Fresh and Frozen Seafood
Selecting and Serving It Safely



Fish and shellfish contain high quality protein and other essential nutrients and are an important part of a healthful diet. In fact, a well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and aid in children's proper growth and development.

As with any type of food, it is important to handle seafood safely to reduce the risk of foodborne illness, often called "food poisoning." Follow these safe handling tips for buying, preparing, and storing fish and shellfish – and you and your family can safely enjoy the fine taste and good nutrition of seafood.

Buy Right

Fresh Fish and Shrimp

Only buy fish that is refrigerated or displayed on a thick bed of fresh ice (preferably in a case or under some type of cover). Because the color of a fish can be affected by several factors including diet, environment, treatment with a color fixative such as carbon monoxide or other packaging processes, color alone is not an indicator of freshness. The following tips can help you when making purchasing decisions:

- Fish should smell fresh and mild, not fishy, sour, or ammonia-like.
- A fish's eyes should be clear and shiny.
- Whole fish should have firm flesh and red gills with no odor. Fresh fillets should have firm flesh and red blood lines, or red flesh if fresh tuna. The flesh should spring back when pressed.
- Fish fillets should display no discoloration, darkening, or drying around the edges.
- Shrimp, scallop, and lobster flesh should be clear with a pearl-like color and little or no odor.
- Some refrigerated seafood may have time/temperature indicators on their packaging, which show if the product has been stored at the proper temperature. Always check the indicators when they are present and only buy the seafood if the indicator shows that the product is safe to eat.
- Fresh fish and fish fillets sold as "Previously Frozen" may not have all the characteristics of fresh fish (e.g., bright eyes, firm flesh, red gills, flesh, or bloodlines), however, they should still smell fresh and mild, not fishy, sour, or rancid.

Shellfish

Follow these general guidelines for safely selecting shellfish:

- **Look for the label:** Look for tags on sacks or containers of live shellfish (in the shell) and labels on containers or packages of shucked shellfish. These tags and labels contain specific information about the product, including the processor's certification number. This means that the shellfish were harvested and processed in accordance with national shellfish safety controls.
- **Discard Cracked/Broken Ones:** Throw away clams, oysters, and mussels if their shells are cracked or broken.
- **Do a "Tap Test":** Live clams, oysters, and mussels will close when the shell is tapped. If they don't close when tapped, do not select them.
- **Check for Leg Movement:** Live crabs and lobsters should show some leg movement. They spoil rapidly after death, so only live crabs and lobsters should be selected and prepared.

Frozen Seafood

Frozen seafood can spoil if the fish thaws during transport and is left at warm temperatures for too long before cooking.

- Don't buy frozen seafood if its package is open, torn, or crushed on the edges.
- Avoid packages with signs of frost or ice crystals, which may mean the fish has been stored a long time or thawed and refrozen.
- Avoid packages where the "frozen" fish flesh is not hard. The fish should not be bendable.





Picnic Tips

A Clean Cooler Is Critical. Be sure to clean coolers with hot soapy water before packing cooked seafood. Cleaning is especially important if the cooler was previously used to transport raw seafood. If the cooler has been used to transport raw seafood, it is also a good idea to sanitize the interior after cleaning using a kitchen sanitizer. A clean cooler prevents harmful bacteria from the raw fish from contaminating cooked seafood or other foods.

Keep Chilled Until Serving. Carry picnic seafood in a cooler with cold packs or ice. When possible, put the cooler in the shade and keep the lid closed as much of the time as you can.

Store Properly

Put seafood on ice or in the refrigerator or freezer soon after buying it. If seafood will be used within 2 days after purchase, store it in a clean refrigerator at a temperature of 40°F or below. Use a refrigerator thermometer to check! Otherwise, wrap it tightly in plastic, foil, or moisture-proof paper and store it in the freezer.



Separate for Safety

When preparing fresh or thawed seafood, it's important to prevent bacteria from raw seafood from spreading to ready-to-eat foods. Take these steps to avoid cross-contamination:

- When buying unpackaged cooked seafood, make sure it is physically separated from raw seafood. It should be in its own display case or separated from raw product by dividers.
- Wash your hands for at least 20 seconds with soap and warm water after handling any raw food.
- Wash cutting boards, dishes, utensils, and counter tops with soap and hot water between the preparation of raw foods, such as seafood, and the preparation of cooked or ready-to-eat foods.
- For added protection, kitchen sanitizers can be used on cutting boards and counter tops after use. Or use a solution of one tablespoon of unscented, liquid chlorine bleach per gallon of water.
- If you use plastic or other non-porous cutting boards, run them, along with plastic, metal, or ceramic utensils through the dishwasher after use.

