



The great fish debate

The government wants us to eat more seafood. But consuming too much of certain species could put you at risk for mercury exposure. A CONSUMER REPORTS exclusive.

WHEN YOU GRILL a piece of salmon or have a fish taco for lunch, you're getting a good source of high-protein food that provides important nutrients. And if you're a woman who is pregnant or nursing, that fish contains important fuel for your baby's brain development.

In fact, fish is seen as such a beneficial food that the Food and Drug Administration and Environmental Protection Agency recently came out with proposed new guidelines recommending that women of childbearing age and young children eat more of it. But if Americans follow those guidelines without careful attention to which species they are consuming, they could end up taking in too much mercury.

The latest federal proposal encourages women who are pregnant, breast-feeding, or trying to become pregnant to eat between 8 and 12 ounces of fish per week, and suggests a minimum weekly quota for young children, too. This marks the first time those agencies have set a firm minimum level for weekly fish consumption, including shellfish.

Though the agencies say consumers should seek out fish that are

low in mercury, almost all seafood contains the toxin in varying amounts, and getting too much of it can damage the brain and nervous system. That is especially true for fetuses, but children and adults who eat too much high-mercury seafood also can suffer harmful effects such as problems with fine motor coordination, speech, sleep, and walking, and prickly sensations.

CONSUMER REPORTS' food-safety experts analyzed the FDA's own data that measures mercury levels in various types of seafood. From that we identified almost 20 seafood choices that can be eaten several times per week, even by pregnant women and young children, without worrying about mercury exposure.

However, CR disagrees with the recommendations from the FDA and EPA on how much tuna women and children may eat. (We don't think pregnant women should eat *any*.) We also believe the agencies do not do enough to guide consumers to the best low-mercury seafood choices. To make decisions easier for consumers, our chart on the facing page gives advice about good low-mercury choices.

"We're particularly concerned about canned tuna, which is second only to shrimp as the most commonly eaten seafood in the U.S.,"

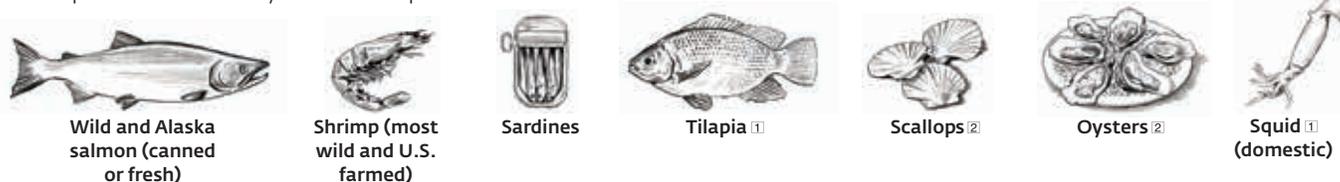
Good choices if you want more fish

Below are low-mercury fish that anyone can eat frequently. We have also considered environmental and sustainability concerns for these recommended lists, which are a result of our analysis

of FDA data. A few fish, such as clams and anchovies, appear to be low in mercury but didn't make our lists because the FDA tested so few samples.

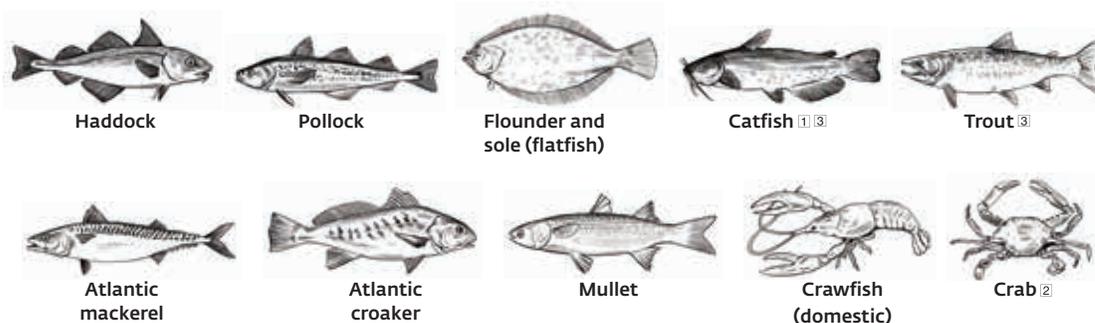
Lowest-mercury fish

A 132-pound person can safely eat 36 ounces per week.
A 44-pound child can safely eat 18 ounces per week.



