



REVISED SEPTEMBER 2016

Commercial Processing Example: *Whole/Distribution of Histamine Fish*

Example: This is a Special Training Model for illustrative purposes only. The SHA models are based on guidance contained in FDA's *Fish and Fishery Products Hazards and Control Guidance* (4th Edition, 2011) and additional information available since the 2011 edition. It was produced by the National Seafood HACCP Alliance (SHA) strictly as an example for training. This Model does not represent a specific requirement or recommendation from FDA. Keep in mind that this model may not apply to all situations.

Narrative

Product Market Names - Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna (*Thunnus albacares*)

Receive – Wild fish are received from various suppliers. No fish are purchased directly from fishermen. All fish are fresh (not previously frozen) and are delivered by refrigerated truck or in containers in which the product is thoroughly iced. No fish are received or shipped in reduced oxygen containers.

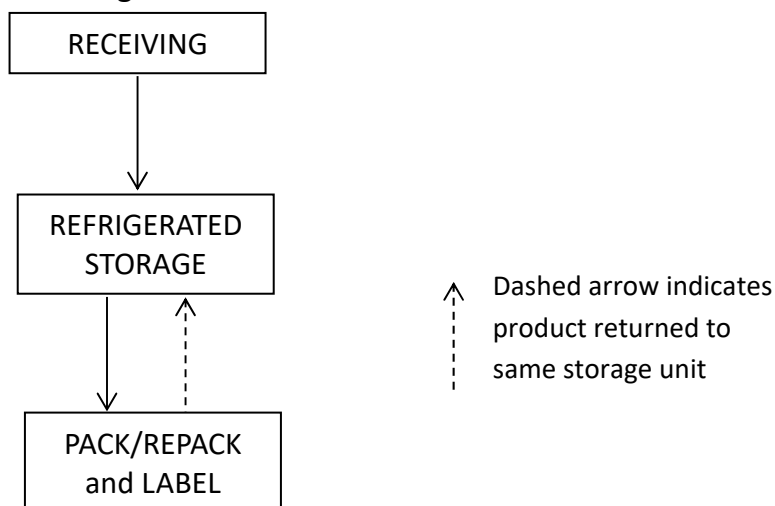
Store – Fresh fish are immediately moved into a refrigerated storage cooler where they are stored in containers in which the product is thoroughly iced. Customer orders are stored in the same storage units overnight if necessary.

Pack/Repack & Label – For each customer's order the products are removed from cooler, re-packed on ice as necessary, labeled and then loaded onto company trucks or placed back into refrigerated storage overnight for delivery the next day. The maximum time out of refrigerated conditions for this step is less than 30 minutes.

Intended Use: All fish are distributed with intentions to be consumed cooked. There is no prior knowledge that the fish products will be consumed raw.

Wholesale/Distribution of Histamine Fish

Processing Flow Chart



****Both refrigerated storage steps occur in the same cooler***

Commercial Processing Example: *Wholesale/Distribution of Histamine Fish*

Example: For Illustrative Purposes Only. Models are based in current guidance contained in FDA's *Fish and Fishery Products Hazards and Control Guidance*. Keep in mind that this model does not apply to all situations.

Description	Company: ABC Wholesale Company																					
	Where Product Is Purchased			How Product Is Received				How Product Is Stored				How Product Is Shipped				How Product is Packaged		How Product Will Be Consumed			Intended Consumer	
Fish or Shellfish Species	From Fisherman	From Fish Farm	From Processor	Refrigerated	Iced	Frozen	Shelf-Stable	Refrigerated	Iced	Frozen	Shelf-Stable	Refrigerated	Iced	Frozen	Shelf-Stable	Air Packed	ROP*	Raw to be cooked	Raw RTE*	Cooked RTE*	General Public	At Risk Population
Common Name: Amberjack or Yellowtail Market Name: Amberjack Scientific Name: <i>Seriola lalandi</i>			√		√				√				√			√		√			√	
Common Name: Bluefish Market Name: Bluefish Scientific Name: <i>Pomatomus saltatrix</i>			√		√				√				√			√		√			√	
Common Name: Atlantic Mackerel Market Name: Mackerel Scientific Name: <i>Scomber scombrus</i>			√		√				√				√			√		√			√	
Common Name: Mahi-mahi or Dolphinfish Market Name: Mahi-mahi Scientific Name: <i>Coryphaena spp.</i>			√		√				√				√			√		√			√	
Common Name: Yellowfin Tuna Market Name: Tuna Scientific Name: <i>Thunnus albacares</i>			√		√				√				√			√		√			√	

*ROP = Reduced Oxygen Packaging; *RTE = Ready-to Eat

Potential Food Safety Hazards: All potential food safety hazards based on the product description and processing flow diagram associated with this product and process are identified using Tables 3-2 (species-related) and 3-4 (process-related) in the *FDA Hazards and Controls Guidance* (2011 edition). Processors should be aware that additional guidance may be periodically posted on FDA Seafood HACCP websites, and additional hazards not covered by this guidance may be relevant to certain products under certain circumstances.

