


CONTROLLING SEAFOOD FOOD SAFETY RISKS AT RETAIL

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Food Safety Risks: SEAFOOD

NATURE OF PUBLIC HEALTH RISKS


SEAFOOD FOOD SAFETY PROGRAMS

REDUCING PUBLIC HEALTH RISKS AT RETAIL

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Nature of Public Health Risks- HARVEST

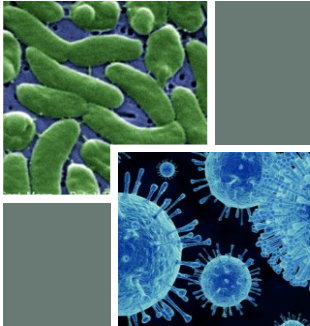
- Many health risks associated with seafood safety originate in the environment.
- Risks:
 - Human/Animal
 - Naturally Occurring
- The first step in controlling risks in seafood is at the HARVEST or at the POINT OF CAPTURE.



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Risk at HARVEST or Point of Capture

- Understanding the potential hazards
 - The pathogens of concern include:
 - Bacteria** (e.g., Vibrio, Salmonella, Shigella, and Campylobacter jejuni, Listeria Monocytogenes, E. coli)
 - Virus**, hepatitis A virus and norovirus.
 - Parasites** ciguatera, scombroid fish poisoning, paralytic shellfish poisoning (PSP), and neurotoxic shellfish poisoning (NSP)
 - Human origin pathogens
 - Salmonella, Shigella, C. jejuni, hepatitis A virus, and norovirus
- *Pathogens may be found on raw fish as a result of near-shore harvested water contamination, **poor sanitation practices on the harvest vessel, and poor aquacultural practices.**
- Naturally occurring pathogens
 - Naturally occurring pathogens such as V. vulnificus, V. parahaemolyticus, and V. cholerae



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Nature of Public Health Risks-PROCESSOR

Risk Analysis and HACCP plans

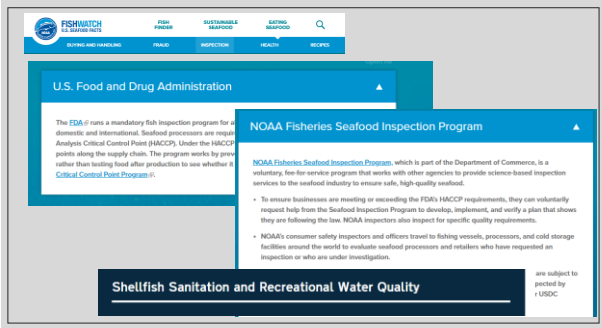
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Seafood Food Safety Programs

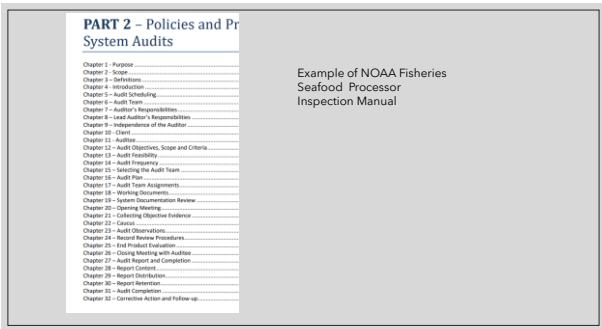
- Inspection at the processing and retail level is important to maintain safety of seafood.
- Hazards: Bacteria, Virus and Parasites
 - Seafood has the potential sources
 - mainly fecal pollution of the aquatic environment- human and animal pollution
 - the natural aquatic environment- naturally occurring
 - industry, retail, restaurant, or home processing and preparation
- Auditing food systems
 - HACCP
 - Internal Audits
 - Third party audits
 - Regulatory inspection process



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Public Health Risks

- Seafood-borne illness
- Natural Seafood Toxins
- Shellfish-borne disease
- Seafood related parasitic infections
- Intolerance

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Public Health Risks at Retail

- Harvest
- Processor

Fun Fact- The word "Seafood" is mentioned 37 times in FOOD CODE

- Retail- from Door to MORE....
 - Delivery
 - Storage
 - Processing
 - Storage
 - Cook/no cook
 - Holding
 - Customer



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At Retail- Approved Source

Condition 3-101.11 Safe, Unadulterated, and Honestly Presented.

