Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services
Paul R. LePage, Governor Mary C. Mayhew, Commissioner

Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel.: (207) 287-8016; Fax: (207) 287-9058
TTY Users: Dial 711 (Maine Relay)

Tel. (207) 287-5671 **Health Inspection Program** **Fax (207) 287-3165**

Example HACCP Plan for Reduced Oxygen Packaging of Frozen Seafood

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. Because it is particularly high risk, ROP packaging of seafood without a variance can only be done when the seafood is frozen before, during, and after packaging. Any other ROP processing of seafood will require a study and a variance request. If you have a question whether a your proposed process is safe, contact a food process authority *(Jason Bolton,Ph.D. http://foodsciencehumannutrition.umaine.edu/faculty/jason-bolton/).*

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. The attached plan is an example of what a plan for frozen seafood might look like. The code requires that the plan contain:

1. **A list of the foods that are covered by the plan.**
   - This list should be posted in the ROP processing area.
2. **A flow diagram that breaks down the procedure step by step.**
3. **A training program.**
   - The training program section of the attached example plan lists minimal requirements for training.
4. **General operating procedures.**
   - These serve as a reminder of the procedures needed to use ROP safely and should be posted in the ROP processing area.
5. **Standard operating procedures (SOPs) at Critical Control Point (CCP's).**
   - The SOPs at CCPs section describes how you will be monitoring and documenting the conditions necessary to use ROP safely.
   - The code requires that seafood products be frozen before, during, and after being placed in ROP.
   - You will need to break the seal on the packaging prior to thawing seafood products.
   - You will need to label the ROP packages with a warning statement (see example plan) and a use by date.
   - You will need to install a continuous monitoring thermometer ie. Datalogger (about $60) in any frozen storage areas used to hold ROP foods. You will need to download and review the data from this device daily and keep the data on file for review by regulatory authorities. You will also need to check the device in person twice a day and record the reading.
   - A manager/supervisor will need to review the records at least weekly to make sure they are being kept properly and the product storage temperature did not go over 32 F. You will need to periodically verify that the thermometer you are using is accurate and calibrated when required.
   - If you find that product has been stored above 32 F, you will need to hold the product for evaluation by a process authority before serving or selling the product.

The following foods are covered by this plan:

Raw frozen seafood

Flow diagram - * indicates CCP

Receiving	Product is checked for quality and temperature abuse upon receipt from the supplier.
Freezing*	**Product is fully frozen prior to packaging.**
Vacuum packaging and labeling*	**Product is vacuum packaged using a MVS-26 Tabletop Chamber unit and food grade packaging. Product is labeled "Keep frozen and break seal prior to thawing"**
Frozen storage*	**Product is moved to a frozen storage unit and maintained frozen until used.**
Thawing*	**The product seal is broken prior to thawing**
Cook and serve	Product is cooked and served.

Training Program

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

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

Only the foods covered under this plan will be vacuum 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.

Product is labeled "**Keep frozen and break seal prior to thawing"**

Product is fully frozen prior to placing in ROP, maintained frozen during packaging, and stored frozen until used.

The seal on the package is broken prior to thawing.

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

Standard Operating Procedures (SOPs) at CCP's									
(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			
Freezing	Pathogen growth due to time-temperature abuse.	Product must be fully frozen prior to vacuum packaging	Product condition	Examination of product condition will be done prior to beginning ROP process	Each batch	Designated employee	If the product is not fully frozen it will be returned to the freezer or the product will be diverted to non-ROP use.	The PIC will review the monitoring log weekly to verify that it is being maintained and no critical limits have been exceeded.	Process log
Labeling	Inadequate labeling leading to time-temperature abuse	Product must be labeled with a warning statement "Keep frozen and break seal prior to thawing"	Label	Product will be checked for warning statement before moving to cold storage	Each batch	Designated employee	Unlabeled products will be properly labeled	The PIC will review the monitoring log weekly to verify that it is being maintained and no critical limits have been exceeded	Process log

Standard Operating Procedures (SOPs) at CCP's									
(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			
Frozen storage	Pathogen growth due to time-temperature abuse.	Frozen storage area must be kept at 32 F or lower	Product condition	Continuous monitoring thermometer 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 stored above 32 F will be segregated and held and the downloaded data will be sent to a process authority for evaluation.	The PIC will review the monitoring log weekly to verify that it is being maintained and no critical limits have been exceeded	Frozen storage log Calibration log
Thawing	Pathogen growth due to time-temperature abuse.	The seal must be broken on any seafood products brought out to thaw	Condition of seal	Visual check when removed for thawing	Each time product is removed for thawing	Designated employee	Any product thawed without the seal broken will be discarded.	The PIC will review the monitoring log weekly to verify that it is being maintained and no critical limits have been exceeded	Thawing log

Process Log

Critical limits:

All seafood products must be frozen prior to packaging in ROP.

All ROP seafood products must be labeled with a warning statement: "Keep frozen and break seal prior to thawing"

Date	Product	Lot #	Frozen prior to packaging? Yes/No	Packaging properly labeled? Yes/No	Initials
Reviewer signature:				**Date:**	

Frozen Storage Log

Critical limit: Product must be kept frozen at all times.

Product/ Date	Time 1	Temp 1	Time 2	Temp 2	Data review? Yes/No	Any temps above 32 F Yes/No	Corrective action taken	Initials
Reviewed by:						Date		

Thawing log

Critical limit: All ROP seafood products must have the seal broken on the packaging prior to thawing.

Date	Product	Lot #	Seals broken on all packages? Yes/No	Initials
Reviewer signature:			**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/Date of review