Prepare Safely

Thawing

Thaw frozen seafood gradually by placing it in the refrigerator overnight. If you have to thaw seafood quickly, either seal it in a plastic bag and immerse it in cold water, or — if the food will be cooked immediately thereafter — microwave it on the "defrost" setting and stop the defrost cycle while the fish is still icy but pliable.

Cooking



Most seafood should be cooked to an internal temperature of 145°F. If you don't have a food thermometer, there are other ways to determine whether seafood is done.

- **Fish:** The flesh is clear and separates easily with a fork
- **Shrimp, Scallops, Crab, and Lobster:** The flesh becomes firm and clear
- **Clams, Mussels, and Oysters:** The shells open during cooking — throw out ones that don't open

Uncooked spoiled seafood can have sour, rancid, fishy, or ammonia odors. These odors become stronger after cooking. If you smell sour, rancid, or fishy odors in raw or cooked seafood, do not eat it. If you smell either a fleeting or persistent ammonia odor in cooked seafood, do not eat it.

Serving

Follow these serving guidelines once your seafood is cooked and ready to be enjoyed.

- Never leave seafood or other perishable food out of the refrigerator for more than 2 hours or for more than 1 hour when temperatures are above 90°F. Bacteria that can cause illness grow quickly at warm temperatures (between 40°F and 140°F).
- For party planning, keep hot seafood hot and cold seafood cold:
  - Keep cold chilled seafood refrigerated until time to serve.
    — Serve cold seafood on ice if it is going to stay out longer than 2 hours.
  - Keep hot seafood heated until time to serve or divide the seafood into smaller containers and keep them in a refrigerator until time to reheat and serve.
  - Serve hot seafood under a heat source (e.g., hot lamp, crock pot, hot plate, etc.) if it is going to stay out longer than 2 hours or discard the seafood after 2 hours.



Eating Raw Seafood - What You Need to Know

It's always best to cook seafood thoroughly to minimize the risk of foodborne illness. However, if you choose to eat raw fish anyway, one rule of thumb is to eat fish that has been previously frozen.

- Some species of fish can contain parasites, and freezing will kill any parasites that may be present.
- However, be aware that freezing doesn't kill all harmful germs. That's why the safest route is to cook your seafood.

Special Health Notes

At-Risk Groups

Some people are at greater risk for foodborne illness, and are also more likely to have a lengthier illness, undergo hospitalization, or even die. These groups include:

- Pregnant women
- Children
- Older adults
- Persons with weakened immune systems (such as transplant patients and individuals with HIV/AIDS, cancer, and diabetes)



These susceptible groups should avoid the following foods:

- Raw or undercooked fish or shellfish, or food containing raw or undercooked seafood (for example, sashimi) found in some sushi or ceviche.
- Raw oysters, even if they are treated after they have been harvested. Post-harvest treatment eliminates some naturally occurring pathogens, but does not remove all pathogens that can cause illness
- Refrigerated types of smoked seafood except in a cooked recipe, such as a casserole. Refrigerated smoked seafood (such as salmon, trout, whitefish, cod, tuna, or mackerel) is usually labeled as "nova-style," "lox," "kippered," "smoked," or "jerky." Canned or shelf-stable smoked seafood is acceptable.

Important Advice for Pregnant and Breastfeeding Women and Young Children

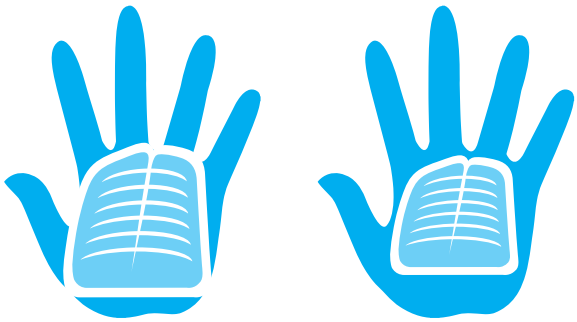
Fish and other protein-rich foods have nutrients that can help a child's growth and development. Due to the evidence of benefits from eating fish, women who are pregnant or breastfeeding should consume at least 8 and up to 12 ounces per week of a variety of fish, from choices that are lower in methylmercury. In January 2017, FDA and EPA issued final advice regarding fish consumption based on levels of methylmercury in fish. This advice is specifically for women who are pregnant, might become pregnant, or are breastfeeding, and for young children.

