

Mercury in fish

Mercury is a naturally occurring element that is found in air, water and food. Most people are exposed to mercury via food. Fish take up mercury from streams and oceans as they feed. This mercury is in the more toxic, methylmercury form. It binds to their tissue proteins (such as muscle). Food processing, preparation and cooking techniques don't significantly reduce the amount of mercury in fish.

Pregnant women - or, rather, their unborn babies - are at the greatest risk. Babies developing in the uterus (womb) seem to be most vulnerable to the effects of mercury on their nervous systems. The mercury may slow their development in the early years. Research is ongoing, but women should be selective about the kinds and amounts of fish they eat during pregnancy.

Methylmercury is the most hazardous

Mercury is common in the environment and has three forms: organic, inorganic and metallic. The organic form of mercury, particularly methylmercury, is the most dangerous.

Fish absorb methylmercury

Methylmercury in fish mainly comes from mercury in ocean sediment that is transformed into methylmercury by microorganisms. This organic form of mercury is absorbed by the tissues of fish through their gills as they swim and through their digestive tracts as they feed.

Some fish contain more mercury than others

Mercury levels differ from one species of fish to the next. This is due to factors such as type of fish, size, location, habitat, diet and age. Fish that are predatory (eat other fish) are large and at the top of the food chain, and so tend to contain more mercury. Fish that contain higher levels of mercury include:

- Shark
- Ray
- Swordfish
- Barramundi
- Gemfish
- Orange roughy
- Ling
- Southern bluefin tuna.

Fish with lower mercury levels

Examples of fish that contain lower levels of mercury include:

- Shellfish including prawns, lobsters and oysters
- Salmon
- Canned tuna.

Fish as part of the diet

Fish is an important part of a healthy diet. Some of the health benefits of fish include that it is:

- High in protein
- Low in saturated fat
- High in unsaturated fat
- High in omega-3 oils.

For healthy adults and children, mercury from most fish sold in Australia is not a health risk, when fish is consumed as part of a normal diet. However, fish with high levels of mercury, like shark (flake), should probably not be eaten more than once a week.

Mercury and the unborn baby

Unborn babies are at increased risk from mercury. The mercury in fish can lead to raised mercury levels in the mother. This mercury can be passed on through the placenta to her developing baby.

The foetus appears to be most sensitive to the effects of mercury during the third and fourth months of a pregnancy. The effects on the brain and nervous system may not be noticed until developmental milestones - such as walking and talking - are delayed. Memory, language and attention span may also be affected.

International researchers recommend reducing safe levels of mercury

Studies of the brain development of children whose mothers ate significant amounts of fish with high mercury levels during pregnancy have been carried out in New Zealand, the Faroes and the Seychelles.

The Joint Food and Agriculture Organization (FAO) and World Health Organization (WHO) Expert Committee on Food Additives (JECFA) reviewed these studies in June 2003. These researchers recommended reducing the amount of fish known to contain mercury in the diet, particularly for pregnant women. Australian research shows that mercury levels in some fish, particularly shark, could be even higher than in the areas studied for this research. In fact, it seems that mercury levels in some shark species caught in Victorian waters are particularly high.

Australian guidelines for safe levels are under review

Since the Joint FAO and WHO Expert Committee (JECFA) revised its guidelines on methylmercury, Food Standards Australia New Zealand (FSANZ) has also begun to review its advice on the consumption of fish during pregnancy. When the review is completed by FSANZ, they may give further recommendations.

Pregnant women should limit the amount of fish they eat

Pregnant women or women intending to become pregnant within the next six months should be careful about which fish they eat. They should:

- Avoid fish with high levels of mercury (shark, ray, swordfish, barramundi, gemfish, orange roughy, ling and southern bluefin tuna).
- Limit other fish, such as tuna steaks, to one portion per week or two 140g cans of tuna per week (smaller tuna contain less mercury).

However, there is no restriction needed on the amount of salmon, including canned salmon, which is eaten.

Some fish that are caught in Victorian inland waters by family or friends may also have high levels of mercury. Pregnant women should also limit their consumption of these fish to one portion per week.

Studies on eating patterns in Australia show that most pregnant women probably do not eat fish in amounts that would be likely to harm their unborn babies, even considering the new lower level set by leading health authorities.

Mercury and breastfeeding

Methylmercury from fish eaten by women during pregnancy seems to only pose a health threat to the baby while it is in the womb. Once the baby is born, the levels of mercury in the mother's milk are not high enough to be a risk to the infant.

Infants and children

It is best to avoid giving infants and young children the types of fish that have high mercury content. Infants and young children are advised to avoid eating shark, swordfish and marlin on a regular basis.

Our body does clear out the mercury

It's important to remember that the body can and does get rid of mercury over time. So people only go over the safe levels if they eat a lot of high mercury fish regularly over many months.

Where to get help

- Your doctor
- An accredited practising dietitian, contact the Dietitians Association of Australia

- For further information contact Food Standards Australia New Zealand on Tel. (02) 6271 2222, email: info@foodstandards.gov.au or visit the website

Things to remember

- Fish that contain high levels of mercury include shark, orange roughy, swordfish and ling.
- Mercury is a naturally occurring element that is found in air, water and food.
- The unborn baby is most sensitive to the effects of mercury, particularly during the third and fourth months of gestation.
- Pregnant women should avoid consumption of fish that contain high levels of mercury.

This page has been produced in consultation with, and approved by:

DHS - Food Safety Unit

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