Recommendations in the FDA Guidance indicate 4 potential hazards that are species- or process-related as listed in Tables 3-2 and 3-4. Each potential hazard must be addressed in the Hazard Analysis. **Special Notice:** Pathogenic bacteria growth as listed for all fish in the FDA Guide Table 3-4 and parasites as listed in Table 3-2 for mackerel (*Scomber scombrus*) were not included because all fish products are sold with intentions to be cooked prior to consumption and there are no current indications or requests that the fish will be consumed raw.

1. Environmental chemicals (Bluefish; species-related, chapter 5)
2. Scombrototoxin (Histamine) (species-related, chapter 7)
3. Food Allergens (natural) – (process-related, chapter 19)
4. Metal Inclusion (if used in packaging) – (process-related, chapter 20)

SANITATION CONTROL PROCEDURES (SCP) are monitored throughout all processing steps and the daily SCP records accompany the HACCP records.

Hazard Analysis Worksheet

Firm Name <i>ABC Wholesale Company</i>	Finished Product Description: <i>Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna</i>
Firm Location <i>Anywhere USA</i>	Method of Storage & Distribution: <i>Stored and distributed packed in ice under refrigeration in oxygen permeable containers</i>
	Intended Use & Consumer: <i>Raw fish that will be cooked before it is eaten, to be consumed by the general public.</i>

Histamine Fish: *Amberjack, Bluefish, Mackerel, Mahi-mahi and Tuna*

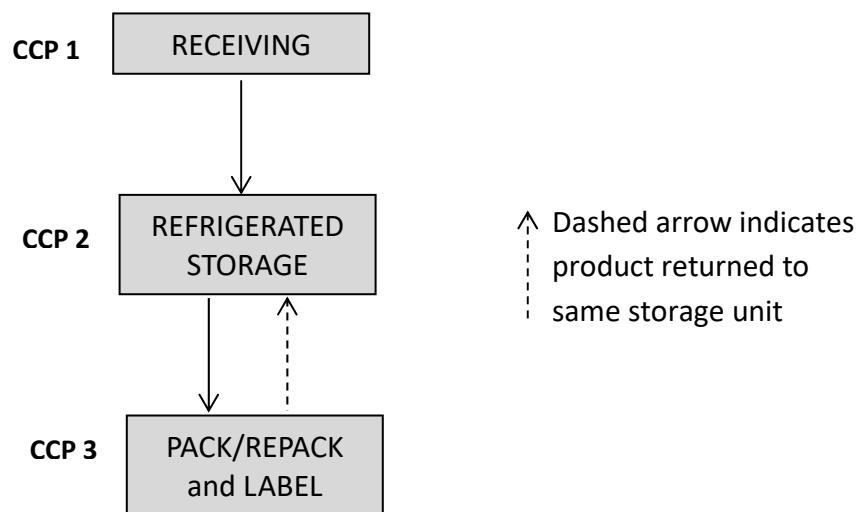
(1) Processing Step	(2) List all potential food safety hazards that could be associated with this product and process.	(3) Is the potential food safety hazard significant (introduced, enhanced or eliminated) at this step? (Yes or No)	(4) Justify the decision that you made in column 3	(5) What control measure(s) can be applied to prevent this significant hazard?	(6) Is this step a Critical Control Point? (Yes or No)
Receiving	Environmental Chemicals (Bluefish)	No	Hazard already controlled by primary processor		
	Histamine	Yes	Temperature abuse during shipping could cause histamine	Proper icing or temperature control during shipping	Yes
	Food Allergens	Yes	Amberjack, Bluefish, Mackerel, Mahi-mahi and Tuna are food allergens	Each species will be labeled with the correct market name at pack/ repack & label step	No
	Metal Inclusion	No	Not likely to occur at this step; no introduction of metal fragments		
Refrigerated storage	Environmental Chemicals (Bluefish)	No	Hazard already controlled by primary processor		
	Histamine	Yes	Histamine could form if temperature abuse occurs in storage	Histamine fish will be stored on ice in the refrigerated cooler	Yes
	Food Allergens	Yes	Amberjack, Bluefish, Mackerel, Mahi-mahi and Tuna are food allergens	Each species will be labeled with the correct market name at pack/ repack & label step	No
	Metal Inclusion	No	Not likely to occur at this step; no introduction of metal fragments		
Pack / Repack / and Label	Environmental Chemicals (Bluefish)	No	Hazard already controlled by primary processor		
	Histamine	No	Time-temp. abuse not likely because of short time at this step		No
	Food Allergens	Yes	Amberjack, Bluefish, Mackerel, Mahi-mahi and Tuna are food allergens	Each container must be labeled with the market name of the fish species at this step	Yes
	Metal Inclusion	No	Not likely to occur at this step		No

