

This table is an example of a portion of a HACCP plan relating to the control of scombrototoxin formation for a fresh mahi mahi processor using harvest vessel control. It is provided for illustrative purposes only. Histamine formation may be only one of several significant hazards for this product.

Updated: 7/24/98

(1) Critical Control Point (CCP)	(2) Significant Hazard(s)	(3) Critical Limits for each Preventive Measure	(4) What	(5) Monitoring How	(6) Frequency	(7) Who	(8) Corrective Action(s)	(9) Records	(10) Verification
Receiving - fresh mahi mahi	Scombrototoxin formation	All lots received by harvest vessel records show: 1) icing on board the harvest vessel was performed in accordance with the vessel's cooling rate study that validates cooling to 50°F or below within 6 hrs. or death regardless of maximum exposure temperature, or placement on ice within 12 hrs. of death if the maximum exposure temperature does not exceed 837#176;F 2) method of capture; 3) time of landing; 4) estimated time of death; 5) method of cooling; 6) time cooling began; and 7) sea and air temperature if exposure time is greater than 6 hrs. no more than 2.5% decomposition (persistent and readily perceptible) in the incoming lot	Harvest vessel records	Visual review	Every lot received	Receiving supervisor	Reject lot	Harvester vessel records	Histamine analysis on one incoming lot every three months (10 fish per sample) Review monitoring, corrective action and verification records within one week of preparation
			Amount of decomposition in incoming lot	Sensory examination	Entire lot (up to 118 fish) for every lot received	Quality control staff	Reject lot	Receiving record	Same

		Ice complete surrounds product at time of delivery	Amount of ice at time of delivery	Visual examination	Every lot received	Receiving supervisor	Reject It	Receiving record	Same
		If the fish are delivered 12 or more hours after death, an internal temperature of 50°F or below; if the fish are delivered 24 or more hours after death, an internal temperature of 40°F or below	Internal temperature of a representative number of fish at time of delivery	Digital thermometer	Every lot received	Receiving supervisor	Reject lot	Receiving record	Same Check accuracy of digital thermometer once per year
Raw material storage	Scombrototoxin formation	Product completely covered in ice throughout storage (to ensure that product is not exposed to temperatures above 40°F for more than 4 hours cumulatively during raw material and finished product storage and butchering/ packaging)	Amount of ice at time of removal from raw material storage cooler	Visual examination	Every lot removed from raw material storage cooler	Production supervisor	Add ice Hold lot and evaluate base on total time/ temperature exposure during raw material and finished product storage and butchering/ packaging. Destroy lot if time above 40°F exceeds 4 hrs.	Processing record	Review monitoring and corrective action records within one week of preparation
Butchering / packaging	Scombrototoxin formation	Product is not exposed to temperatures above 40°F for more than 4 hours cumulatively during raw material and finished product storage and butchering/ packaging	Time of product exposure to unrefrigerated conditions during butchering / packaging	Visual examination of marked product	Start marked product at beginning of every lot and at least every 2 hours	Quality control supervisor	Destroy lot	Processing record	Review monitoring and corrective action records within one week of preparation
Finished product storage	Scombrototoxin formation	Product completely covered in ice throughout storage (to ensure that product is not exposed to temperatures above 40°F for more than 4 hours cumulatively during raw material and finished product storage and butchering/ packaging)	Amount of ice at time of removal from finished product storage cooler for shipment	Visual examination	Every lot removed from finished product storage cooler for shipment	Shipping supervisor	Add ice Hold lot and evaluate base on total time/ temperature exposure during raw material and finished product storage and butchering/ packaging. Destroy lot if time above 40°F exceeds 4 hrs.	Shipping record	Review monitoring and corrective action records within one week of preparation

This table is an example of a portion of a HACCP plan relating to the control of scombrototoxin formation for a canned tuna processor, using histamine testing. It is provided for illustrative purposes only. Histamine formation may be only one of several significant hazards for this product.

Updated: 7/24/98

(1) Critical Control Point (CCP)	(2) Significant Hazard(s)	(3) Critical Limits for each Preventive Measure	(4) What	(5) Monitoring How	(6) Frequency	(7) Who	(8) Corrective Action(s)	(9) Records	(10) Verification
Receiving - frozen tuna	Scombrototoxin formation	Less than 50 ppm histamine in all fish in the sample	Fish flesh for histamine content	Histamine analysis of 1 fish per ton if fish are 20 lbs. or more each and 2 fish per ton if fish are less than 20 lbs. each fish in each incoming lot	Every lot	Quality assurance staff	Subdivide lot and re-examine portions of the lot for histamine. Reject portion of the lot if any fish in the portion is 50 ppm or greater	Reports of analysis	Review monitoring, corrective action and verification records within one week of preparation
		No more than 3 decomposed fish (persistent and readily perceptible) in a 118 fish sample	Amount of decomposition in incoming lot	Sensory analysis	118 fish in every lot	Quality assurance staff	Reject lot	Quality Assurance Record	
Thawing	Scombrototoxin formation	For fish that have been frozen for 24 weeks or more: no more than 12 hours cumulative time for thawing and butchering	Length of frozen storage	Information from harvest or transport vessel	Every lot received	Receiving supervisor	Make adjustments to the thawing process	Receiving record	Review monitoring and corrective action records within one week of preparation
		Time of product exposure to unrefrigerated conditions during thawing	Visual observation of marked product	Start marked product at start of every thawing operation	Quality assurance staff	Analyze representative sample of lot for histamine. Divert to non-food use if any unit is 50 ppm or greater	Processing record		
Butchering	Scombrototoxin formation	For fish that have been frozen for 24 weeks or more: no more than 4 hrs. cumulative time for thawing and butchering	Time of product exposure to unrefrigerated conditions during thawing	Visual observation of marked product	Start marked product at start of every thawing operation	Quality assurance staff	Same	Processing record	Same record
		For fish that have been frozen for 24 weeks or more: no more than 12 hours cumulative	Length of frozen storage	Information from harvest or transport vessel	Every lot received	Receiving supervisor	Move product to cooler and hold	Receiving record	Review monitoring and corrective action records within one
			Time of product exposure to	Visual observation	Start marked product at	Quality assurance staff	Analyze representative sample of lot	Processing record	

time for thawing and butchering	unrefrigerated conditions during butchering	of marked product	start of every thaw process		for histamine. Divert to a non-food use if any unit is 50 ppm or greater.	week of preparation
For fish that have been frozen for less than 24 weeks: no more than 4 hrs. cumulative time for thawing and butchering	Time of product exposure to unrefrigerated conditions during butchering	Visual observation of marked product	Start marked product at start of every thaw process	Quality assurance staff	Same	Processing Same record

FDA. 1998. Scombrototoxin (Histamine) Formation (A Chemical Hazard). Ch. 7, In *Fish and Fishery Products Hazards & Controls Guide: Second Edition*. 73-90. Department of Health and Human Services, Public Health Service, Food and Drug Administration, Center for Food Safety and Applied Nutrition, Office of Seafood, Washington, DC.