Sources 3-201.11 Compliance with Food Law.

Refer to the public health reason for § 3-101.11.

Source
A primary line of defense in ensuring that food meets the requirements of § 3-101.11 to obtain food from approved sources. The implications of which are discussed below.

The Interstate Certified Shellfish Shippers List (ICSSL) is published monthly for the information and use by food control officials, seafood industry and other interested persons. The publication is distributed under authorities of the Public Health Service Act and the Food, Drug and Cosmetic Act by the U.S. Food and Drug Administration (FDA) in conjunction with the Office of Food Safety at the Center for Food Safety and Applied Nutrition, 5001 Campus Drive, College Park, MD 20740.

Interstate Certified Shellfish Shippers List
Shellfish Shippers List (Dynamic -- May be updated daily when new data is available.)

PDF format for printing*

2022

- March PDF (2MB)
- February PDF (2MB)
- January PDF (2MB)



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At Retail- Delivery

- Approval/Appearance
 - Fish use your senses- sight, smell.
 - Shellfish-when you shake the box -do the shells close? They should be culling out any closed product.
 - An approved source supplier?

3-202.18 Shellstock Identification.
All shellstock shall be obtained in containers bearing legible source identification tags or labels that are affixed by the harvester or dealer that originates, ships, or receives the shellstock, as specified in the National Shellfish Sanitation Program Guide for the Control of Bivalvan Shellfish, and that list:

3-202.19 Shellstock Condition.
When received by a FOOD ESTABLISHMENT, SHELLSTOCK shall be reasonably free of mud, oyster shells, and shells with broken shells. Dead shellfish or shellstock with badly broken shells shall be discarded.

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At Retail-Temperature

Shellstock temperature can reliably be obtained by checking exterior shells or internal meats.
45F or less at receiving. 41F in storage / display.

- Transportation Equipment
- Temperature
 - Receiving temps 41F (45F shellstock only)

Specifications for Receiving

3-202.11 Temperature.
(A) Except as specified in ¶ (B) of this section, refrigerated, nonfermentable cooked, raw shellfish shall be at a temperature of 5°C (41°F) or below when received.
(B) If a temperature other than 5°C (41°F) for a refrigerated cooked non-safety food is specified in the governing law distribution, such as laws governing milk and milk products, including, the food may be received at the specified temperature.

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Food Code Fact Sheet #26

What you should know about the Code

Raw Molluscan Shellfish

It is critical that molluscan shellfish products, when consumed and kept properly handled and stored to limit potential to permit possible further or illness. Reports must be kept for shellfish products in use of an outbreak to trace the product back to its source for further investigation.



Consumption of shellfish is a common cause of foodborne illness. Reports must be kept for shellfish products in use of an outbreak to trace the product back to its source for further investigation.

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Section	Code	Description	Comments
Raw Molluscan Shellfish	3-402.11	Parasite Destruction	

o <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/FOODSAFETY/DOCUMENTS/FactSheet26Shellfish.pdf>

Fun Fact: The word "Shellfish" is mentioned 225 times in the FOOD CODE


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At Retail- Processing

- Will the seafood be served raw or cooked?
- If cooked
 - What is cooking temperature?
 - Cook to order or cook and hot held?
- If raw
 - Parasite Destruction
 - Freezing certain species of fish intended for raw consumption due to parasite concerns
 - Don't forget exemptions: Molluscan shellfish, A scallop only shucked abductor muscle, certain tuna species, and aqua cultured fish.

Based on FDA's current assessment, parasites are not considered a significant hazard in molluscan shellfish or in scallop products consisting only of the shucked abductor muscle. Therefore these products are not required to be subject to the parasite destruction procedures specified under § 3-402.11(A) prior to sale or service in a raw or partially cooked form.



3-402.11 Parasite Destruction.

(A) Except as specified in ¶ (B) of this section, before service or sale in READY-TO-EAT form, raw, raw-marinated, partially cooked, or marinated-partially cooked fish shall be:

- Frozen and stored at a temperature of -20°C (-4°F) or below for a minimum of 168 hours (7 days) in a freezer.
- Frozen at -35°C (-31°F) or below until solid and stored at -20°C (-31°F) or below for a minimum of 15 hours, or
- Frozen at -35°C (-31°F) or below until solid and stored at -20°C (-4°F) or below for a minimum of 24 hours.