(1) Processing Step	(2) List all potential food safety hazards that could be associated with this product and process.	(3) Is the potential food safety hazard significant (introduced, enhanced or eliminated) at this step? (Yes or No)	(4) Justify the decision that you made in column 3	(5) What control measure(s) can be applied to prevent this significant hazard?	(6) Is this step a Critical Control Point? (Yes or No)
Refrigerated storage (final)	Environmental Chemicals (Bluefish)	No	Hazard already controlled by primary processor		
	Histamine	Yes	Histamine could form if temperature abuse occurs in storage	Histamine fish will be stored on ice in the refrigerated cooler	Yes
	Food Allergens	No	Each species was labeled with the correct market name at pack/ repack & label step		
	Metal Inclusion	No	Not likely to occur at this step; no introduction of metal fragments		

Wholesale/Distribution of Histamine Fish

Processing Flow Chart

Shaded steps are Critical Control Points



****Both refrigerated storage steps occur in the same cooler***

HACCP Plan Form

Firm Name <i>ABC Wholesale Company</i>	Product Description <i>Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna (large)</i>
Firm Location <i>Anywhere USA</i>	Method of Storage & Distribution <i>Stored and distributed packed in ice under refrigeration in oxygen permeable containers</i>
	Intended Use & Consumer <i>Raw fish that will be cooked before it is eaten, to be consumed by the general public.</i>

Critical Control Point (CCP)		CCP 1: RECEIVING
Significant Hazard(s)		Histamine
Critical Limits for each Control Measure		All products are completely surrounded with ice at receipt
Monitoring	What	Amount of ice
	How	Visual check of representative number of containers in shipment in comparison with pictured standards
	Frequency	Every shipment
	Who	Receiving Manager
Corrective Action		<p>IF: containers do not have enough ice; THEN: reject product</p> <p>To regain control: Call supplier to let them know CL was not met and provide product delivery specifications and standards; Discontinue use of supplier until their transport procedures are corrected. Retrain involved staff.</p>
Verification		Review Daily Receiving Log and Corrective Actions once per week. Conduct periodic internal product temperature checks with temperature probe to assess proper icing. Thermometer calibration and accuracy checks monthly
Records		Daily Receiving Log; Corrective Actions and thermometer calibration and accuracy records

Signature:	Date:
-------------------	--------------

HACCP Plan Form

Firm Name <i>ABC Wholesale Company</i>	Product Description <i>Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna (large)</i>
Firm Location <i>Anywhere USA</i>	Method of Storage & Distribution <i>Stored and distributed packed in ice under refrigeration in oxygen permeable containers</i>
	Intended Use & Consumer <i>Raw fish that will be cooked before it is eaten, to be consumed by the general public.</i>

Critical Control Point (CCP)		CCP 2: REFRIGERATED STORAGE (INITIAL AND FINAL)
Significant Hazard(s)		Histamine
Critical Limits for each Control Measure		All products are completely surrounded with ice while stored in the cooler
Monitoring	What	Amount of ice
	How	Visual check of representative number of containers in shipment in comparison with pictured standards
	Frequency	Every 4 hours during business operating hours
	Who	Cooler manager
Corrective Action		<p>IF the amount of ice is not adequate; THEN: Chill and hold the product until it can be evaluated based on its total time and temperature exposure, including exposures during prior processing operations; Reject suspect and obviously abused products</p> <p>To regain control, determine and document the cause for improper icing; document the problem and corrections through further training of involved staff.</p>
Verification		Review Daily Receiving Log and Corrective Actions once per week. Conduct periodic internal product temperature checks with temperature probe to assess proper icing. Thermometer calibration and accuracy checks monthly
Records		Daily Receiving Log; Corrective Actions and thermometer calibration and accuracy records