Low-mercury fish

A 132-pound person can safely eat up to 18 ounces per week.
A 44-pound child can safely eat up to 6 ounces per week.



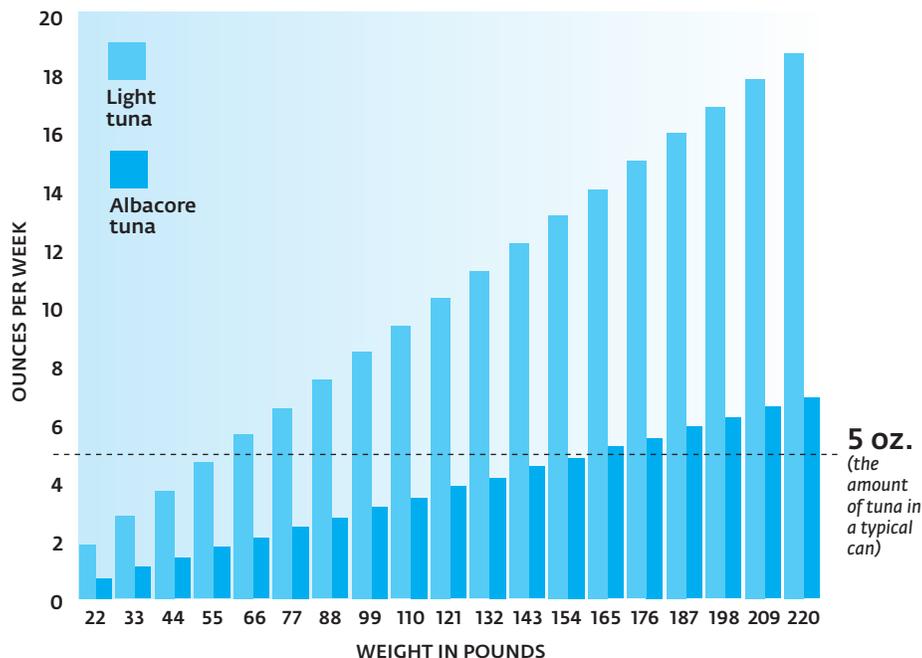
¹You may want to consider country of origin and choose domestic rather than imported if possible.

²Always follow any local alerts regarding when shellfish can be safely harvested and eaten. Eating shellfish raw always carries additional risks of foodborne illness, and it's not recommended for vulnerable groups.

³If wild caught (which includes being fished from local rivers and lakes), check with your state health department for information about PCBs especially for these fish; it's a good idea to check for anything on this list if you are concerned about PCBs.

How much canned tuna can you safely eat?

Ounces of canned tuna that are safe per week by body weight.*



5 oz.
(the amount of tuna in a typical can)

Swim away from these

The FDA and EPA say most women and young children should avoid the first four highest-mercury fish below. They're considering adding the last two to the list. If you are a frequent consumer of any type of fish—24 ounces or more per week—CR suggests that you avoid the fish below as well.

To minimize your mercury intake, limit your consumption of these higher-mercury fish.

- Grouper
- Chilean sea bass
- Bluefish
- Halibut
- Sablefish (black cod)
- Spanish mackerel (Gulf)
- Fresh tuna (except skipjack)
- Swordfish
- Shark
- King mackerel
- Gulf tilefish
- Marlin
- Orange roughy

*Chart does not take other mercury exposure into account.

says Jean Halloran, director of food policy initiatives for Consumers Union, the advocacy arm of Consumer Reports. Given its popularity and its mercury content, canned tuna accounts for 28 percent of Americans' exposure to mercury, according to an analysis by an EPA researcher published in 2007.

How much is too much?

When the FDA and EPA last issued recommendations about seafood, in 2004, they advised women of childbearing age to eat no more than 12 ounces of fish per week because of concerns about exposure to mercury.

Though the agencies are still recommending that upper limit, they now are adding minimum weekly quotas, in part because recent research the FDA conducted indicated that one in five pregnant women had eaten no fish at all in the previous month and the majority of those who did had less than 4 ounces per week. In announcing the updated advice, the FDA's acting chief scientist, Stephen Ostroff, M.D., said, "The latest science strongly indicates that eating 8 to 12 ounces per week of a variety of fish lower in mercury during pregnancy benefits fetal growth and development." The proposed guidelines will be discussed in upcoming public meetings.



