creamery Paso Roble, CA</p>	<p>Date:</p>
<p>Batch #:</p>	<p style="text-align: center;"><b>Make Sheet:</b> <b>Goat Cheddar</b></p>	<p>Type:</p>

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
1 <sup>st</sup> Cooking						
1 <sup>st</sup> Scalding						
2 <sup>nd</sup> Cooking						
Salting						
Pumpover						
Draining						
Cutting						

Holding						
Milling						
Hooping						
Pressing						
Flipping						
To Storage						
To Distribution						



Central Coast Creamery  
Paso Roble, CA

Date:

Batch #:

**Make Sheet:**  
**Seascape**

Type:

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
1 <sup>st</sup> Cooking						
1 <sup>st</sup> Scalding						
2 <sup>nd</sup> Cooking						
Salting						
Pumpover						
Draining						
Cutting						



Holding						
Milling						
Hooping						
Pressing						
Flipping						
To Storage						
To Distribution						



Central Coast Creamery  
Paso Roble, CA

Date:

Batch #:

**Make Sheet:**  
**Blue Cheese**

Type:

	Type	Amount	Time	Temp °F	pH	Comment
Vat Check						
Milk						
<b>TOTAL</b>						
Starter						
CaCl						
Rennet						
Cutting						
Stirring						
Draining						
Moulding						
Flipping						
Brining						
Out of Brine						
To Storage						
To Distribution						



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #1 Safety of Water**

**Prerequisite Program #1**

**Safety of Water, including cooling water, that comes in contact with food and food-contact surfaces.**

**Goal:**

Water for creamery purposes, that contacts food and food contact surfaces, is safe for human consumption and of safe sanitary quality.

**Procedures:**

1. Attainment of certification stating that the well water and recirculated water is free from coliforms.

Monitor	Frequency	Document(s)	Verification
1. QC	Annually	Water supplier certification	Owner

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #2 Condition and cleanliness of food contact surfaces**

**Goal:**

All equipment product contact surfaces should be cleansed and sanitized before use. All equipment for processing milk and making cheese shall conform to State and Federal standards for food contact.

**Procedures:**

1. Sanitary Standard Operating Procedures for cleaning and sanitizing all equipment used in the creamery.
2. Maintenance of all equipment is kept in good shape to increase the ability to properly clean and sanitize.
3. Clothing and gloves worn by employees are kept in good shape and are clean.

Monitor	Frequency	Document(s)	Verification
1. QC	Daily	Sanitary Standard Operating Procedures	QS
2. QC	Daily	Equipment maintenance log	QS
3. QC	Daily	Cheese room checklist	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #3 Prevention of cross-contamination from unsanitary objects**

**Goal:**

To prevent contamination of products from cleaning chemicals, unsanitary objects, ingredients, packaging materials, and other food contact surfaces, including gloves and outer garments not covered by prerequisite program 2.

To prevent cross-contamination of pasteurized milk and cheese with raw milk.

**Procedures:**

1. Prevention of contamination of pasteurized milk, curds, and cheese with raw milk.
2. Prevention of contamination from the environment inside and outside the creamery, including milk holding tank, whey holding tank, trash cans, and cardboard boxes.
3. Prevention of contamination of the brines.
4. Prevention of contamination of packaging materials.
5. Prevention of contamination by cleaners and sanitizers.
6. Prevention of contamination by outside service and repair workers and visitors.

Monitor	Frequency	Document(s)	Verification
1. QC	Daily	Make sheets	QS
2. QC	Daily	Cheese room checklist	QS
3. QC	Weekly	Brine management log	QS
4. QC	Daily	Packaging room checklist	QS
5. QC	Daily	Cheese room checklist	QS
6. QC	Daily	Visitor log	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal

- violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



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**Prerequisite Program #4 Maintenance of hand washing and sanitizing, and toilet facilities**

**Goal:**

Toilet rooms shall have solid doors that are self-closing and do not open into any room in which milk or dairy products are processed, packaged, or stored. Legible signs are posted in each toilet room directing employees to wash their hands before returning to work. Toilet rooms and fixtures shall be kept in clean condition and in good repair. The rooms shall be ventilated and well lit. Hand washing facilities are conveniently located in every toilet room and every production area and are provided with hot and cold running water, soap, and single-use paper towels.

