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Safe Seafood

Seafood (fish and shellfish) is well known for its health and nutritional value. Increasing availability and variety of seafood offers consumers many choices, but seafood safety should be a concern for every one.

The Food and Drug Administration (FDA) is responsible for regulating the seafood industry, and the majority of commercial seafood is safe to eat. But foodservice facilities and consumers need to do their part to ensure seafood safety by following safe handling and cooking guidelines. These guidelines emphasize three critical issues: cleanliness, temperature, and time. Proper handling of seafood can help prevent foodborne illness and maximize its shelf life.

The incidence of illness attributed to seafood can be reduced if the public is better informed, understands the risks, and most important, learns to prevent seafood-borne illness. When handled properly, finfish and shellfish are as safe to eat as any other source of protein. For healthy individuals, the nutritional benefits of seafood far outweigh the safety concerns. Persons with compromised immune systems, such as those with liver disease, can also benefit from eating seafood, but should follow a few precautionary measures when preparing and consuming seafood.

PURCHASING STRATEGIES

- Always purchase seafood from a dealer that maintains high standards. Know the characteristics of high-quality fresh or frozen seafood and avoid low-quality products.
- Indicators of fresh fish include eyes which are clear and bulge a little. Whole fish and fillets should have firm and shiny (moist) flesh. Dull flesh may indicate the fish is old. Fresh whole fish should have bright red or pink gills free from slime; if the flesh doesn't spring back when pressed, then it isn't fresh. There should be no darkening around the edges of the fish or brown or yellowish discoloration. Fresh fish should smell fresh and mild, not "fishy." For best quality all fresh seafood should be kept at 32° F, and should feel cold to the touch. For safety reasons, never store seafood above 41° F.



- Frozen fish should be packaged in close-fitting, moisture-proof packages. Look for packages that still have their original shape with intact wrapping and little or no visible ice.
- Purchase raw shellfish carefully. Buy raw clams, oysters and mussels only from reputable markets. When 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.
- Keep your seafood cold when you leave the market. Transport all seafood at 41° F or below.
- Make sure all seafood delivery trucks are clean, avoid cross contamination as they are packed, and are delivering food at the proper temperature.

STORING FRESH SEAFOOD

- The word "fresh" refers to seafood that has not been frozen, although frozen fish can have excellent quality.
- Place seafood in the refrigerator immediately. Store it in the coldest part of the fridge at a temperature close to 32° F for longer shelf life.
- Wrap fresh seafood in cling wrap or store in airtight containers. Store fresh, pasteurized, or smoked seafood products at 32 to 38° F, but never above 41° F.
- Refrigerate live clams, oysters, mussels, crabs, lobsters, and crayfish in well-ventilated containers.
- Do not store live shellfish in airtight bags or containers. Keep them in their original mesh bags with their tags until they are ready to be used.
- Storing live shellfish in salt water shortens their shelf life. Storing them in fresh water kills them.
- Keep live shellfish alive. Do not cook or eat shellfish that have died during storage.
- Live clams, oysters, and mussels have tightly closed shells, or the shells will close when tapped. Live crabs, lobsters, and crayfish move their legs. Dead shellfish spoil rapidly and develop off-flavor and off-odors.

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- Avoid cross-contamination in your refrigerators. Make sure that the juice from raw seafood doesn't come in contact with cooked or ready-to-eat foods.

STORING FROZEN SEAFOOD

- Store frozen seafood products in the freezer immediately after delivery or purchase.
- If packaged in moisture- and vapor-proof packages, store frozen seafood in their original package.
- If frozen seafood is packaged in over-wrapped trays, repackage in plastic freezer wrap, freezer paper, or other moisture- and vapor-proof material before you store in freezer.
- Keep frozen seafood products at 0° F or below until ready to use. For maximum shelf life, store frozen fish as close to -20° F as possible. Commercially frozen fish can be stored in the freezer for up to six months for best quality.


THAWING FROZEN SEAFOOD

- Many frozen seafood products do not need to thaw before being cooked. Follow the processor's directions for preparing frozen seafood.
- Thaw frozen seafood in the refrigerator (about 18-24 hours per pound) or under cold running water (about one hour per pound) or in your microwave followed by cooking (set on defrost for 5-6 minutes for 1 pound).
- Do not thaw frozen seafood at room temperature or under warm running water. Thinner parts of the seafood thaw faster


than thicker parts and the outer edges may start to spoil before the center has thawed.