Other than the new advice on minimum weekly fish consumption, most of the other federal recommendations are essentially the same ones given in 2004. The agencies advise that young children and women of childbearing age avoid four fish with the highest mercury levels: swordfish, shark, king mackerel, and tilefish from the Gulf of Mexico. They are also considering adding marlin and orange roughy to that list.

Our safety experts agree that those women and children should avoid high-mercury seafood. We also suggest that *anyone* who eats 24 ounces or more of fish per week should steer clear of high-mercury choices.

The dietary safety limit for methylmercury (a form of mercury that builds up in fish and shellfish) set by the EPA is 0.1 microgram per kilogram of body weight per day. Based on that, a blood level of 5.8 micrograms per liter of blood is what the agency considers a maximum acceptable level. But that guideline was set more than a decade ago. Some scientists and consumer safety advocates believe it should be changed because several studies published since then say adverse effects could occur at lower mercury blood levels.

Deborah Rice, a former senior risk assessor for the EPA, thinks the limit should be lowered. Rice, who co-wrote the EPA document that established the current limit in 2001, says, "Based on newer studies showing harm from mercury at lower doses, there is no question that 5.8 micrograms is too high." She suggests that the acceptable level should be lowered to 2 or 3 micrograms of mercury per liter of blood.

But even using the EPA's current levels, some of the agencies' advice on fish consumption still causes concern. For instance, the new recommendations allow pregnant women to have up to 6 ounces of albacore (white) tuna weekly.

The average mercury levels in the FDA data

TOP: JAVIER LARREA/GETTY IMAGES; BOTTOM: AXEL DUPEUX

Sick from sushi: A fish lover feels the effects of mercury

Richard Gelfond liked to play tennis, but he noticed he was having trouble keeping his balance. That's when he decided it was time to seek medical advice about the mysterious symptoms he'd been experiencing, which included a feeling of numbness in his lips and tingling in his feet.

Gelfond, of New York City, who is chief executive officer of the innovative motion picture company Imax, consulted several doctors, who also were baffled until one of them finally asked him whether he ate a lot of seafood.

He certainly did. Gelfond often had fish for lunch and dinner as part of a low-calorie, low-cholesterol diet. And he primarily ate swordfish, tuna steaks or sushi, and Chilean sea bass, all of which tended to have moderate to high levels of mercury. The blood test his doctor ordered revealed that Gelfond's mercury level was 13 times as high as the 5.8 micrograms of mercury per liter of blood that EPA officials consider a safe level.

"When my test results finally came back, my balance had gotten so bad I

couldn't cross the street without help, but I never suspected it was caused by all of those tuna steaks, swordfish tacos, sushi lunches, and other fish meals I was eating as part of what I thought was a healthier diet," Gelfond says.

Almost 10 years have passed since he received the diagnosis of mercury poisoning, and Gelfond says he still loves fish. But he's careful to choose lower-mercury options such as flounder, scallops, and shrimp, and he opts for sushi made with salmon rather than tuna. Though his blood mercury level has dropped to 15 micrograms, symptoms such as feeling off-balance still occasionally resurface, especially when he is tired.

As a physician and professor of environmental and occupational medicine at Rutgers Robert Wood Johnson Medical School, Michael Gochfeld, M.D., Ph.D., has been involved in mercury research for 40 years and says he has seen patients suffering mercury poisoning symptoms at blood levels of only 40 or 50 micrograms per liter, but another

patient he evaluated recently had no symptoms even though he had a mercury blood level of 150 micrograms from frequent consumption of a variety of fish that he caught himself.

When patients show symptoms, Gochfeld advises that they stop eating fish altogether at first, then begin incorporating low-mercury fish into their diet after their mercury blood levels drop to low levels, which usually occurs within three to six months. For most patients, the symptoms will go away as the mercury level falls, but in serious cases, health might improve but not necessarily return to normal.

Because of his experience, Gelfond provided funding to a center at Stony Brook University in New York to research health effects from dietary exposure to mercury. "I was sure what happened to me could be happening to others," Gelfond says. "I wanted to raise public awareness about the risks of mercury overexposure for adults so that they could be diagnosed more quickly than I was."



we analyzed indicated that a 125-pound woman would exceed the EPA's "safe" consumption limit for mercury by eating just 4 ounces of albacore tuna. A 48-pound child would exceed the limit eating any more than 1.5 ounces (about a third of a can).