**Procedures:**

1. A contract cleaning service will clean the rooms every week.
2. Hand washing sinks will be maintained in the processing rooms so that there is always hot and cold water, as well as soap and paper towels.
3. Our quality control manager inspects the facility to ensure proper upkeep and sanitation.
4. Good Manufacturing Practices are implemented and employees are trained to follow them.

Monitor	Frequency	Document(s)	Verification
1-2. QC	Weekly	Toilet facility & Cheese room checklist	QS
3. QC	Annual	Annual Verification Report	QS
4. QC	Annual	Employee training log	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #5 Protection of product, packaging, and product-contact surfaces from adulteration**

**Goal:**

To prevent a food from containing any poisonous or deleterious substance, which may render it injurious to health. To ensure that the food, packaging material and food contact surfaces are protected from various microbiological, chemical, and physical adulterants, such as lubricants cleaners, sanitizers, condensate, floor splash, ceiling drips, rust and paint particles.

**Procedures:**

1. Only food grade products are used on equipment.
2. Protection of the ingredients and packaging materials from adulteration.
3. The adulteration of milk and cheese is prevented by maintaining clean food contact surfaces.
4. Cleaners and sanitizers are labeled properly and clearly and stored at a distance from food contact surfaces.
5. Security of equipment, milk, and cheese from physical adulterants such as peeling paint, rust, water leaks, ceiling drips, and condensation.

Monitor	Frequency	Document(s)	Verification
1-5. QC	Daily	Cheese & packaging room checklist	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.





Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #6 Proper labeling, storage, and use of toxic compounds**

**Goal:**

To ensure that the labeling, storage, and use of toxic compounds are adequate to protect food from contamination.

**Procedures:**

1. Proper labeling is required for toxic compounds, cleaners, sanitizers, and lab equipment solutions including the name of the compound inside and instructions for proper use.
2. Proper storage and use of toxic compounds to prevent contamination of ingredients and products. Also included should be detailed instructions for each cleaner and sanitizer along with employee training on how to use them correctly.

Monitor	Frequency	Document(s)	Verification
1-2. QC	Daily	Cheese room checklist	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #7 Control of  
employee health conditions**

**Goal:**

To control conditions that could result in the microbiological contamination of food, food packaging materials, and food contact surfaces.

To manage employees who are diagnosed with or have symptoms of an illness, wounds or other afflictions that could be the source of microbial contamination.

**Procedures:**

1. Employees who show signs of medical problems, exposed wounds, coughing, sneezing, etc. will be excused from work. Minor injuries received on the job, such as scrapes and cuts, will be assessed by the HACCP leader and bandaged. The HACCP leader will decide if they can continue working or not.
2. All new employees are trained in General Manufacturing Practices.

Monitor	Frequency	Document(s)	Verification
1. QC	Daily	Employee health log	QS
2. QC	New hires	Employee training log	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



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**Prerequisite Program #8 Exclusion of pests  
(rodents, insects, birds)**

**Goals:**

Monitoring must confirm that pests are excluded from relevant areas of the creamery to the extent possible and should also confirm that approved procedures are followed to prevent (or eliminate) infestation without contaminating foods or food processing equipment and utensils.

**Procedures:**

1. The area surrounding the creamery is in good condition. There is no debris or litter around the premises and the trash is put in the designated closed metal bin at the end of the complex.
2. The whey storage tank is kept in good condition by keeping the outside clean and residue free at all times. The tank is emptied in a timely manner once filled. When emptied into the receiving tanker the hose is put through a secured and designated slot.
3. If pests were to appear anywhere in or around the facility our staff is trained to identify the signs of their presence.
4. To maintain the cleanliness of the facilities interior the following is done:
  - a. Weekly detailed cleaning
  - b. Cheesemaking wastes and spills that may occur are cleaned in a timely fashion after occurrence
  - c. Timely removal of trash

Monitor	Frequency	Document(s)	Verification
1. QC	Case by Case	Pest Log	QS
2. QC	Daily	Cheese Room Checklist	QS
3. QC	Daily	Cheese Room Checklist	QS
4. QC	Daily	Cheese Room Checklist	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.

