

Bivalve Shellfish Safety:

Restaurant and Retail Operator Advice



Bivalve shellfish have two hinged shells and include oysters, clams, scallops, mussels and cockles. Bivalve shellfish can contain naturally occurring toxins, or harmful bacteria or viruses. Cooking does not destroy toxins in bivalve shellfish.

Photo source: BC Shellfish Growers Association

Recommendations for purchasing and receiving shellfish

- Buy shellfish from an approved source, with shellfish tags for each lot. This ensures shellfish are harvested from open (safe government monitored) areas and were properly handled after harvesting. By law, all shellfish must be obtained from a federally registered shellfish processing plant.

Keep issued bivalve shellfish tags for at least three (3) months

- Shellfish are highly perishable. Do not purchase or accept shellfish with strong or rotten odors - this is a sign the shellfish have not been stored properly and are decomposing.
- Check that incoming shipments of raw shellfish are received in ice (at or less than 4°C). If ice is melted or shellfish is warmer than 4°C REJECT THE SHIPMENT.
- Keep shellfish cold (less than 4°C), and refrigerate immediately after receiving or purchasing.
- When you receive whole shellfish (unshucked), they should be alive, with the shells closed. If the shells are open, tap the shellfish - if the shell closes, the shellfish is still alive. Throw out any shellfish with shells remaining open.



Photo source: BC Shellfish Growers Association

Shelf-life and recommendations for storing shellfish

FRESH IN SHELL OR SHUCKED

- Store live shellfish in an open container, and keep chilled (0 to 4°C).
- Do not put live shellfish in a closed container or into fresh water (the shellfish will suffocate and die).
- Place live shellfish on the lowest shelf in the refrigerator, and cover with a clean damp towel. Do not allow any juices or liquids to leak onto other food items.
- Store shucked shellfish (meaning without the shell) in a closed (plastic or glass) container, or a leak-proof bag.

Cooking does not destroy toxins in bivalve shellfish

FROZEN SHELLFISH

- For optimum quality, commercially frozen seafood can be stored in the freezer for up to six months.
- Thaw shellfish either in the refrigerator overnight; or in cold running water for approximately one hour.

SHELF-LIFE

Shellfish should not be kept for more than the shelf-life as follows:

	Fresh in Shell	Fresh Shucked	Cooked
Oysters	7 – 10 days	5 – 7 days	1 – 4 days in containers
Clams & Mussels	2 – 3 days	1 – 2 days	
Scallops		2 – 3 days	
Shrimp	1 - 2 days	2 - 3 days	
Crab/Lobster	use same day purchased		
Squid		1 - 2 days	

Recommendations for cooking shellfish

- During preparation keep raw shellfish separated from cooked foods and follow good hygiene practices:
 - wash hands before preparing foods
 - wash hands after handling raw shellfish
 - keep counters and utensils clean and sanitized
- Use only drinking-quality water for rinsing.
- Scrub shells of clams, mussels and oysters with a stiff brush (under running water) before cooking.
- Bacterial and viral infections can be avoided by thoroughly cooking shellfish to an internal temperature of 90°C for 90 seconds. The following instructions should be followed for cooking bivalve shellfish (clams, mussels and oysters):
 - Boil:** add shellfish in the shell to water that is already boiling. Boil for 3 to 5 minutes after the shells are open.
 - Steam:** add shellfish in the shell to a pot of boiling water that is already steaming. Steam for 4 to 9 minutes after shells are open.
 - Fry:** for at least 3 minutes at 190°C (375°F) after shells are open
 - Bake:** for at least 10 minutes at 230°C (450°F) after shells are open
- After cooking, throw out any shellfish with unopened shells.
- Avoid direct contact between raw shellfish and other cooked ready-to-eat foods.



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Tips to Avoid Cross-Contamination

Cross-contamination is the transfer of illness-causing bacteria and viruses to cooked "ready-to-eat" seafoods. These seafoods include cooked crabmeat, cooked shrimp, smoked seafoods, and surimi-based simulated seafood products. Cross-contamination can occur from:

- ✗ raw seafood to cooked seafood
- ✗ equipment or utensils to cooked seafood
- ✗ seafood handlers to cooked seafood
- ✗ the environment to cooked seafood

Safe Handling of Raw Seafood and Equipment

1. Proper display or storage of seafoods is done in such a manner that raw and cooked seafoods are physically separated. This can be accomplished by separate refrigerated units and the use of barriers.
2. Place seafood in washable, non-insulated containers rather than directly on the ice. Display containers should allow liquids to drain.
3. Store cooked seafoods in sanitary containers marked only for that use.
4. Clean and sanitize knives, cutting boards and food contact surfaces between processing raw and cooked products. Ideally, separate equipment and working areas would be used for raw and cooked product.
5. Empty seafood display cases daily and remove old ice. Clean and sanitize display cases and drains before adding fresh ice and restocking.
6. Handle seafood in the display case with individual utensils or single-use sanitary materials.
7. Place spiked price tags in garnish or ice, but not in seafood.
8. Keep the surface of the weigh scale sanitary. Protect the scale by placing seafood on single-use paper or plastic material. Clean and sanitize scale if any food comes in contact with the surface.
9. Clean up spills with single-service towels. Do not use cleaning cloths or sponges which may contain unwanted bacteria.

The Environment

1. Insects and rodents carry illness-causing bacteria and must be eradicated if found in a seafood establishment.
2. Store garbage and processing wastes in covered containers away from display areas.