HANDLING AND PREPARATION

- Keep all shellstock (clams, oysters, mussels) tags for 90 days after sale or consumption in an orderly fashion by date used. This is a regulatory requirement for retail food facilities in most states because the tag provides useful information should it be needed to investigate an illness or recall.
- Wash your hands before preparing seafood or other foods. Be cognizant of your hands once you have touched raw seafood that you don't contaminate other foods or equipment with your fishy hands.
- Don't cross-contaminate! Food poisoning and spoilage bacteria can spread from live and raw seafood to cooked seafood or other ready-to-eat foods. Handle raw and cooked seafood products separately.
- If allergens are a concern in your facility, have a good Allergen Control Plan and follow it closely.
- Thoroughly wash and rinse knives, containers, and cutting boards between handling raw and cooked seafood. Keep raw and cooked seafood from coming in contact with each other.
- Cook fish and shellfish thoroughly. Fish is cooked when it begins to flake and reaches an internal temperature of 145° F.
- All raw foods contain bacteria. Handle seafood as you would any perishable food. Keep seafood properly refrigerated, cook adequately, and handle with safety in mind.




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FOODBORNE ILLNESS AND SEAFOOD

Many consumers enjoy raw or lightly marinated seafood products such as sashimi, sushi, ceviche, gravlax, cold-smoked fish, and raw shellfish. Eating raw seafood (and raw meat, poultry or dairy products) carries a greater food safety risk than eating properly cooked products. Follow these three basic tips to reduce the risk of illness:

- Use commercially frozen fish for sashimi, sushi, ceviche, gravlax, or cold-smoked fish. Commercially frozen fish are usually held at temperatures cold enough to kill the parasites present in raw fish. However, since bacteria that cause illness may still be present, individuals in high-risk groups should avoid raw seafood of any kind.
- Be certain clams, oysters, and mussels come from certified shellfish-growing waters.
- Refrigerate until use.

VIBRIO VULNIFICUS

About 20 million Americans eat raw oysters. However, for some people, eating raw oysters can cause serious illness or even death. *V. vulnificus* infections are transmitted to humans either through open wounds in contact with seawater or by eating certain improperly cooked or raw shellfish, such as oysters, clams, and mussels. *V. vulnificus* is most likely to be present during warm months.

V. vulnificus is a rare cause of disease, but it is also underreported. According to the CDC, an average of 50 culture-confirmed cases, 45 hospitalizations, and 16 deaths are reported each year from the Gulf Coast region (Alabama, Florida, Louisiana, Mississippi, and Texas). Nationwide, there are as many as 95 cases (half of which are culture confirmed), 85 hospitalizations, and 35 deaths.

While not a hazard to most healthy people, *V. vulnificus* can cause sudden chills, fever, nausea, vomiting, blood poisoning, and death within two days in people with certain medical conditions. Forty percent of *V. vulnificus* infections from raw oyster consumption are fatal. The bacteria are not a result of pollution; so, although oysters should always be obtained from reputable sources, eating oysters from “clean” waters or in reputable restaurants with high turnover does not provide 100 percent protection. All individuals, even healthy ones, who eat foods contaminated with this organism are susceptible to gastroenteritis, which usually develops within 16 hours of eating the food. Eating raw oysters with hot sauce or while drinking alcohol does not kill the bacteria, either.

NORWALK VIRUS

Ingestion of raw or insufficiently steamed clams, oysters, or fish also poses a high risk for infection from the Norwalk virus, a cause of viral gastroenteritis or the stomach “bug.” (Foods other than seafood can be contaminated by the Norwalk virus by ill food handlers as well.)

It’s estimated that Norwalk viruses are responsible for about one-third of the cases of viral gastroenteritis not involving the 6- to 24-month age group. Approximately 181,000 cases occur annually, with no known associated deaths. Norwalk and Norwalk-like viruses have been associated with outbreaks on cruise ships, in communities, camps, schools, institutions, and families. Foods such as raw oysters, cake frosting and salads, as well as drinking water, have been implicated as common sources of viral infection in several outbreaks.

