

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.
- Use only drinking-quality water for rinsing.
- Scrub shells of clams, mussels and oysters with a stiff brush (under running water) before cooking.
- Bacteria 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:** for 4 to 9 minutes. Throw out any shellfish with unopened shells.
 - Fry:** for at least 3 minutes at 190°C (375°F)
 - Bake:** for at least 10 minutes at 230°C (450°F)
- Avoid direct contact between raw shellfish and other uncooked foods.



Remember, cooking does not destroy toxins!



Photo Source: BC Shellfish Growers Association

British Columbia programs that ensure shellfish quality and safety

The Canadian Shellfish Sanitation Program (CSSP) seeks to ensure that bivalve shellfish harvested in Canada is safe to eat. The CSSP is run by 3 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 fish and 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. Bivalve shellfish tags issued are required to be kept for three (3) months by all businesses purchasing bivalve shellfish in BC.

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.



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Shellfish Safety: Advice for Harvesters

Shellfish are animals living in the sea that have shells. Shellfish are generally edible but are not actually fish. Bivalve shellfish have two hinged shells and include oysters, clams, scallops, mussels and cockles.



Photo Source: BC Shellfish Growers Association

Recommendations for harvesting shellfish

- As a recreational harvester, you will need to buy a "Tidal Waters Licence" from DFO.
- *Check before you harvest* - harvest bivalve shellfish only from approved open areas.
- To ensure the area you are going to harvest from is safe, contact your local office of Fisheries and Oceans Canada (DFO), DFO's 24 hour information telephone line at (604) 666-2828 or toll free at 1-866-431-3474 or consult the DFO Pacific Region website at www.pac.dfo-mpo.gc.ca.
- Harvest shellfish when the shellfish are still under water, and on a receding tide (tide is going out, not coming in).
- Refrigerate immediately after harvesting. Use an ice pack and cooler to keep shellfish cold (less than 4°C) until they can be refrigerated.
- Harvest shellfish 125m away from floathomes. This is a safety barrier in case of sewage contamination of the shellfish.

Shelf-life and recommendations for storing shellfish

FRESH IN SHELL

- Store live shellfish in an opened bucket or container, and keep chilled (0 to 4 °C).
- Shellfish 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 the shells remaining open.
- 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 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.

FROZEN SHELLFISH

- Store frozen seafood for 3 – 4 months.
- Thaw shellfish either in the refrigerator overnight; **or** in cold water for approximately one hour; **or** microwave on the defrost setting until the shellfish are softened but still icy.

FRESHLY COOKED SHELLFISH

- Store cooked shellfish refrigerated in containers for 1 – 4 days.
- Store cooked whole crab and lobster in sealed containers for 2 – 3 days, and crab, shrimp and lobster meats for 3 – 4 days.

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

	Fresh in Shell	Fresh Shucked
Oysters	7 – 10 days	5 – 7 days
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

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 Hepatitis A and Norovirus) are likely a result of sewage contamination.

Eating raw shellfish increases the risk of infection. 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

Illnesses associated with eating shellfish can occur when:

- Contaminated shellfish are eaten raw.
- Contaminated shellfish are eaten cooked when toxins are elevated.
- Shellfish are not kept cold either during or after harvesting. Higher temperatures allow some bacteria to multiply and cause illness.

How do I avoid getting ill?

There is sometimes no way to know if shellfish are contaminated; there may be no change in the sight, smell or taste. Follow the harvesting, storing and cooking instructions.

Can tide colour tell you when to harvest shellfish safely?



Photo Source: Department of Fisheries and Oceans

NO. In fact, shellfish under normal coloured tides may also be contaminated with deadly toxin – that's because toxin-producing plankton do not always turn the ocean a red colour.

Severe disease is rare. However, people with underlying medical conditions, such as liver disease, may be at increased risk of severe complications.

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

What should I do if I get sick after eating shellfish?

- See your doctor for testing, advice and treatment.
- Contact your local public health department to report your illness.
- Keep track of where you consumed, purchased or harvested the shellfish and other foods.

Harvest shellfish only from open approved areas.



Photo Source: Department of Fisheries and Oceans

What are the symptoms?

<i>Hyperlink to appropriate Condition:</i>	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 • persons with liver conditions at risk for serious illness 		<ul style="list-style-type: none"> ▪ Numbness/ tingling in mouth, face, arms or legs ▪ Coordination problems ▪ In serious cases, paralysis, difficulty breathing & death 	<ul style="list-style-type: none"> ▪ Muscle weakness ▪ Disorientation ▪ Memory loss ▪ In serious cases, death is possible 	<ul style="list-style-type: none"> ▪ Chills
Onset of Symptoms after exposure	within 24 hrs	within 15-50 days (typically 28-30 days)	within 12-48 hours (typically 36 hrs)	within 15 min to 10 hrs (typically 2 hours)	within 24 hrs	within 30 min to 12 hrs
Duration of Symptoms	1-7 days	1-2 weeks (mild) to 1 year	2-3 days	few hours to a few days	few hours to a few days	2-3 days