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Food Code Adoption in North Carolina

New Requirements for Establishments Serving Sushi / Sashimi

Parasite Destruction Requirements


Fish that will be served raw, marinated, partially cooked or marinated-partially cooked are required to be:

- Frozen and stored at a temperature of 4°F (20°C) or below for a minimum of 168 hours (7 days) in a freezer.
- Frozen at -35°C (-31°F) or below until solid and stored at -20°C (-31°F) or below for a minimum of 15 hours, OR
- Frozen at -35°C (-31°F) or below until solid and stored at -40°F (-20°C) or below for a minimum of 24 hours.

Documentation of Parasite Destruction

Documentation is required to verify parasite destruction of each type of fish to be served raw, raw-marinated, partially cooked or marinated-partially cooked. Documentation must include the following:

- if the establishment purchases fish frozen by the supplier, a written agreement or statement from the supplier is required stating the fish was frozen to a temperature and time frame specified in the section above.
- if farm-raised, aqua cultured fish, such as, salmon, are served or sold in ready-to-eat form, a written agreement or statement from the supplier or aqua culturist stating the fish were farm-raised and pollock fish shall be obtained and retained for 90 days.



<https://ehs.dph.ncdhhs.gov/faf/docs/foodprot/NC-Sushi-SashimiTrainingDocumentFinalWebVersion-2012.pdf>

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At Retail-Consumer Advisory

- Consumer Advisory
 - Is it required?
 - Is consumer advisory legit? Does it meet CODE
 - Is consumer advisory available for public viewing?
 - Disclosure and Reminder?

(B) **DISCLOSURE** shall include:

- A description of the animal-derived FOOD, such as "oysters on the half shell (raw oysters)," "raw-EGG Caesar salad," and "hamburgers (can be cooked to order)";¹⁸ or
- Identification of the animal-derived FOOD by asterisking them to a footnote that states that the items are served raw or undercooked, or contain (or may contain) raw or undercooked ingredients.¹⁹
- REMEMBER shall include asterisking the animal-derived FOOD requiring disclosure to a footnote that states:

Consumer Advisory
3-603.11 **Consumption of Animal Foods that are Raw, Undercooked, or Not Otherwise Processed to Eliminate Pathogens.**

(A) Except as specified in § 3-401.11(C) and Subparagraph 3-401.11(D)(4) and under § 3-801.11(C), if an animal food such as beef, eggs, fish, lamb, milk, pork, poultry, or shellfish is served or sold raw, undercooked, or without otherwise being processed to eliminate pathogens, either in READY-TO-EAT form or as an ingredient in another READY-TO-EAT FOOD, the retail holder shall inform consumers of the significantly increased risk of consuming such FOOD by way of a DISCLOSURE and REMINDER, as specified in (B) and (C) of this section using brochures, deli cases or menu advisories, label statements, table tents, placards, or other effective written means.²⁰

(1) Regarding the safety of these items, written information is available upon request;²¹

(2) Consuming raw or undercooked MEATS, POULTRY, seafood, shellfish, or EGGS may increase your risk of foodborne illness;²² or

(3) Consuming raw or undercooked MEATS, POULTRY, seafood, shellfish, or EGGS may increase your risk of foodborne illness, especially if you have certain medical conditions.²³

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Food Code Fact Sheet #6
What you should know about the Code

Consumer Advisory

FRS 303-403-0000. (3) READY-TO-EAT FOODS. (B) DISCLOSURE shall include:

(1) A description of the animal-derived FOOD, such as "oysters on the half shell (raw oysters)," "raw-EGG Caesar salad," and "hamburgers (can be cooked to order)"; or

(2) Identification of the animal-derived FOOD by asterisking them to a footnote that states that the items are served raw or undercooked, or contain (or may contain) raw or undercooked ingredients.

(C) REMINDER shall include asterisking the animal-derived FOOD requiring disclosure to a footnote that states:

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(3) Consuming raw or undercooked MEATS, POULTRY, seafood, shellfish, or EGGS may increase your risk of foodborne illness, especially if you have certain medical conditions.²³

The consumer advisory can be presented by using brochures, deli case or menu advisories, label statements, table tents, placards, or other effective written means.

