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Wild-Caught Products

Supplementary Sampling and Laboratory Testing Instructions

(Issue 2.0 – 16-January-2021)

Seafood Processing Standard (SPS)

(Current Issue)

Use in conjunction with SPS ANNEX 4 – Sampling and Testing Verification Requirement

1.0 Primary Product Forms

As referred to in the SPS – "Primary Product Form" examples are:

- fresh
- raw ready-to-eat (e.g. sashimi, sushi)
- raw frozen
- raw breaded
- cooked breaded
- cooked
- dumpling
- smoked - cold
- smoked - hot
- pickled
- dried
- canned
- salted
- marinated

Raw frozen product forms, for the purpose of this definition, include all raw IQF or block frozen products expected to have the same hazards (e.g. microbiological). Examples include: deveined, peeled and deveined, whole, de-headed, butterfly tail on.

Example 1 – Primary Product Form:
A seafood processing facility produces the following product forms of one species of pink shrimp *(P. borealis)*: cooked, breaded, raw ready to eat, marinated, and 3 forms of peeled and/or deveined for a total of 7 products:

- The number of Primary Product Forms to be sampled = 5, (Cooked, breaded, raw ready-to-eat, marinated, and raw).
- When sampling, primary product forms are based on a per species basis. So, If the facility above was also producing raw Argentine Red Shrimp *P. muelleri* in frozen block and IQF, that would be 5 primary product forms for *P. borealis* and 1 for *P. muelleri*.

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2.0 Sampling Instructions

2.1 Number of Samples

a. Twelve (12) samples total shall be collected from across **a maximum of 3 different species** from various lots in the inventory. The **number of samples per species depends on the number of species sampled** (Table 1).
b. In the event that less than 3 species are present at the time of sampling, samplers shall collect 12 samples total in equal numbers from the species that are present at the time of sampling (Table 1).
c. Species and product forms to be selected must be based on risk.
    i. If Mercury susceptible species (Table 2) are present, at least 4 samples must be collected from one of the species.
    ii. If Histamine susceptible species (Appendix A) are present, at least 4 samples must be collected from one of the species.
    iii. Samples must be selected from one or more RTE primary products forms (e.g. smoked, sushi, etc.) if they are present at the time of sampling.
    iv. Samples must be selected from the same primary product form within a species when three or more species are present, but samplers should attempt to take different primary product forms from different species in order to cover as many primary product forms as possible.

Table 1. Sample collection sizes for wild-caught species based on the number of species present at the time of sampling.

Number of Species Present	Number of Species to Sample	Number of Samples per Species	Number of Primary Product Forms per Species
> 3	3	4	1
2	2	6	2
1	1	12	3

Table 2. Fish species known to contain very high levels of mercury and hence referred to as mercury susceptible species.

BIGEYE TUNA	*Thunnus obesus*
MACKEREL, SPANISH OR KING	*Scomberomorus cavalla*
MARLIN	*Makaira spp.*
	Tetrapturus spp.
ORANGE ROUGHY	*Hoplostethus atlanticus*
SHARK	All species
SWORDFISH	*Xiphias gladius*
TILEFISH	Family *Malacanthidae* (Gulf of Mexico)

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Example 2 – Number of samples and primary product form selection per species:
A seafood processing facility provides to the sampler an inventory list containing the following information concerning wild-caught species they process (Note: lot codes are required on inventory sheets for traceability purposes but have been omitted for this exercise):

King Mackerel, *Scomberomorus cavalla* – Frozen Fillets, Frozen Steaks, Cold Smoked, Hot Smoked.
Swordfish, *Xiphias gladius* – Frozen Fillets, Frozen Steaks.
Sea Scallops, *Placopecten magellanicus* – Raw IQF.
Bay Scallops, *Argopecten irradians* – Raw IQF.
Albacore Tuna, *Thunnus alalonga* – Canned.
Yellowfin Tuna, *Thunnus albacares* – RTE Frozen Sushi, Frozen Steaks.
Blue Mussel, *Mytilus edulis* – Marinated frozen

- Sample selection must consider Microbiological, Mercury and Histamine food safety risks.
- Attempts should be made to sample different primary product forms between the species selected.
- Mercury susceptible species include King Mackerel and Swordfish (Table 2).
- Histamine samples include King Mackerel, Albacore Tuna, Yellowfin Tuna (Appendix A).
- The selections indicated in Solutions 2a-2c would be considered acceptable:

Example Solution 2a.

