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### Example HACCP plan for cook chill processing

Cook chill processing is a form of reduced oxygen packaging. It is defined in the food code as follows:

- “Cook chill Packaging, in which cooked Food is hot filled into impermeable bags which have the air expelled and are then sealed or crimped closed. The bagged Food is rapidly chilled and refrigerated at temperatures that inhibit the growth of psychotropic pathogens”

Using reduced oxygen packaging (ROP) can create serious food safety hazards. The reduced oxygen in these packages can allow the growth of bacteria called *Clostridium botulinum*, which produces a deadly toxin. To use this process safely, you will need to have in place temperature and labeling controls, and careful attention to sanitation.

A HACCP plan is required by the food code. The plan will help you to control the hazard and document the controls for the regulatory authorities. Attached is an example of what a plan for a cook chill process might look like. **This example plan would not be appropriate for seafood products, which must be frozen before, during, and after ROP, or processed under a variance.**

The code requires that the plan contain:

- 1. A list of the foods that are covered by the plan.**
  - Different foods may have different requirements to ensure safety. It is important that the correct process and plan is followed for the food being packaged.
- 2. A flow diagram that breaks down the procedure step by step.**
- 3. A training program.**
  - The training section of the attached plan lists minimal requirements for training.
  - Employees must understand the hazards involved and the controls required to control those hazards.
  - Supervisors and managers must understand how to implement a HACCP program, outside training is highly recommended. See link to FDA document???
- 4. General operating procedures.**
  - These will serve as a reminder of the procedures needed to use cook chill processing safely.
  - Examples would include recipes, cooking instructions, processing instructions, and equipment instructions.
  - These procedures should be posted in the processing area.
  - You will want to set operating limits. The operating limits will be stricter than your critical limits. This will enable you to adjust the process before you exceed the critical limit.

## 5. Standard operating procedures (SOPs) at Critical Control Points (CCP's.)

- This section describes how you will be monitoring and documenting the conditions required to safely package foods using cook chill.
- You will need to monitor and document that the product is cooked according to the requirements of the 2013 Maine Food Code section 3-401.11.
- You will need to monitor the temperature of the product when it is bagged (135 F or greater).
- You will need to monitor and document that the cooked product is cooled as specified under 2013 Maine Food Code section 3-501.14 and subsequently:

**(i)** Cooled to 1°C (34°F) within 48 hours of reaching 5°C (41°F) and held at that temperature until consumed or discarded within 30 days after the date of packaging;

**(ii)** Cooled to 1°C (34°F) within 48 hours of reaching 5°C (41°F), removed from refrigeration equipment that maintains a 1°C (34°F) food temperature and then held at 5°C (41°F) or less for no more than 72 hours, at which time the Food must be consumed or discarded;

**(iii)** Cooled to 3°C (38°F) or less within 24 hours of reaching 5°C (41°F) and held there for no more than 72 hours from Packaging, at which time the Food must be consumed or discarded; or

**(iv)** Held frozen with no shelf life restriction while frozen until consumed or used.

- You will need to install a continuous monitoring thermometer ie. Datalogger(about \$60) in any cold storage areas used to hold ROP foods. You will need to download and review the data from this device daily and keep the records from this device on file for review by the regulatory authorities. You will also need to check the device in person twice a day and record the reading.
- You need to label the packages with a warning statement and a use by date.
- A manager/supervisor will need to review the records at least weekly to make sure they are being kept properly and that all critical limits have been met.
- You need to periodically verify that any thermometers you are using are accurate and calibrated when required.
- If you find that product has been processed in a way that does not meet the requirements of this plan, you will need to hold the product for evaluation by a food process authority ((Jason Bolton, Ph.D. <http://foodsciencehumannutrition.umaine.edu/faculty/jason-bolton/>).before serving or selling the product.