<https://www.oregon.gov/oha/p/h/health/environments/foodsafety/pages/foodcode.aspx>

Raw or undercooked Allergens shellfish: Raw oysters or oysters on the half shell	Everyone, especially Persons with liver disease or alcoholism Immune-compromised	White rotifera Other vibrios Hepatitis A
Raw fish: Sushi, sashimi, tuna carpaccio	Everyone, especially Immune-compromised Older Adults	Parasites Vibrio parahaemolyticus

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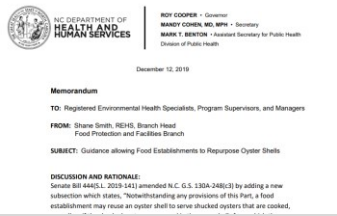
At Retail- Shucking Shellstock

- Start with Product
 - Approved?
- Clean
 - Hands
 - No DIC
 - Equipment
- Product Handling
 - Cold/iced
- Tools
 - Approved
 - Wash, Rinse, Sanitize

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At Retail- Reuse of Shells

**NCDHHS
Memo- Reuse
of Oyster
Shells**



<https://ehs.dph.ncdhhs.gov/faf/docs/foodprot/OysterShellReuseMemo-121219.pdf>

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A BILL TO BE ENTITLED
AN ACT ALLOWING FOOD ESTABLISHMENTS TO REPURPOSE OYSTER SHELLS AS SERVING DISHES.

The General Assembly of North Carolina enacts:

SECTION 1. G.S. 130A-248 is amended by adding a new subsection to read:

(c3) Notwithstanding any provision of this Part, a food establishment may reuse an oyster shell to serve shucked oysters that are cooked, regardless if the shucked oysters are reused in the same shells from which they originated, provided the establishment does all of the following:

- (1) Posts on the premises a conspicuous sign, clearly legible, and easily readable by the public, advising that the establishment reuses oyster shells to serve cooked oysters.
- (2) Protects each reused oyster shell from contamination by, at a minimum, doing all of the following on the same day the oyster is removed from the shell:
 - a. Boils the shell for a minimum of ten minutes.
 - b. Thoroughly dries the shell.
 - c. Stores the shell in a covered container that is refrigerated until it is reused.
- (3) Reuses the shell within 48 hours after the oyster is removed from the shell.*

SECTION 2. This act becomes effective October 1, 2019.

**NCGS
130-
248(c3)**

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Conspicuous sign:

1. Please use the provided sign and post it near the grade card or other conspicuous location at any establishment that reuses oyster shells. County logos or contact information can be added to the sign.

CONSUMER ADVISORY: OYSTER SHELL REUSE

This establishment reuses oyster shells in one or more menu items containing cooked oysters. North Carolina General Statutes* allow oyster shell reuse provided consumers are informed. Questions regarding this process should be directed to the Manager on Duty.

*N.C. G.S. 130-248(c) states "Notwithstanding any provisions of this Part, a food establishment may reuse an oyster shell to serve shucked oysters that are cooked, regardless if the shucked oysters are reused in the same shells from which they originated, provided the establishment does all of the following: (1) Posts on the premises a conspicuous sign, clearly legible and easily readable by the public, advising that the establishment reuses oyster shells to serve cooked oysters. (2) Protects each reused oyster shell from contamination by, at a minimum, doing all the following on the same day the oyster is removed from the shell: a). Boils the shell for a minimum of ten minutes b). Thoroughly dries the shell c). Reuses the shell within 48 hours after the oyster is removed from the shell."

SIGN

Fun Fact: The word "Shellstock" is mentioned 70 times in the FOOD CODE

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Handling the reused oyster shells:

1. A tracking log is attached that can be utilized to track oyster shell reuse.
 - a. Logs should be kept for 90 days.
 - b. Tags should be kept with oyster shells that have been washed.
 - c. Oyster shells that have been washed should not be commingled with other washed oyster shell batches. Oyster shells should be washed a batch at a time so that the tag can remain with the product.
 - d. Oyster shells can be dried by being placed in a flat food-grade container with draining holes in it. Paper towels and/or cloth should not be used to dry oyster shells or as a draining surface because this could lead to contamination of the shells. [Here](#) is an example of a container that could be utilized.
 - e. If the log is used to track dates, it should be readily available for inspection.
 - f. Oyster shells found undated or kept more than 48 hours after washing shall be discarded.
 - g. Oyster shells should be stored in a manner that prevents them from being contaminated by raw foods and prevents them from contaminating ready-to-eat food.