3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
Paso Roble, CA

**Prerequisite Program #9 Receiving, Storage and Handling of Raw Milk**

**Goal:**

Raw milk and other ingredients used in cheesemaking and packaging that are received at the creamery must be of acceptable quality and used and stored so as to prevent cross-contamination with pasteurized milk and other ingredients and cheese during processing, aging, and packaging.

**Procedures:**

1. The raw milk is received at a temperature of 45°F or below.
2. Ingredients received that are to be added to the milk such as rennet, cultures, and calcium chloride will be in good condition and have enough shelf-life.
3. Packaging materials including boxes and shipping materials are in good condition and stored in the storage room.

Monitor	Frequency	Document(s)	Verification
1. QC	Daily	Receiving Log	QS
2. QC	Daily	Supply Receiving Log	QS
3. QC	Daily	Supply Receiving Log	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.



Central Coast Creamery  
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**Prerequisite Program #10 Temperature Control (raw ingredients, cheese aging and cold storage of finished product)**

**Goal:**

To have adequate means of maintaining and monitoring temperatures of raw materials and ingredients used in production, and finished products to ensure the safe processing and storage of food. To maintain and monitor temperatures and relative humidity in cheeses during aging to ensure proper cheese ripening conditions.

**Procedures:**

1. Starter cultures are stored in a designated freezer at temperatures < -10 °F.
2. Rennet is stored in a designated refrigerator at temperatures <45°F.
3. Pasteurization of milk for each batch of cheese is recorded on a chart and monitored by the QC manager.
4. Aging temperatures are maintained at 50°F and RH 75%.
5. Finished products, post aging, are stored in a designated cooler at temperatures <40°F.

Monitor	Frequency	Document(s)	Verification
1. QC	Daily	Temperature log	QS
2. QC	Daily	Temperature log	QS
3. QC	By batch	Pasteurization Charts	QS
4. QC	Daily	Aging room temperature log	QS
5. QC	Daily	Cooler temperature log	QS

**Corrections:**

1. Corrections will be taken as needed at each step and noted on the corresponding document.
2. Any correction that cannot be done immediately will be reported to the appropriate supervisor to assess whether the situation presents a hazard, a potential impact on our ability to produce a safe, quality product or a legal violation. The supervisor will also assess whether temporary measures are needed to minimize the effect of the deviation on our product or operation.
3. Corrections that cannot be addressed immediately will be given a timeline for correction and will be reassessed as needed to maintain control of the program.

# Hazard Analysis – Holey Cow, Ewenique, & Goat Gouda

Product Hazard Analysis Form:  
Holey Cow, Ewenique, & Goat Gouda

B = biological
C = chemical
P = physical

Raw Milk Receiving	B- vegetative pathogens	No	PP #9 - maintaining 45°F	No
	C- beta-lactum drugs	No		
	P- foreign material	No		
Raw Milk Storage	B- vegetative pathogens	No	PP #9 - maintaining 45°F	Yes CCP 1
	C-	No		
	P-	No		
Pasteurization	B- vegetative pathogens	No	Pasteurization is able to kill the vegetative pathogens by heating the milk to a minimum of 145° for a minimum of 30 minutes.	Yes CCP 2
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cheese Vat setting with cultures and rennet	B- vegetative pathogens	No		No
	C-	No		
	P- Ingredients	No	PP #3 - Prevention of cross-contamination	
Cutting the Curd	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cooking the Curd	B- vegetative pathogens	Yes	SOP - (1st cook) increase temperature to 92-93°F (2nd cook) increase temperature to 96-97°F	Yes CCP 3
	C-	No		
	P-	No		
Salting	B-	No		No
	C-	No		
	P- contamination of salt	No	PP #9 - Receiving and storage of raw ingredients	
Draining/ Pumpover	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cutting & Hooping	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- foreign material	No	PP #5 - Protection from adulteration	
Pressing	B-	No		No
	C-	No		
	P- foreign material	No	PP #5 - Protection from adulteration	
Brining	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C-	No		
	P- foreign material	No	PP #5 - Protection from adulteration	
Aging	B- vegetative pathogens	Yes	Aging the cheese for at least 90 days at <50°F is needed to prevent the growth of vegetative pathogens	Yes CCP 4
	C-	No		
	P- Foreign material from the aging room and from human contact	No	PP #3 - Prevention of cross-contamination & PP #5 - Protection from adulterants	
Cutting/ Packaging	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- packaging materials	No	PP #3 - Prevention of cross-contamination	
Storage	B- vegetative pathogens	No	PP# 10 - Temperature Control	Yes CCP 5
	C-	No		
	P-	No		