Signature:	Date:
-------------------	--------------

HACCP Plan Form

Firm Name <i>ABC Wholesale Company</i>	Product Description <i>Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna (large)</i>
Firm Location <i>Anywhere USA</i>	Method of Storage & Distribution <i>Stored and distributed packed in ice under refrigeration in oxygen permeable containers</i>
	Intended Use & Consumer <i>Raw fish that will be cooked before it is eaten, to be consumed by the general public.</i>

Critical Control Point (CCP)		CCP 3: PACK/REPACK AND LABEL
Significant Hazard(s)		Food Allergens
Critical Limits for each Control Measure		All containers or packages of fish must be identified with their market name
Monitoring	What	Label on Product Containers
	How	Visual check for each delivery
	Frequency	Each container for each delivery
	Who	Packing Supervisor
Corrective Action		<p>IF the container does not contain the market name, THEN label the container and invoice as necessary for correct identification</p> <p>Regain control by identifying, recording and correcting the cause for the problem. Retrain involved staff.</p>
Verification		Review Packing Log and Corrective Actions once per week Train packing room workers to correctly identify all products with appropriate labels
Records		Packing Log and Corrective Actions

Signature:	Date:
-------------------	--------------

HACCP Plan Form (*landscape format*)

Firm Name <i>ABC Wholesale Company</i>	Product Description <i>Amberjack, Bluefish, Mackerel, Mahi-mahi, and Tuna (large)</i>
Firm Location <i>Anywhere USA</i>	Method of Storage & Distribution <i>Stored and distributed packed in ice under refrigeration in oxygen permeable containers</i>
	Intended Use & Consumer <i>Raw fish that will be cooked before it is eaten, to be consumed by the general public.</i>

Critical Control Point (CCP)	Significant Hazard(s)	Critical Limits for each Control Measure	Monitoring				Corrective Action	Verification	Records
			What	How	When	Who			
Receiving	Histamine	All products are completely surrounded with ice at receipt	Amount of ice	Visual check of representative number of containers in shipment in comparison with pictured standards	Every shipment	Receiving Manager	<p>IF: containers do not have enough ice; THEN: reject product</p> <p>To regain control: Call supplier to let them know CL was not met and provide product delivery specifications and standards; Discontinue use of supplier until their transport procedures are corrected. Retrain involved staff.</p>	Review Daily Receiving Log and Corrective Actions once per week. Conduct periodic internal product temperature checks with temperature probe to assess proper icing. Thermometer calibration and accuracy checks monthly	Daily Receiving Log; Corrective Actions and thermometer calibration and accuracy records
Refrigerated Storage (Initial and Final)	Histamine	All products are completely surrounded with ice while stored in the cooler	Amount of ice	Visual check of representative number of containers in shipment in comparison with pictured standards	Every 4 hours during business operating hours	Cooler manager	<p>IF the amount of ice is not adequate; THEN: Chill and hold the product until it can be evaluated based on its total time and temperature exposure, including exposures during prior processing operations; Reject suspect and obviously abused products</p> <p>To regain control, determine and document the cause for improper icing; document the problem and corrections through further training of involved staff.</p>	Review Daily Receiving Log and Corrective Actions once per week. Conduct periodic internal product temperature checks with temperature probe to assess proper icing. Thermometer calibration and accuracy checks monthly	Daily Receiving Log; Corrective Actions and thermometer calibration and accuracy records

Critical Control Point (CCP)	Significant Hazard(s)	Critical Limits for each Control Measure	Monitoring				Corrective Action	Verification	Records
			What	How	When	Who			
Pack / Repack and Label	Food Allergens	All containers or packages of fish must be identified with their market name	Label on Product Containers	Visual check for each delivery	Each containers for each delivery	Packing Supervisor	<p>IF the container does not contain the market name, THEN label the container and invoice as necessary for correct identification</p> <p>Regain control by identifying, recording and correcting the cause for the problem. Retrain involved staff.</p>	<p>Review Packing Log and Corrective Actions once per week</p> <p>Train packing room workers to correctly identify all products with appropriate labels</p>	Packing Log and Corrective Actions

Signature:	Date:
-------------------	--------------