Methylmercury in Fish

This sheet talks about exposure to methylmercury in pregnancy and while breastfeeding. This information should not take the place of medical care and advice from your healthcare provider.

What is methylmercury?
Methylmercury is an organic form of mercury. Methylmercury is found mostly in water, soil, plants and animals. Methylmercury is different from elemental mercury, the type of mercury that is found in thermometers and some dental amalgams (tooth fillings).

Where does methylmercury come from?
Methylmercury is made from mercury after it reaches water. Mercury is found in the air and comes from natural and man-made sources. When mercury enters water such as lakes, rivers and streams, it is changed into methylmercury.

How can I be exposed to methylmercury?
People are exposed to methylmercury from eating fish, shellfish, and marine animals. These animals absorb methylmercury from the water through their gills and from the food they eat. Almost all fish contain some methylmercury. Methylmercury in small amounts is not likely to be harmful. However, high exposure can be toxic to humans.

Do some fish have more methylmercury than others? Are there fish that I should avoid eating?
In general, large fish, fish that have long life spans, and fish that eat other fish are more likely to contain higher amounts of methylmercury.

Eating fish is an important part of a healthy diet and is a good food choice for pregnancy. However, the U.S. Food and Drug Administration (FDA) and the US Environmental Protection Agency (EPA) advise women who could become pregnant, women who are already pregnant, nursing mothers, and children under the age of 6 to avoid eating fish that have high levels of methylmercury.

The following large fish have the highest levels of methylmercury, and should be avoided during pregnancy and breastfeeding: shark, swordfish, king mackerel, marlin, orange roughy, and bigeye tuna. It is also recommended to avoid tilefish from the Gulf of Mexico. Tilefish from the Atlantic Ocean have lower average levels of methylmercury. Also avoid eating whale meat and/or blubber (fat), as whales generally have higher levels of methylmercury than fish.

If I am planning a pregnancy or I am already pregnant, what kind of fish can I eat, and how much?
The FDA and EPA have created a chart of fish that categorize fish as “Best Choices”, “Good Choices”, and “Choices to Avoid” which can be found here: https://www.fda.gov/food/consumers/advice-about-eating-fish

A typical serving of fish is 4 ounces, weighed before cooking. For women who could become pregnant or who are currently pregnant, the FDA & EPA suggest eating up to 12 ounces (340 grams) of fish a week. This would equal two to three servings from their list of fish that fall under their “Best Choices” category, and one serving per week from the “Good Choices” category.
There are many choices for fish from the “Best Choices” category, including store bought small ocean fish (salmon, pollock, catfish), shellfish (crab, shrimp), or canned fish (including light tuna). Fish sticks and fast-food fish are likely made from fish with lower levels of methylmercury, often pollock.

There are different types (species) of tuna. So you will find different varieties of tuna listed for each category of choices. Canned light tuna (including skipjack) is listed under “Best Choices”. Albacore (white) tuna and yellowfin tuna typically have higher mercury levels and are under “Good Choices”.

Can I eat fish caught by family and friends from local waters?
Freshwater fish caught from local waters may contain high levels of methylmercury or other local pollutants and might not be safe to eat. The EPA and state and local health departments monitor freshwater lakes and streams. Check with your local agency to see if the fish is safe to eat. If you eat fish caught by family or friends, check for fish advisories, which can be found here: https://fishadvisoryonline.epa.gov/Contacts.aspx. If there is no advisory, the recommendation is to eat only one serving and no other fish that week.

Can exposure to methylmercury make it harder for me to get pregnant?
This is not clear as it has not been well studied. However, one study found blood levels of mercury were higher among women with infertility than a control group. Women who are planning to become pregnant should follow the FDA and EPA advice on eating fish.

Can exposure to methylmercury increase the chance for miscarriage?
This is not clear as it has not been well studied. However, one study that measured blood levels of mercury did not find a higher chance for miscarriage.