# Hazard Analysis for Goat Cheddar & Seascap

Product Hazard Analysis Form:  
Goat Cheddar & Seascap

B = biological  
C = chemical  
P = physical

Raw Milk Receiving	B- vegetative pathogens	No	PP #9 - maintaining 45°F	No
	C- beta-lactum drugs	No		
	P- foreign material	No		
Raw Milk Storage	B- vegetative pathogens	No	PP #9 - maintaining 45°F	Yes CCP 1
	C-	No		
	P-	No		
Pasteurization	B- vegetative pathogens	No	Pasteurization is able to kill the vegetative pathogens by heating the milk to a minimum of 145° for a minimum of 30 minutes.	Yes CCP 2
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cheese Vat setting with cultures and rennet	B- vegetative pathogens	No		????
	C-	No		
	P- Ingredients	No	PP #3 - Prevention of cross-contamination	
Cutting the Curd	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cooking the Curd	B- vegetative pathogens	Yes	SOP - (1st cook) increase temperature to 93°F (2nd cook) increase temperature to 101°F	Yes CCP 3
	C-	No		
	P-	No		
Salting	B-	No		No
	C-	No		
	P- contamination of salt	No	PP #9 - Receiving and storage of raw ingredients	
Draining/ Pumphover	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cutting	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- foreign material	No	PP #5 - Protection from adulteration	
Milling	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- foreign material	No	PP #5 - Protection from adulteration	
Hooping	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- foreign material	No	PP #5 - Protection from adulteration	
Pressing	B-	No		No
	C-	No		
	P- foreign material	No	PP #5 - Protection from adulteration	
Aging	B- vegetative pathogens	Yes	Aging the cheese for at least 90 days at <50°F is	Yes CCP 4
	C-	No		
	P- Foreign material from	No	PP #3 - Prevention of cross-contamination & PP #5 -	
Cutting/ Packaging	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- packaging materials	No	PP #3 - Prevention of cross-contamination	
Storage	B- vegetative pathogens	No	PP# 10 - Temperature Control	Yes CCP 5
	C-	No		
	P-	No		



# Hazard Analysis for Big Rock Blue

Product Hazard Analysis Form:  
**Big Rock Blue**

B = biological
C = chemical
P = physical

Raw Milk Receiving	B- vegetative pathogens	No	PP #9 - maintaining 45°F	No
	C- beta-lactum drugs	No		
	P- foreign material	No		
Raw Milk Storage	B- vegetative pathogens	No	PP #9 - maintaining 45°F	Yes CCP 1
	C-	No		
	P-	No		
Pasteurization	B- vegetative pathogens	No	Pasteurization is able to kill the vegetative pathogens by heating the milk to a minimum of 145° for a minimum of 30 minutes.	Yes CCP 2
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cheese Vat setting with cultures and rennet	B- vegetative pathogens	No		
	C-	No		
	P- Ingredients	No	PP #3 - Prevention of cross-contamination	
Cutting the Curd	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Draining	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Moulding	B-	No		No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Brining	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C-	No		
	P- foreign material	No	PP # 5 - Protection from adulteration	
Piercing	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P-	No		
Cutting/ Packaging	B- vegetative pathogens	No	PP #2- Condition and Cleanliness of Food Contact	No
	C- sanitizing chemicals	No	PP #3 - Prevention of cross-contamination	
	P- packaging materials	No	PP #3 - Prevention of cross-contamination	
Storage	B- vegetative pathogens	No	PP# 10 - Temperature Control	Yes CCP 3
	C-	No		
	P-	No		