The following product is covered by this plan:

Chicken soup

Flow diagram - \* indicates CCP

Receiving	Ingredients are checked for quality and temperature abuse upon receipt from the supplier.
Cooler storage	Ingredients are is moved immediately to refrigerated/frozen/dry storage
Preparation	Ingredients are mixed according to written recipes and instructions
<b>Cooking*</b>	Product is cooked.
<b>Bagging*</b>	Product is packaged while hot in food grade packaging, sealed, and immediately moved to an ice bath.
<b>Chilling and labeling*</b>	Product is chilled using an ice bath and, once cooled to the required temperature, labeled with a warning statement and use by date.
<b>Refrigerated storage*</b>	Product is moved to a refrigerated storage unit equipped with a continuous monitoring thermometer.
Heat and serve	Product is heated and served

### Training Program

Employees whose job duties include vacuum packaging will be trained in:

- The foods that are allowed to be packaged under this plan
- The food safety risks involved in this process.
- The proper use of the equipment
- Labeling requirements for cook chill foods
- Handling procedures and storage requirements for vacuum packed foods.
- The proper cleaning procedures for the equipment.
- The critical limits at each of the critical control points.

Training records will be kept on file with this plan.

## **General Standard Operating Procedures**

Only trained personnel will be allowed to operate the equipment.

Only the foods covered under this plan will be packaged.

Only food grade packaging will be used.

Equipment will be cleaned, rinsed, and sanitized after each use, or every 4 hours if the equipment is used for longer than 4 hours.

Cook chill processing will only take place in the designated area for these operations and be separated from other operations by either time or location.

Operating limits will be as follows:

- Cooking – cook to minimum of 170 F for a minimum of 15 seconds.
- Bagging temperature – bagging temperature will be maintained at a minimum of 140 F.
- Cold storage temperature- the cold storage unit will be maintained at 38 F.

Product recipes will be written, attached to this plan, and posted in the processing area.

Cooking instructions will be written, attached to this plan, and posted in the processing area.

**Standard operating procedures (SOPs) at Critical Control Points (CCP's.) 1 of 3**

(1) Critical Control Point	(2) Significant Hazards	(3) Critical Limits for each Preventive Measure	Monitoring				(8) Corrective Actions	(9) Verification	(10) Records
			(4) What	(5) How	(6) Frequency	(7) Who			
Cooking	Pathogen survival through cooking	Product will be cooked to a minimum of 165 F for at least 15 seconds	Temperature of cooked product	Use a calibrated thermometer and check multiple locations in the cooking unit. Record the lowest temperature found	Each batch	Cook or designated employee	Cooking step will continue until required temperatures are met	Weekly manager review and thermometer calibration	Cooking-cooling log  Calibration log
Bagging	Pathogen contamination and growth due to time-temperature abuse	Product temperature will be kept at 135 F or higher during the bagging process	Temperature of the product at the bagging step	Use a calibrated thermometer and check product temperature throughout the bagging process	Each batch throughout the bagging process	Cook or designated employee	If product temperature falls below 135 F during bagging, product will be diverted to non ROP packaging	Weekly manager review and thermometer calibration.	Cooking-cooling log  Calibration log

Standard operating procedures (SOPs) at Critical Control Points (CCP's.) 2 of 3

(1) Critical Control Point	(2) Significant Hazards	(3) Critical Limits for each Preventive Measure	Monitoring				(8) Corrective Actions	(9) Verification	(10) Records
			(4) What	(5) How	(6) Frequency	(7) Who			
Cooling	Pathogen growth due to time-temperature abuse	Product will be cooled to 70 F within two hours, and to 41 F within a total of 6 hours, and subsequently to 34 F within 48 hours of reaching 41 F.	Product temperature	Use a calibrated thermometer placed between two bags of product	Every hour during the initial cooling and every 12 hours after reaching 41 F	Designated employee	Product that does not meet the cooling requirements will be segregated and held for evaluation by a process authority.	Weekly manager review and thermometer calibration.	Cooking-cooling log  Calibration log
Labeling 1	Improper labeling leading to temperature abuse and pathogen growth	Product will be labeled "Store at 41 F or lower" and a use by date/time shelf life of 72 hours from the time of product reaches 34 F during cooling and is removed from the ice bath.	Labeling	Visual check of the label and the Cooking- cooling log to ensure correct use by date/time.	Each batch	Designated employee	Product with incorrect use by date/time will be relabeled with correct use by date time	Weekly manager review	Cooking cooling log