Mercury is an element that occurs naturally in the environment and is also released to the environment through many types of human activity. It can collect in streams, lakes, and oceans and is turned into methylmercury in the water or sediment. It is this type of mercury that is present in fish. Methylmercury can be harmful to the developing brain and nervous system. The highest methylmercury levels are found in large, long-lived fish, such as king mackerel, marlin, orange roughy, shark, swordfish, tilefish (from the Gulf of Mexico), and bigeye tuna. So, pregnant and breastfeeding women, and young children should avoid these seven fish.

Goal: Pregnant and breastfeeding women, as well as young children should eat 2 to 3 servings of a variety of fish each week from the "Best Choices" list or 1 serving a week from the "Good Choices" list. If you eat fish caught by family or friends, check for fish advisories. If there is no advisory, eat only 1 serving and no other fish that week.

What is a serving?

To find out, use the palm of your hand!



For an adult
4 ounces

For children, ages 4 to 7
2 ounces

FOOD FACTS

You can use this chart to help you choose which fish to eat, and how often to eat them, based on their mercury levels. The "Best Choices" have the lowest levels of mercury.

Best Choices EAT 2-3 SERVINGS A WEEK

- Anchovy
- Atlantic croaker
- Atlantic mackerel
- Black sea bass
- Butterfish
- Catfish
- Clam
- Cod
- Crab
- Crawfish
- Flounder
- Haddock
- Hake
- Herring
- Lobster, American and spiny
- Mullet
- Oyster
- Pacific chub mackerel
- Perch, freshwater and ocean
- Pickerel
- Plaice
- Pollock
- Salmon
- Sardine
- Scallop
- Shad
- Shrimp
- Skate
- Smelt
- Sole
- Squid
- Tilapia
- Trout, freshwater
- Tuna, canned light (includes skipjack)
- Whitefish
- Whiting

OR

Good Choices EAT 1 SERVING A WEEK

- Bluefish
- Buffalofish
- Carp
- Chilean sea bass/ Patagonian toothfish
- Grouper
- Halibut
- Mahi mahi/ dolphinfish
- Monkfish
- Rockfish
- Sablefish
- Sheepshead
- Snapper
- Spanish mackerel
- Striped bass (ocean)
- Tilefish (Atlantic Ocean)
- Tuna, albacore/white tuna, canned and fresh/frozen
- Tuna, yellowfin
- Weakfish/seatrout
- White croaker/ Pacific croaker

Choices to Avoid HIGHEST MERCURY LEVELS

- King mackerel
- Marlin
- Orange roughy
- Shark
- Swordfish
- Tilefish (Gulf of Mexico)
- Tuna, bigeye

*Some fish caught by family and friends, such as larger carp, catfish, trout and perch, are more likely to have fish advisories due to mercury or other contaminants. State advisories will tell you how often you can safely eat those fish.

This advice refers to fish and shellfish collectively as "fish."
For more information, see **www.fda.gov/fishadvice** or **www.epa.gov/fishadvice**.

EPA United States Environmental Protection Agency

FDA U.S. FOOD & DRUG ADMINISTRATION



About Foodborne Illness

Know the Symptoms

Consuming dangerous foodborne bacteria will usually cause illness within 1 to 3 days of eating the contaminated food. However, sickness can also occur within 20 minutes or up to 6 weeks later. Although most people will recover from a foodborne illness within a short time, some can develop chronic, severe, or even life-threatening health problems. Foodborne illness can sometimes be confused with other illnesses that have similar symptoms. The symptoms of foodborne illness can include:

- Vomiting, diarrhea, and abdominal pain
- Flu-like symptoms, such as fever, headache, and body ache

Take Action

If you think that you or a family member has a foodborne illness, contact your healthcare provider immediately. Also, report the suspected foodborne illness to FDA in either of these ways:

- Contact the Consumer Complaint Coordinator in your area. Locate a coordinator here: **http://www.fda.gov/Safety/ReportaProblem ConsumerComplaintCoordinators**
- Contact MedWatch, FDA's Safety Information and Adverse Event Reporting Program:
  By Phone: 1-800-FDA-1088
  Online: File a voluntary report at **http://www.fda.gov/medwatch**

For more information, contact the U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition's Food and Cosmetic Information Center at **1-888-SAFEFOOD** (toll free), Monday through Friday 10 AM to 4 PM ET (except Thursdays from 12:30 PM to 1:30 PM ET and Federal holidays). Or, visit the FDA website at **http://www.fda.gov/educationresourcelibrary**