# HACCP Plan – Holey Cow, Ewenique, Goat Gouda

HACCP PLAN: Holey Cow, Ewenique, & Goat Gouda

Process Step	Hazard Description	CCP Description	Critical Limit	Monitoring Procedures/ Frequency/Person Responsible	Corrective Action/ Person Responsible	HACCP Records
Raw Milk Storage	vegetative pathogens	Cold storage of raw milk before processing	Not <45°F	Record milk temperature/Daily/QC	Test product, if not processible it will be disposed of and recorded/QC	Corrective Action Log
Pasteurization	vegetative pathogens	Pasteurization	Not <145°F for not <30 minutes	Pasteurization recorded on a chart/each batch/QC	Reprocess	Corrective Action Log
Cooking the Curd	vegetative pathogens	Cooking curds to a certain temperature for a specific time	Temperature is increased to 93°F & again to 97°F	Record the temperature on the make sheet/each batch/QC	Isolate and hold product for safety evaluation	Corrective Action Log
Aging	vegetative pathogens	Aging temperature & minimum aging time	Aging cheese for not <90 days at no >50°F	Record the temperature of the aging room/Daily/QC	Isolate and hold product for safety evaluation	Corrective Action Log
Storage	vegetative pathogens	Cold storage temperature	Storing cheese no >45°F	Record the temperature of the storage room/Daily/QC	Isolate and hold product for safety evaluation	Corrective Action Log

# HACCP Plan – Goat Cheddar & Seascape

HACCP PLAN: Goat Cheddar & Seascape

Process Step	Hazard Description	CCP Description	Critical Limit	Monitoring Procedures/ Frequency/Person Responsible	Corrective Action/ Person Responsible	HACCP Records
Raw Milk Storage	vegetative pathogens	Cold storage of raw milk before processing	Not <45°F	Record milk temperature/Daily/QC	Test product, if not processible it will be disposed of and recorded/QC	Corrective Action Log
Pasteurization	vegetative pathogens	Pasteurization	Not <145°F for not <30 minutes	Pasteurization recorded on a chart/each batch/QC	Reprocess	Corrective Action Log
Cooking the Curd	vegetative pathogens	Cooking curds to a certain temperature for a specific time	Temperature is increased to 93°F & again to 101°F	Record the temperature on the make sheet/each batch/QC	Isolate and hold product for safety evaluation	Corrective Action Log
Aging	vegetative pathogens	Aging temperature & minimum aging time	Aging cheese for not <90 days at no >50°F	Record the temperature of the aging room/Daily/QC	Isolate and hold product for safety evaluation	Corrective Action Log
Storage	vegetative pathogens	Cold storage temperature	Storing cheese no >45°F	Record the temperature of the storage room/Daily/QC	Isolate and hold product for safety evaluation	Corrective Action Log

# HACCP Plan for Big Rock Blue

HACCP PLAN: Big Rock Blue

Process Step	Hazard Description	CCP Description	Critical Limit	Monitoring Procedures/ Frequency/Person Responsible	Corrective Action/ Person Responsible	HACCP Records
Raw Milk Storage	vegetative pathogens	Cold storage of raw milk before processing	Not <45°F	Record milk temperature/Daily/QC	Test product, if not processible it will be disposed of and recorded/QC	Corrective Action Log
Pasteurization	vegetative pathogens	Pasteurization	Not <145°F for not <30 minutes	Pasteurization recorded on a chart/each batch/QC	Reprocess	Corrective Action Log
Storage	vegetative pathogens	Cold storage temperature	Storing cheese no >45°F	Record the temperature of the storage room/Daily/QC	Isolate and hold product for safety evaluation	Corrective Action Log

## **Conclusions**

Overall, this project was a great learning experience and realization of how much work goes into developing a HACCP program. Since this HACCP program was made for an actual operation, my project doesn't end here. The next steps will include further verification and implementation of the program in the facility, which will allow us to modify and more accurately format it to the operation.

## References

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