Seafood Handlers

1. Wear separate outerwear (aprons) when handling raw and ready-to-eat fish products. Clothing can spread unwanted bacteria to seafoods. Wear clean outer garments.
2. Wear a hair net or hat to keep hair from falling onto and contaminating seafoods. Hair contains millions of bacteria.
3. Always work with clean hands. Avoid touching your face, nose or clothing. Clean hands between handling raw and cooked seafoods, between handling money and food, and whenever they touch anything other than seafood. Handwashing steps:

Wash with soap
and water

Dry with single use
paper towels or air dryer

4. Do not handle seafood if you have unprotected cuts or sores. Infected cuts and sores often contain illness-causing bacteria.
5. Use sanitary gloves when handling raw and cooked seafoods. Change single-use gloves between handling raw and cooked foods or every time they touch anything other than seafood. When using heavy duty non-latex gloves, use separate sets to handle raw and cooked seafoods, and wash and sanitize gloves as needed.
6. Sneeze and cough into a tissue and away from seafood. Never smoke, eat or drink while handling seafood.
7. Remove watches, rings, and jewelry, which may carry unwanted bacteria.
8. Inform your supervisor if you are ill.

For further information please contact your local Health Authority:



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Why does eating shellfish sometimes cause illness?

Shellfish naturally ingest organisms such as bacteria, viruses, and plankton toxins that are in ocean water. These organisms and toxins can build up in the shellfish and can make people sick when they consume the contaminated shellfish.

Vibrio parahaemolyticus, **Hepatitis A** and **Norovirus** infections are associated with eating raw shellfish. **Vibrio** is a bacterium naturally found in the ocean. During warm summer months the levels of bacteria increase in the water and bivalve shellfish (especially raw oysters) can become contaminated. Shellfish contaminated with viruses (like **Hep A** and **Norovirus**) are likely a result of sewage contamination.

*Eating raw shellfish increases the risk of foodborne illness.
Cooking shellfish will destroy these organisms and prevent illness*

Paralytic Shellfish Poisoning (PSP), **Diarrhetic Shellfish Poisoning (DSP)** and **Amnesic Shellfish Poisoning (ASP)** can be the result of eating shellfish contaminated with toxins from plankton (sometimes - but not always - seen in 'red tides').

Cooking shellfish does not destroy these toxins – PSP, DSP, ASP

People with underlying medical conditions such as liver disease may be at increased risk of serious complications.

Allergic Reactions can result in some persons when they contact seafood (fish, crustaceans and shellfish). Seafood is considered one of the ten most common food allergens by Health Canada.



Photo source: BC Shellfish Growers Association

BC programs that monitor shellfish quality and safety

The Canadian Shellfish Sanitation Program (CSSP) classifies harvesting areas and controls the commercial and recreational harvesting and processing of shellfish for the consumer market. The CSSP is run by three federal government agencies:

- **Environment Canada (EC)**
 - monitors water quality in shellfish areas
- **Canadian Food Inspection Agency (CFIA)**
 - monitors for marine toxins in shellfish areas
 - registers and inspects shellfish processing plants
- **Fisheries and Oceans Canada (DFO)**
 - closes harvest areas
 - prohibits shellfish harvesting when bacteriological or toxin levels are unsafe

In BC, all commercially harvested bivalve shellfish are processed and inspected in federally registered plants.

The shellfish industry is organized under the BC Shellfish Growers Association. The industry participates with CSSP and other provincial and federal government agencies in monitoring and managing bivalve shellfish.

Shellfish harvesters and processing plants manage risks by following strict time/temperature guidelines to safely harvest and transport shellfish. A shellfish sampling program ensures that *Vibrio parahaemolyticus* levels during warm summer months are within Health Canada guidelines. These control measures work together to reduce the risk of illness to the consumer.

What to do when you get foodborne illness complaints

- Advise the complainant to see their doctor for testing, advice and treatment (or call the nurse line at 8-1-1).
- Record the details of the complaint (name, phone number, date of meal, etc).
- Contact your local Environmental Health Protection office to report the illness complaint.

www.health.gov.bc.ca/socsec/contacts.html

For further information please contact your local Health Authority:



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Symptoms associated with common shellfish illnesses in BC

Hyperlink to appropriate Condition:	Vibrio parahaemolyticus	Hepatitis A	Norovirus	Paralytic Shellfish Poisoning	Amnesic Shellfish Poisoning	Diarrhetic Shellfish Poisoning
Diarrhea	✓		✓		✓	✓
Abdominal discomfort	✓	✓	✓		✓	✓
Nausea	✓	✓	✓	✓		✓
Fatigue		✓	✓			
Fever	✓	✓	✓			
Dizziness				✓	✓	
Vomiting	✓		✓	✓	✓	✓
Headache	✓			✓	✓	
Other		<ul style="list-style-type: none"> • Jaundice • Loss of appetite • Persons with liver conditions at risk for serious illness 		<p>MOST COMMON:</p> <ul style="list-style-type: none"> • Numbness/tingling in mouth, face, hands, feet • Coordination problems, difficulty swallowing • In serious cases, paralysis, difficulty breathing & death 	<ul style="list-style-type: none"> • Muscle weakness • Disorientation • Memory loss • In serious cases, seizures, coma, unstable blood pressure & death 	<ul style="list-style-type: none"> • Chills
Onset of Symptoms after exposure	4 to 96 hrs (typically 15 hrs)	within 15-50 days (typically 28-30 days)	within 12-48 hrs (typically 36 hrs)	within 15 min to 10 hrs (typically 2 hrs)	within 24 hrs	within 30 min to 12 hrs
Duration of Symptoms	1 to 7 days	Weeks	2-3 days	few hours to a few days	few hrs to a few days	Hours to 3 days

Note: If you are ill with food poisoning, you are advised to visit your physician. This table may not reflect all possible symptoms or illnesses associated with seafoods. For more information and immediate help, call the nurse line at 8-1-1, or Drug Poison Info Line at 1-800-567-8911.