The agencies also include canned light tuna as a lower-mercury choice that consumers can eat to meet the minimum weekly fish quota. According to the National Fisheries Institute, light tuna accounts for about 70 percent of canned-tuna consumption in the U.S. Though canned light tuna on average has only a third of the mercury that albacore has, the FDA's data show that 20 percent of the samples it tested since 2005 contained almost double the average level the agency lists for that type of tuna. And the highest level of mercury in its samples of canned light tuna exceeded the average mercury level for king mackerel.

There's no way for pregnant women to tell which cans have the higher spikes of mercury, which can potentially damage the brain of an infant in the womb at a critical stage of development. "The brain undergoes a series of complex developmental stages that need to be completed in the right sequence and at the right time," explains Philippe Grandjean, M.D., an adjunct professor at the

Harvard School of Public Health and a leading researcher. A mother's intake of methylmercury when she eats fish could reach the fetus within hours and may leave a permanent deficit at a critical time, he says.

CONSUMER REPORTS has said for some time that canned light tuna is not a good low-mercury choice and that pregnant women should not eat any tuna at all. Nothing in the new federal testing data or advice has given us cause to change that view, which also is shared by some scientists, such as Rice.

In fact, our recent analysis of the FDA's mercury testing data has prompted us to add a new piece of cautionary advice about another form of tuna.

Certain types of tuna—such as yellowfin and big eye tuna, also known as "ahi"—used in sushi are especially high in mercury. FDA data show that many samples have levels comparable to shark and swordfish, which FDA advises pregnant women and other vulnerable groups to avoid entirely.

Our food-safety experts are recommending that young children, women of childbearing age, and anyone who eats a lot of fish—24 ounces per week or more—should avoid eating sushi made with tuna and opt instead for sushi made with low-mercury fish.

The FDA's view

In a statement to Consumer Reports, the FDA explained the rationale for its advice. "Based on a review of the latest science, we have concluded that it is possible for pregnant and breastfeeding women, and women who might become pregnant, to increase growth and developmental benefits to their children by eating more fish than these groups of women typically do," the agency said. "This can be done while still protecting them from the potentially harmful effects of methylmercury in fish."

How does mercury get into fish?

Mercury levels in the northern Pacific Ocean have risen about 30 percent over the past 20 years and are expected to rise by 50 percent more by 2050 as industrial mercury emissions increase, according to a 2009 study led by researchers at the U.S. Geological Survey and Harvard University.

Mercury-containing plants and tiny animals are eaten by smaller fish that are then gobbled up by larger fish, whose tissue accumulates mercury. That's why larger, longer-living predators such as sharks and swordfish tend to have more of the toxin than smaller fish such as sardines, sole, and trout.

In comments submitted to federal health officials earlier this year, a group of scientists and policy analysts pointed out that a 6-ounce serving of salmon contains about 4 micrograms of mercury vs. 60 micrograms for the same portion of canned albacore tuna—and 170 micrograms for swordfish.

When you eat seafood containing methylmercury, more than 95 percent is absorbed, passing into your bloodstream. It can move throughout your body, where it can penetrate cells in any tissue or organ.

MORE HELP ONLINE

A useful tool to help you make safer seafood choices is the "Got Mercury?" calculator, which can be found at ConsumerReports.org/cro/mercury1014. Enter the types and amount of fish you plan to eat for the week, along with your body weight, and you'll see whether you'll be exceeding the safe dietary limit for mercury.



How you can take action

The FDA and EPA are seeking feedback on their proposed guidelines on fish before they are made final. Consumer Reports believes the agencies should:

- Advise pregnant women to avoid eating any tuna, including canned light tuna.
- Delete its recommendation that women of childbearing age can safely eat up to 6 ounces of canned white (albacore) tuna per week.
- Include anyone who eats more than 24 ounces of fish per week among the vulnerable groups and develop advice for them to avoid overexposure to mercury.

Make your voice heard by asking the agencies to improve their advice about tuna consumption and require that their cautionary advice be posted where fish is sold so that it's easier to make the right choices to minimize mercury exposure.

To submit comments online, go to regulations.gov and type FDA-2014-N-0595 in the search field.

HOOKED
Imax CEO Richard Gelfond still has some problems from mercury exposure.