



# MAS NOTE

From the University of Delaware Sea Grant Marine Advisory Service

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## CONSUMERS: KNOW THE FACTS ABOUT EATING RAW SHELLFISH

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The food supply available to U.S. consumers is not only abundant and of wide variety, but also fundamentally safe. This basic food safety, often taken for granted, is the responsibility of the food industry and is assured by the regulatory activities of the Food and Drug Administration (FDA) in the U.S. Department of Health and Human Services, the National Marine Fisheries Service (NMFS) in the U.S. Department of Commerce, and the U.S. Department of Agriculture, as well as by state and local public health agencies. But consumers, too, have a responsibility to properly select, handle, store, and prepare foods of all types to assure continued safety.

For hundreds of years, people have been eating raw molluscan shellfish such as oysters, clams, and mussels. In addition to having a more delicate flavor and texture than cooked shellfish, raw oysters and clams retain more nutrients than when they are cooked. However, recently, the media and others have warned consumers about the risks of eating raw shellfish. What should you do? Here are the facts about raw shellfish consumption.

Clams and oysters are the only foods we eat alive and raw, complete with the contents of their stomachs. Shellfish can be harmful to humans because of the way these marine animals take in nutrients. Oysters, clams, and mussels are filter feeders; that is, they obtain nutrients and oxygen by pumping large quantities of water across their complex gill systems. By obtaining nutrients this way, they also take in any bacteria, viruses, chemical contaminants, and other impurities that are present in the water. Thus, shellfish can ingest the bacteria that cause cholera and gastroenteritis, the virus that causes Hepatitis A, and the toxin that causes paralytic shellfish poisoning (PSP). These bacteria and viruses are harmful to humans, but not to shellfish. Thorough cooking destroys these bacteria and viruses. If, however, contaminated shellfish is eaten raw, an individual may become ill from the bacteria or viruses. Note that cooking does not destroy the toxin that causes paralytic shellfish poisoning.

To protect consumers from contaminated shellfish and shellfish with paralytic shellfish poisoning, an extensive federal/state program called the Interstate Shellfish Sanitation Conference (an organization of shellfish-producing states, the FDA, the shellfish industry, and NMFS) was established to monitor shellfish-growing waters. Those waters that become polluted are closed to commercial shellfishing.



Also, under this program, shellfish must be traceable to their source from the moment they are harvested from a bay, river, or estuary to when they end up in a restaurant or market. Each container of shellfish must have a tag or label approved by the appropriate state shellfish control agency that bears the information necessary to trace shellfish, both to a specific area and to a particular harvester. Inspectors can then verify if the shellfish came from approved waters. If the tags are missing, the shellfish are removed and destroyed.

While the seafood industry has established an extensive monitoring program to protect consumers from contaminated shellfish, there are several precautionary measures that consumers themselves can take to avoid eating shellfish that contain harmful organisms.

### Precautions

- ♦ Obtain shellfish from approved sources. A list of shellfish shippers that meet federal standards is published monthly by the FDA. One way to ensure that shellfish come from a certified shipper is to buy them from a reliable seafood retail outlet or grocery store. Roadside trucks or stands with “bargain” prices are chancy. If in doubt, ask the seafood market personnel to show you the certified shipper’s tag that accompanies “shell on” products or check the shipper number on shucked oyster containers.
- ♦ Obey posted warnings when harvesting shellfish.
- ♦ Don’t cross-contaminate. Handle raw and cooked seafood separately; thoroughly clean and rinse work space between each operation. Keep raw and cooked seafood from coming in contact with each other.
- ♦ Keep all seafood chilled between 32° and 40°F (0° to 5°C).

- ◆ Store seafood properly. Here are some guidelines:
  - Store shucked shellfish in a leak-proof bag, plastic container, or covered jar.
  - Freshly shucked clams have a shelf life of five to seven days. Scallops have a shelf life of two to three days. Freshly shucked oysters have a shelf life of five to seven days.
  - Mussels and clams in the shell (live) should be used within two to three days; oysters in the shell, within seven to ten days. Never put live shellfish in water or in an air-tight container where they could suffocate. Some shells may open during storage. If so, tap them. They will close if alive; if not, discard them immediately.
- ◆ Refrigerate leftover cooked shellfish dishes as you would any other leftovers.
- ◆ Observe proper sanitation when preparing seafood. It's especially important to wash your hands before preparing seafood meant to be eaten raw.
- ◆ Do not eat raw seafood if you have the following medical conditions:
  - Liver disease*, including cirrhosis, hemochromatosis, and chronic alcohol use.
  - Diabetes mellitus*.
  - Immune disorders*, including AIDS, cancer, and reduced immunity due to steroid or immunosuppressant therapy.
  - Gastrointestinal disorders*, including previous gastric surgery and low gastric acid (for example, from antacid use or achlorhydria).

If you should suffer from gastrointestinal problems after consuming raw shellfish, contact a physician immediately and notify your local health department.

Despite the care taken, raw or lightly cooked shellfish do carry a slightly higher risk of causing discomfort or illness than thoroughly cooked products. A similar risk exists with the ingestion of raw or very rare, rather than fully cooked, meat and poultry.

During the summer of 1988, the FDA issued an advisory warning to high-risk individuals with chronic liver disease or weakened immune systems urging them to avoid eating raw or partially cooked oysters. This warning was made because a common saltwater microorganism, *Vibrio vulnificus*, may cause severe illness if it infects an open wound or is taken in by oysters that are later consumed by humans. (*Vibrio vulnificus* problems have been attributed to Gulf oysters although the microorganism has been found elsewhere.) The advisory noted that the major concern occurs in summer months and with in-the-shell versus shucked products. Currently, food scientists at the University of Delaware Sea Grant College Program are investigating a new food preservation technique using high hydrostatic pressure to inactivate *Vibrio* and other pathogens. Presently, however, since *Vibrio* is destroyed by heat, consumers who are at risk (see medical conditions above) are advised to enjoy shellfish in their many delicious, cooked preparations.

## Guidelines for Cooking Molluscan Shellfish

- ◆ *Boiled in the Shell*—After shells open, continue boiling for 3–5 minutes.
- ◆ *Steamed in the Shell*—Cook 4–9 minutes from the start of steaming. Use small pots and do not overload. Discard any clams, mussels, or oysters that do not open during cooking.
- ◆ *Shucked*—Boil or simmer for at least 3 minutes, fry in oil at least 10 minutes, and bake for at least 10 minutes at 450°F.

Shellfish are a versatile and delicious source of nutrition. They are low in calories, high in protein, low in sodium, and low in total fat, saturated fat, and cholesterol. Shellfish are a good source of vitamins and minerals such as thiamin, niacin, phosphorus, potassium, iron, iodine, fluoride, zinc, and copper. Clams, oysters, and mussels can be quick and easy to prepare, especially when served raw. However, there are certain risks associated with eating raw shellfish. By knowing what precautions to take, consumers can make an educated choice about their seafood consumption habits.

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- The U.S. Food and Drug Administration offers a toll-free *Seafood Hotline*: 1-800-FDA-4010.