Species	Number of Samples	Product Forms
King Mackerel	4	Cold smoked
Yellowfin Tuna	4	RTE Frozen Sushi
Blue Mussel	4	Marinated frozen

Example Solution 2b.

Species	Number of Samples	Product Forms
King Mackerel	4	Hot smoked
Sea Scallop	4	Raw IQF
Albacore Tuna	4	Canned

Example Solution 2c.

Species	Number of Samples	Product Forms
Swordfish	4	Frozen Fillets
Bay Scallops	4	Raw IQF
Yellowfin Tuna	4	RTE Frozen Sushi

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2.2 Sample Collection Requirements

a. Compositing of samples is to be conducted by a qualified third-party laboratory and not by the sampler.
b. When testing for mercury and/or histamines is not required, collect up to twelve samples (500 grams from each separate lot code) as described above from among the Primary Product Forms of finished products that are in the active inventory at the processing plant at the time of the audit. If testing is required for mercury and/or histamines, 750-gram samples must be collected.
c. For Seafood Processing Plants that also process aquaculture species, please refer to PI - Interpretation Guidelines - Sampling & Testing Requirement - Aquaculture - Issue 2.0. Additional samples shall be collected for aquaculture/farm raised species under separate instructions.
d. Aseptic sampling protocols shall be followed at all times.
e. Sampling shall be conducted in accordance with SPS ANNEX 4, A4_1.0-3.0 and Table I.
f. Samplers shall organize and obtain equipment necessary to conduct the sampling: thermo-cool boxes, sterile polyethylene bags (confirm with the assigned laboratory concerning their standard procedures, as they may refuse the sample if improper packaging procedures are used), heat-sealing machines (normally available at the facility), and permanent markers (do not attempt to use stickers, as they may not stick properly to sample bags).
g. DO NOT USE permanent markers that may contain prohibited dyes utilized in aquaculture (example black Sharpie markers) to identify the alphanumeric codes on sample bags.
h. Samplers shall organize the traceability/chain of custody information related to samples that will be collected and document these details.
i. Samplers shall inform the lab of the expected date and time for delivery of samples - especially if it is out of normal business hours for the lab, so that they can make arrangement to store the samples accordingly.
j. Samples shall be packaged in an outer package containing only individual samples from a single species.

3.0 Laboratory Testing Instructions

a. Testing laboratories must be accredited to ISO 17025.
b. Compositing of samples is allowed given the following conditions:
    i. Compositing is to be conducted by a qualified third-party laboratory and not by the sampler.
    ii. Before compositing is done, samples shall be split so there will be reserve portions of each sample available in case follow-up breakout testing for one or more parameters is required.
    iii. No more than 4 samples can be combined into a single composite.
    iv. No compositing between aquaculture (farm raised) products and wild-caught fishery products is allowed.
    v. Mixing species or primary product forms within a composite is NOT allowed for microbiological tests.

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c. Testing shall be in accordance with SPS ANNEX 4 Tables I, II, IV.
d. Laboratories shall conduct 3 sets of microbiological tests for each set of 12 samples submitted.
e. Laboratories shall conduct 1 Methyl Mercury test on each susceptible species present.
f. Laboratories shall conduct 1 Histamine test on each susceptible species present.

Example 3 – Laboratory testing determinations for wild-caught species:

The testing laboratory receives 12 individual samples for product testing as indicated in above example Solution 2a.