**Standard operating procedures (SOPs) at Critical Control Points (CCP's.) 3 Of 3**

(1) Critical Control Point	(2) Significant Hazards	(3) Critical Limits for each Preventive Measure	Monitoring				(8) Corrective Actions	(9) Verification	(10) Records
			(4) What	(5) How	(6) Frequency	(7) Who			
Labeling 2	Improper labeling leading to temperature abuse and pathogen growth	Product will be labeled "Store at 41 F or lower" and a use by date/time shelf life of 72 hours from the time of product reaches 34 F during cooling.	Labeling	Visual check of labels on stored products	Label check of products in storage once per day	Designated employee	Any unlabeled or out of date product will be discarded.	Weekly manager review	Refrigerated storage log
Refrigerated storage	Pathogen growth due to time-temperature abuse	Storage unit will be held at 41 F or lower.	Storage temperature	Continuous monitoring thermometer in warmest part of storage unit with daily download and review of data and visual check of readout	Daily review of data.  Twice daily check of readout	Designated employee	Any product found to have been held above 34 F will be put on hold and records sent to a process authority for evaluation.	Weekly manager review and thermometer calibration	Refrigerated storage log

### Cooking-bagging-cooling log

Check cook temps at different locations in the cooking kettle and record the lowest temperature found. Operating limit = 170 F for at least 15 seconds - Critical limit at least 165 F for 15 seconds. Continue cooking process until lowest temperature meets operating limit.

Check bagging temps at different locations in the holding kettle and record the lowest temperature found. Operating limit = 140 F - Critical limit at least 135 F. If bagging temperature falls below operating limit stop bagging and reheat product.

Check cooling temps by placing the thermometer between two bags. Check temps once per hour until the product reaches 41 F and then check every 12 hours until the product reaches 34 F. (Critical limits 135F-70F within two hours, 135F-41F within a total of 6 hours, 41 F to 34F within 48 hours of reaching 41 F.) Hold for evaluation any product that does not meet cooling requirements.

Product Name/ Date	Lot #	Cook	Bag	Cool	Cool	Cool	Cool	Cool	Cool	Cool	Cool	135F to 70F in 2 hrs? Yes/no	135F to 41F in 6 hrs? Yes/no	41F to 34F in 48hrs? Yes/no	72 hour use by date/time	Proper label? Yes/no	Initial
		Time/ temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp						
example 1/1/15	1	9:00A 170F	10:00A 145F	11:00A 90F	12:00P 45F	1:00P 41F	2:00P 36F	3:00P 34F				Yes	Yes	Yes	1/4/15 3:00P	Yes	THJ
Reviewed by:												Date:					



**Refrigerated Storage Log**

**Critical limits: Temperature must be 41 F or lower**

**Operating Limit = 38 F, notify supervisor if cooler is above 38 F.**

**All ROP products must be labeled with a warning statement “Keep at 41 F or lower” and have a use by date.**

**All ROP products that are unlabeled or whose use by date is expired must be discarded.**

Date	Time 1	Temp 1	Time 2	Temp 2	Data review? Yes/No	Any temps above 41 F? Yes/No	Proper labeling? Yes/no	Out of date product? Yes/no	Corrective action taken	Initials
Reviewed by:					Date					

### Calibration log

#### Calibration instructions

Step 1: Fill a large glass to the very top with ice (crushed ice is preferred but not required).

Step 2: Slowly add very cold water until the water reaches about one half inch (1 centimeter) below the top of the ice.

*Note: If the ice floats up off the very bottom of the glass at all, the ice bath will likely be warmer than 32.0°F (0.0°C). Pour off any excess water.*

Step 3: Gently stir the ice mixture and let it sit for a minute or two.

Step 4: Insert thermometer probe and record results below.

**If the thermometer does not read 32 F then it needs to be recalibrated or replaced. All products produced since the last calibration will need to be evaluated for safety.**

Date	Thermometer reading in ice bath	Corrective action taken if needed	Initials	Reviewer signature and date

### Calibration log

Calibration instructions for hot temperature thermometers.

Step 1: Bring a container of water to boiling, preferably on a stovetop as opposed to a microwave.

Step 2: Carefully insert the thermometer probe (do not allow probe to touch the sides of the container) and record results below.

**If the thermometer does not read 212 F then it needs to be recalibrated or replaced. All products produced since the last calibration will need to be evaluated for safety.**

Date	Thermometer reading in boiling water bath	Corrective action taken if needed	Initials	Review signature and date

## Recipe

Write out the product recipe, attach it to the plan, and post it in the processing area.

## Cooking instructions

Write out the cooking instructions, attach them to the plan, and post them in the processing area.