Boil
Wash
Where to Wash, if needed?
Discard When?
Discard Where?

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Oyster Shell Reuse Tracking Log

Date	Dealer Certification number:	Date (shucked)	Date to discard (48 hrs after shucked):	Shells washed (check box)	Shells dried (check box)	Shells refrigerated (check box)	Employee initials
12/10/19	NC 123 55	12/10/19	12/12/19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	JP

Reuse Tracking LOG

Enforcement:

- Violations related to this law are non-debitable and can only be recorded in the general comment section.
- If violations are observed on multiple occasions related to this law, permit action may be taken based on the general statute if it can be proven by records and/or direct observations that the law is not being followed.

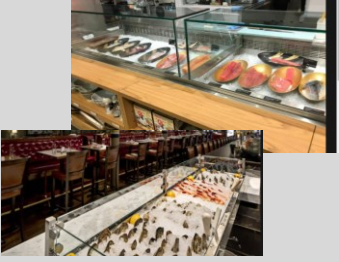
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At Retail-Display Sale and Service

Ask lots of questions



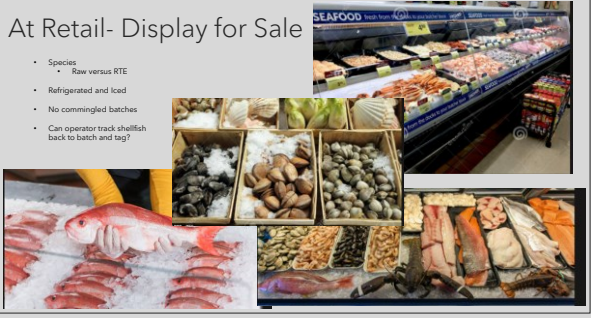
Serve oysters over ice to keep them chilled



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At Retail- Display for Sale

- Species
 - Raw versus RTE
- Refrigerated and iced
- No commingled batches
- Can operator track shellfish back to batch and tag?



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At Retail- Live Display Tanks

- Species
 - Fish or Shellfish
 - Separation of Fish and Shellfish
- Water Quality
- Fish Condition



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4.204.110 Molluscan Shellfish Tanks.

(A) Except as specified under § 86 of this section, molluscan shellfish live support system display tanks may not be used to store or display shellfish that are offered for human consumption and that are continuously marked for sale to the consumer that the animals are for display only.

(B) Molluscan shellfish live support system display tanks that are used to store or display shellfish that are offered for human consumption shall be operated and maintained in accordance with a waterline granted by the regulatory authority as specified in § 8-103.13 and a HACCP plan that:

(1) is submitted by the permit holder and approved as specified under § 8-103.11," and

(2) Ensures that:

(a) Water used with fish other than MOLLUSCAN SHELLFISH does not flow into the molluscan tank,"

(b) The safety and quality of the shellfish as they were received are not compromised by the use of the tank," and

4.204.110 Molluscan Shellfish Tanks.

Shellfish are filter feeders allowing concentration of pathogenic microorganisms that may be present in the water. Due to the number of shellfish and the limited volume of water used, display tanks may allow concentration of pathogenic viruses and bacteria.

Since many people eat shellfish either raw or lightly cooked, the potential for increased levels of pathogenic microorganisms in shellfish held in display tanks is of concern. If shellfish stored in molluscan shellfish tanks are offered for consumption, certain safeguards must be in place as specified in a detailed HACCP plan that is approved by the regulatory authority. Opportunities for contamination must be controlled or eliminated. Procedures must emphasize strict monitoring of the water quality of the tank including the filtering and disinfection system.



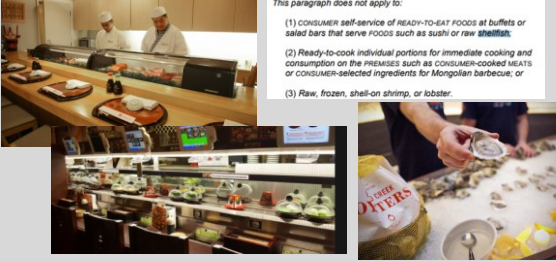
I have a floor process that

- Treating food for Preservation
- Cooling
- Sanitization of food for Preservation
- Product Origin Packaging
- Molluscan shellfish on support tank
- Customer process control for ground use
- Sanitizing Bases
- Property floor to another method



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At Retail- Raw Bars



3-306.13 Consumer Self-Service Operations.