Species	Number of Samples	Product Forms
King Mackerel	4	Cold smoked
Yellowfin Tuna	4	RTE Frozen Sushi
Blue Mussel	4	Marinated frozen

Microbiological Testing (ANNEX 4 Table II):
King Mackerel – Test 1 composite of 4 samples
Yellowfin Tuna – Test 1 composite of 4 samples
Blue Mussel – Test 1 composite of 4 samples

- **Test 3 composites of 4 samples each (1 set of tests for each species)**

Residue Testing (ANNEX 4 Table IV):
Methyl Mercury – Susceptible species includes King Mackerel only:

- **Test 1 composite 4 samples**

Histamine – Susceptible species includes King Mackerel and Yellowfin Tuna:

- **Test 2 composites of 4 samples each (1 test for each species)**

4.0 Detections

4.1 Microbiological Detections

A detection on a composite requires breakout testing (of individual samples) only if the result exceeds GSA-BAP Action Levels (SPS ANNEX 4 Table II). *E. coli* and Staphylococcus results showing detections but not exceeding GSA-BAP Action Levels are to be reported as detections and not failures for that composite.

4.2 Residue Detections

A residue detection on a composite that is proportionately capable of exceeding GSA-BAP Action Levels specified in SPS ANNEX 4 Table IV shall be broken out into individual samples (using the reserve portions of the associated sample lots) for confirmatory testing to determine which sample production lot(s) may be adulterated. Table 4 provides BAP guidelines for laboratories to use for breakout testing when a composite detection is obtained. NOTE: Table 4 is to be used as a guideline only and may not be applicable at very low Action Levels (i.e. table values may be below the sensitivity capability of the testing equipment).

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In the event that breakout testing is conducted, ONLY THE SAMPLES IN THE COMPOSITE PRODUCING THE DETECTION SHALL BE RETESTED (USING THE RESERVE PORTIONS), AND ONLY FOR THOSE PARAMETER(s) THAT RESULTED IN A POSITIVE DETECTION.

Table 4. BAP Guidelines for determining whether a residue composite detection should be broken out into individual samples for retesting.

	GSA-BAP Action Levels (ppm)	
	Mercury	Histamine
Samples per composite	0.5	50.0
	Breakout Value (ppm)	
2	0.30	30.0
3	0.20	20.0
4	0.15	15.0

Example 4 – Determination of breakout testing for a composite detection:

The testing laboratory conducts residue tests per SPS ANNEX 4 on a composite consisting of 4 individual samples. Results indicate a positive detection for Methyl Mercury at any value ≥ 0.15 ppm. Per SPS ANNEX 4, the GSA-BAP Action Level for Methyl Mercury is listed as 0.5 ppm. Using the guideline in Table 4, any value ≥ 0.15 ppm (15 mg/kg) would initiate individual breakout of the composite, and the 4 samples that comprise the composite should be retested individually for Methyl Mercury.

5.0 Failures

5.1 Microbiological Test Failures

a. Individual samples testing above the GSA-BAP Action Levels in SPS ANNEX 4 Table II are considered a Failed Test Result.
b. Any composite testing above GSA-BAP Action Levels for *Staphylococcus aureus, Salmonella* sp., or *Listeria monocytogenes* stated in SPS ANNEX 4 Table II, requires immediate notification by the testing laboratory to the overseeing Certification Body and GSA-BAP. All potential violative sample production lots shall be identified within the notification. Once the notification has been established, the laboratory shall proceed with confirmatory testing on individual samples comprised in the composite of detection for the Microbiological Criteria detected to determine the violative sample production lot(s).

5.2 Contaminant Failures

a. A Contaminant Detection on an individual sample testing above the "GSA-BAP Action Level" value listed in SPS ANNEX 4 Table IV is considered a Failed Test Result.
~~b.~~ A Contaminant Detection that is above the Testing Laboratory's LOQ, but below the "GSA-BAP Action Levels" value listed in SPS ANNEX 4 Table IV is considered a "Detection".