CIGUATERA

In Ciguatera poisoning, the poisonous ingredient is ciguatoxin. This is a poison made in small amounts by certain algae and algae-like organisms called dinoflagellates. Small fish that eat the algae become contaminated. If larger fish eat a lot of the smaller, contaminated fish, the poison can build up to a dangerous level, which can make you sick if you eat the fish. Ciguatoxin is “heat-stable.” That means it doesn’t matter how well you cook your fish, if the fish is contaminated, you will become poisoned.

Ciguatera poisoning normally occurs in larger fish from warm tropical waters. The most popular types of these fish that are eaten include sea bass, grouper, and red snapper. In the United States, the waters around Florida and Hawaii have the highest potential for contaminated fish. The risk is greatest in the summer months, or any time a large amount of algae are blooming in the ocean, such as during “red tide.” A red tide occurs when there is a rapid increase in the amount of dinoflagellates in the water. However, today’s transportation means that anyone around the world may be sitting down to a dinner of fish from contaminated waters. The good news is that state and federal agencies keep a close eye on red tide waters and restrict harvesting in those areas if blooms are found. This is another good reason to only purchase from reputable dealers who obtain seafood and shellfish from certified (monitored) waters.

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Seafood Safety Tips

- Know your seafood seller.
- Purchase seafood carefully.
- Keep seafood cold.
- Keep live shellfish alive.
- Refrigerate live shellfish properly.
- Don't cross-contaminate.
- Cook seafood thoroughly.



SCOMBROID

In Scombroid poisoning, the poisonous ingredient is histamine and similar substances. Normal bacteria on these fish create large amounts of this toxin after the fish dies if it's not immediately refrigerated or frozen. The toxin is an elevated level of histamine generated by bacterial breakdown of substances in the muscle protein. This natural spoilage process is thought to release additional by-products, which cause the toxic effect. Freezing, cooking, smoking, curing, or canning does not destroy the potential toxins.

Scombroid poisoning symptoms usually occur immediately after eating the fish. They may include breathing problems (in severe cases), extremely red skin on face and body, flushing, hives and itching, nausea or vomiting.

Scombroid poisoning usually occurs in large dark meat fish such as tuna, mackerel, mahi mahi, and albacore. Since this poison develops after a fish is caught and dies, where the fish is caught doesn't really matter. The main factor is how long the fish sits out before being refrigerated or frozen. To avoid Scombroid poisoning, keep all seafood and shellfish cold.

OTHER SEAFOOD POISONING

In shellfish poisoning, the poisonous ingredients are toxins made by algae-like organisms called dinoflagellates, which build up in some types of seafood. There are many different types of shellfish poisoning. The most well-known types are paralytic, neurotoxic, and amnesic.

Paralytic shellfish poisoning: About 30 minutes after eating contaminated seafood, you may have numbness or tingling in your mouth. This sensation may spread down to your arms and legs. You may become very dizzy, have a headache, and, in some cases, your arms and legs may become temporarily paralyzed. Some people also have nausea, vomiting, and diarrhea, although these symptoms are much less common.

Neurotoxic shellfish poisoning: The symptoms are very similar to Ciguatera poisoning. After eating contaminated clams or mussels, you will most likely experience nausea, vomiting, and diarrhea. These symptoms will be followed shortly by strange sensations that may include numbness or tingling in your mouth, headache, dizziness, and hot and cold temperature reversal.

Amnesic shellfish poisoning: This is a strange and rare form of poisoning that begins with nausea, vomiting, and diarrhea, which is followed by short-term memory loss, as well as other less frequent neurologic symptoms.

SAFE SEAFOOD

Anyone who has ever smelled spoiled seafood at the fish counter has a pretty good idea of what a poorly run seafood market smells like. But the absence of any strong odor doesn't necessarily mean that the seller or distributor is practicing safe food handling techniques. Know your suppliers and discuss with them the measures they use to provide you with the safest seafood possible, and be sure you are practicing safe handling as well. Keep in mind three basic controls: time, temperature, and cleanliness. 🍷

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