(A) Raw, UNPACKAGED animal FOOD, such as beef, lamb, pork, POULTRY, and FISH may not be offered for CONSUMER self-service.⁶ This paragraph does not apply to:

- (1) CONSUMER self-service of READY-TO-EAT FOODS at buffets or salad bars that serve FOODS such as sushi or raw shellfish;
- (2) Ready-to-cook individual portions for immediate cooking and consumption on the premises such as CONSUMER-cooked MEATS or CONSUMER-selected ingredients for Mongolian barbecue; or
- (3) Raw, frozen, shell-on shrimp, or lobster.

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At Retail- Raw Bars

- Approved Product
 - Hands
 - Clean
 - NBHC
 - Equipment
 - Clean
 - How often cleaning
 - Batch
 - No commingling
 - Consumer Advisory available


Product-specific Advisories:

Consumer advisories may be tailored to be product-specific if a food establishment either has a limited menu or offers only certain animal-derived foods in a raw or undercooked ready-to-eat form. For example, a raw bar serving molluscan shellfish on the half shell, but no other raw or undercooked animal food, could elect to confine its consumer advisory to shellfish. The raw bar could also choose reminder, option #3, which would highlight the increased risk incurred when persons with certain medical conditions ingest shellfish that has not been adequately heat treated.



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Raw or Cooked?



Fun Fact-The word "raw" is mentioned 369 times in the FOOD CODE.

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Other things to consider.....

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BEST ADVICE

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Before you inspect, know the hazard

Annex 4, Table 2a-b. Common Chemical Hazards at Retail, Along with Their Associated Foods and Control Measures

HAZARD	ASSOCIATED FOODS	CONTROL MEASURES
Anisakis simplex	Various fish (cod, halibut, hake, Pacific salmon, herring, scrod, mackerel)	Cooking, freezing
Yersinia enterocolitica	Beef and pork	Cooking
Escherichia coli	Pork, beef, and veal meat	Cooking
TCS = ready-to-eat		TCS = time/temperature control for safety food

Annex 4, Table 2c. Naturally Occurring Chemical Hazards at Retail, Along with Their Associated Foods and Control Measures

HAZARD	ASSOCIATED FOODS	CONTROL MEASURES
Hepatitis A and E	Shellfish, any food contaminated by infected worker via fecal-oral route	Approved source, no bare hand contact with RTE food, minimizing bare hand contact with foods not RTE, employee health policy, handwashing
Other Viruses (Rotavirus, Norovirus, Picornaviruses)	Any food contaminated by infected worker via fecal-oral route	No bare hand contact with RTE food, minimizing bare hand contact with foods not RTE, employee health policy, handwashing
RTE = ready-to-eat		TCS = time/temperature control for safety food

Annex 4, Table 2d. Common Chemical Hazards at Retail, Along with Their Associated Foods and Control Measures

HAZARD	ASSOCIATED FOODS	CONTROL MEASURES
Salmonella	Primarily associated with tuna fish, mahi-mahi, blue fish, anchovies, bonito, mackerel. Also found in cheese	Check temperatures of receiving, store at proper cold holding temperatures, buyer specifications, obtain verification from supplier that product has not been temperature abused prior to arrival in facility
Parasitic fish	Raw fin fish from extreme US, Hawaii, and tropical areas, barracuda, jack, king mackerel, large groupers, and snappers	Ensure fin fish have not been caught <ul style="list-style-type: none"> Purchase fish from approved sources. Fish should not be harvested from an area that is subject to an adverse advisory.
Puffer fish (Fugu, Blowfish)		Do not consume these fish.

<https://www.fda.gov/media/110822/download>

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Helpful Websites

<https://www.fisheries.noaa.gov/insight/noaa-seafood-inspection-program>

<http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/EH/FPF/Fish/GuideForRestaurantsServingRawOystersAndBivalveShellfish.pdf>

<https://www.fda.gov/food/seafood-guidance-documents-regulatory-information/fish-and-fishery-products-hazards-and-controls>

<https://ehs.dph.ncdhs.gov/fat/food/index.htm>