For questions regarding these instructions contact BAP Program Integrity
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APPENDIX A

Fish Species of Potential Scrombrotoxin (Histamine)

MARKET NAMES	LATIN NAMES
ALEWIFE OR RIVER HERRING	*Alosa pseudoharengus*
AMBERJACK	*Seriola spp.*
AMBERJACK OR YELLOWTAIL	*Seriola lalandi*
AMBERJACK OR YELLOWTAIL, AQUACULTURED	*Seriola lalandi*
ANCHOVY	*Anchoa spp.*
	Anchoviella spp.
	Cetengraulis mysticetus
	Engraulis spp.
	Stolephorus spp.
BLUEFISH	*Pomatomus saltatrix*
BONITO	*Cybiosarda elegans*
	Gymnosarda unicolor
	Orcynopsis unicolor
	Sarda spp.
ESCOLAR OR OILFISH	*Lepidocybium flavobrunneum*
	Ruvettus pretiosus
	Lepidocybium flavobrunneum
HERRING	*Etrumeus teres*
	Harengula thrissina
	Ilisha spp.
	Opisthopterus tardoore
	Pellona ditchela
	Alosa spp.
HERRING OR SEA HERRING OR SILD	*Clupea spp.*
HERRING, THREAD	*Opisthonema spp.*
HORSE MACKEREL OR SCAD	*Trachurus trachurus*
JACK	*Caranx spp.*
	C. ignobilis
	C.melampygus
	C.latus
	C. lugubris
	C. ruber
	Carangoides bartholomaei
	Oligoplites saurus
	Selene spp.
	Seriola rivoliana
	Urapsis secunda
JACK OR BLUE RUNNER	*Caranx crysos*
JACK OR CREVALLE	*Alectis indicus*
JACK OR RAINBOW RUNNER	*Elagatis bipinnulata*
JACK OR ROOSTERFISH	*Nematistius pectoralis*
KAHAWAI	*Arripis spp.*
MACKEREL	*Gasterochisma melampus*
	Grammatorcynus spp.
	Rastrelliger kanagurta
	Scomber scombrus

MARKET NAMES	LATIN NAMES
MACKEREL, CHUB	*Scomber spp.*
MACKEREL, JACK	*Trachurus spp.*
MACKEREL, SPANISH	*Scomberomorus spp.*
MACKEREL, NARROW-BARRED SPANISH	*Scomberomorus commerson*
MACKEREL, SPANISH OR KING	*Scomberomorus cavalla*
MAHI-MAHI	*Coryphaena spp.*
MAHI-MAHI, AQUACULTURED	*Coryphaena spp.*
MARLIN	*Makaira spp.*
	Tetrapturus spp.
MENHADEN	*Brevoortia spp.*
	Ethmidium maculatum
PILCHARD OR SARDINE	*Sardina pilchardus*
	Sardinops spp.
SAILFISH	*Istiophorus platypterus*
SARDINE	*Harengula spp.*
	Sardinella spp.
SAURY	*Cololabis saira*
	Scomberesox saurus
	Trachurus spp.
SCAD OR HORSE MACKEREL	*Trachurus trachurus*
SHAD	*Alosa spp.*
SHAD, GIZZARD	*Dorosoma spp.*
	Nematalosa vlaminghi
SHAD, HILSA	*Tenualosa ilisha*
SPEARFISH	*Tetrapturus spp.*
SPRAT OR BRISTLING	*Sprattus spp.*
TREVALLY	*Caranx spp.*
TUNA (SMALL)	*Allothunnus fallai*
	Auxis spp.
	Euthynnus spp.
	Katsuwonus pelamis
	Thunnus tonggol
TUNA (LARGE)	*Thunnus alalunga*
	Thunnus albacares
	Thunnus atlanticus
	Thunnus maccoyii
	Thunnus obesus
	Thunnus thynnus
TUNA, AQUACULTURED	*Thunnus spp.*
WAHOO	*Acanthocybium solandri*
YELLOW TAIL OR AMBERJACK	*Seriola lalandi*
YELLOWTAIL AMBERJACK, AQUACULTURED	*Seriola lalandi*