

Anne Johnson: Welcome to Environmental Health Chat, a podcast about how the environment affects our health, from the National Institute of Environmental Health Sciences. I'm your Host, Anne Johnson, and today we're talking about mercury in seafood. We'll go from the ocean to your dinner table to learn why some types of fish contain mercury. We've also got tips on finding low mercury seafood for your family to enjoy.

Today's expert is Dr. Celia Chen. She's an Aquatic Ecologist at Dartmouth College, who works with the Dartmouth Toxic Metal Superfund Research Program, which is funded by NIEHS.

So there seems to have been a lot of hubbub about mercury in recent years. I asked Celia to boil it down for us?

Celia Chen: Well, the hubbub involves the fact that mercury is a neurotoxin and the main vector to human exposure is from eating fish. There's been kind of a misconception out there I think that people have become afraid to eat fish because of mercury exposure. And the thing that gets lost is that fish are really an important nutritional source for adults and children and the developing fetus. So the message is not to not eat fish, it's to eat low mercury fish.

Anne Johnson: I asked Celia about the health risks of eating seafood that's high in mercury?

Celia Chen: The health effects are still being discovered. Certainly the most obvious is neurological affects, learning and development delays in children, but like many toxins as we learn more and more we often see affects at lower and lower concentrations. For example, cardiovascular affects, some epidemiological affects, and also ones that are related to birth weight and the developing fetus.

Anne Johnson: But she says mercury isn't only something pregnant women need to be concerned about.

Celia Chen: I think that anybody, a female who is in their reproductive ages of life needs to be concerned about it because just because you aren't pregnant doesn't mean that mercury that you're taking in is not going to affect you later on. And, also, because the other affects are not entirely known. There is some concern that men also should be careful of their mercury intake.

Anne Johnson: A big part of Celia's research is tracking how mercury gets into fish through the marine food web. She said the main source of mercury worldwide is coal fired power plants, which release mercury into the air.

Celia Chen: Once it gets into the atmosphere it is transported around the globe, even to places that are very pristine, like the Arctic, and eventually flows down into waterways, and the mercury is converted down in the sediments or the mud into methylmercury. Methylmercury is the toxic form and is the form that is most easily taken up by biological organisms and is also the form that is retained in the tissues for the longest period of time.

So the methylmercury is taken up by plants that grow in the water column, like phytoplankton, and the phytoplankton are eaten then by the next level up, which is zooplankton, and the

zooplankton are eaten by small fish and small fish are eaten by large fish, and so on and so forth. And at each level of that food chain the mercury is increasing in concentration.

Anne Johnson: By the time you get to a top level predator the mercury level can be a million times higher than the level in the surrounding water, according to a recent study in the Journal Bioscience. I asked Celia how people can decide which fish are safe to eat?

Celia Chen: Mercury is extremely high in species, like shark and swordfish, king mackerel, tilefish, and even tuna, but there's lots and lots of fish species that are really nutritious and also are low in mercury, things like Tilapia, flounder, catfish, shad, anchovies, it tends to be the smaller fish. I think it's interesting because it's actually more sustainable to eat those smaller fish than some of these top predators in terms of their population, so you're kind of doing something for conservation, as well as reducing your own exposure to mercury.

Anne Johnson: But Celia said choosing the right fish at the supermarket is only a temporary solution. I asked whether anything can be done to reduce the amount of mercury that finds its way into the ocean in the first place?

Celia Chen: Yes, we can reduce what mercury gets into our food chains by reducing the amount that we emit.

Anne Johnson: Celia said reducing the amount of mercury released from coal fired power plants would have a big impact. She added that there are also ways to control mercury emissions from chemical plants and other industrial sources.

The Dartmouth Superfund Research Program has put together a website full of resources about mercury, its connection to energy, and how to find low mercury seafood. Check out their website and watch a great video about mercury at source2seafood.org. Again, that's source2seafood.org.

Thanks, again, to Celia for taking the time to tell us about her work. Celia Chen is an Aquatic Ecologist at Dartmouth College.

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