To be safe, shouldn’t I just stop eating fish completely during pregnancy?
Fish can provide beneficial protein, long chain polyunsaturated fatty acids (such as omega-3 fatty acids), iodine, selenium and vitamin D. These are all important for your health and the growth and development of your baby. Some studies have found that women who eat fish during pregnancy have better pregnancy outcomes than women who do not eat fish. You can maximize the benefits of fish by choosing fish with low mercury levels.

During pregnancy, it is best to cook fish before eating it. Please see our fact sheet on eating meats and seafood at https://mothertobaby.org/fact-sheets/eating-raw-undercooked-or-cold-meats-and-seafood/pdf/ for more information.

What if I ate more than the recommended amount of fish in a week during my pregnancy?
One week’s consumption of fish probably would not greatly change the level of methylmercury in your body. If you eat a lot of fish during one week, you can limit your fish consumption for the next week or two.

Can methylmercury affect my developing baby?
Methylmercury can affect a developing baby at high levels. It crosses the placenta and can be found in the baby’s blood at levels higher than those in the mother. The baby’s brain is the most sensitive organ to the effects of methylmercury exposure. The brain continues to develop throughout the entire pregnancy, so high exposure at any time in the pregnancy can be concerning.

The effects of methylmercury on human pregnancy have been documented by several events that occurred many years ago in Japan and Iraq. Children were born with birth defects following the contamination of their mothers’ food supply by methylmercury. These were extreme situations where a number of adults also became sick and died from the contamination, although some of the mothers had mild or no symptoms. The birth defects reported were small head size, brain damage, developmental delay, intellectual disability, blindness, muscle weakness, and seizures.

Women in the U.S., who generally do not depend upon fish for their protein intake, are unlikely to consume enough fish to cause harmful effects in a pregnancy. A study in another country, where people eat much more fish than is typically consumed in the U.S. reported that methylmercury from a balanced diet that includes fish is not likely to affect the development of the child from prenatal exposure.

All women who are pregnant or may become pregnant are advised to follow the FDA and EPA guidelines for fish consumption to help reduce the chance for exposure to harmful levels of methylmercury.

Are there tests that can tell if I have high levels of methylmercury in my body?
Blood and hair can be tested to determine exposure to methylmercury. Blood tests are good for detecting methylmercury right after exposures. Hair may be able to detect ongoing (chronic) mercury exposure. However, these
tests can be hard to interpret. A urine test may not be as helpful in testing for methylmercury. You can discuss your exposure concerns with your healthcare providers to determine if testing would be appropriate for you and what type of testing is recommended. There is no standard recommendation to screen women for methylmercury levels before or during pregnancy.

**Can I eat fish and breastfeed my baby?**

A woman who is breastfeeding should follow the same FDA & EPA guidelines described above for eating fish. When the dietary guidelines are followed, the level of methylmercury is considered compatible with breastfeeding.

Very few studies have been done to evaluate breastfed infants whose mothers had high levels of methylmercury. If tests during pregnancy or after delivery show high levels of methylmercury in your system, then you should discuss the safety of breastfeeding with your healthcare provider. Be sure to talk to your healthcare provider about all your breastfeeding questions.

**If a man is exposed to methylmercury, could it affect his fertility (ability to get partner pregnant) or increase the chance of birth defects?**

Studies in experimental animals have shown that mercury can change the shape and movement of sperm. In humans, the research data are not clear. Some studies have suggested that high levels of mercury may cause infertility while other studies have not. There is no information suggesting that a father’s exposure to methylmercury can cause birth defects or learning difficulties in his children.

In general, exposures that fathers have are unlikely to increase risks to a pregnancy. For more information, please see the MotherToBaby fact sheet Paternal Exposures at https://mothertobaby.org/fact-sheets/paternal-exposures-pregnancy/pdf/.

**Please click here for references**

For additional reading on eating fish during pregnancy, you may also be interested in reading the MotherToBaby baby blog on this topic: Eating Fish during Pregnancy: What’s the Current Hook, Line, and Sinker?