



Contributors

Risks vs. benefits of eating salmon

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CHRIS REDDY MARK HAHN

WOODS HOLE

IS THE SALMON wild or farmed? You may hear, or even ask, this question at a restaurant or grocery store sometime this summer.

It has been fashionable to ask that question since 2004, when scientists from Indiana University and colleagues published a study in the journal *Science* reporting significantly higher levels of contaminants such as polychlorinated biphenyls (PCBs) in salmon harvested from fish farms compared with wild salmon. Pointing to the possible health risks, the authors advised the public to limit consumption of farmed salmon to one-half to two meals a month. The news media took the story and made it a topic of household conversation.

Although clearly a source of contaminant exposure, eating salmon also has health benefits. Salmon is a great source of omega-3 fatty acids, which lower the risks of cardiovascular disease and promote neurological development. Some in the scientific and medical communities criticized the study's recommendations, and one scientist from Harvard's School of Public Health even suggested that the advisory "likely caused substantial numbers of premature deaths" by reducing fish consumption and the intake of omega-3 fatty acids.

How should a consumer judge the risks versus the benefits of eating salmon?

The initial study was valuable in providing data on the levels of PCBs and other chemical contaminants in farmed versus wild salmon. The authors also performed a risk assessment to determine how much of the more contaminated salmon could be safely eaten. They noted that the PCB levels in the farmed salmon did not exceed U.S. Food and Drug Administration guidelines for safe consumption of seafood. The authors chose, however, to use a more conservative procedure for determining safe consumption established by the U.S. Environmental Protection Agency. The EPA procedure projected cancer risks from combined exposure to PCBs and the chlorinated pesticides toxaphene and dieldrin from salmon. The results of this analysis were then employed to set recommendations for farmed salmon intake.

The trouble with this approach was that the health benefits of consuming salmon were not factored into the recommendations. Moreover, the scientists failed to adequately communicate the substantial uncertainties inherent in the risk-assessment procedures.

The situation has changed somewhat since that 2004 study. The contaminants in farmed salmon mostly come from the feeds used to raise them. But feeds are more closely scrutinized today, so contaminant levels in salmon from some regions may have fallen in the intervening years. New research has also shown that wild salmon in some areas can be as contaminated as their farmed cousins. Thus, the

differences between wild and farmed salmon in 2007 may be less dramatic than previously thought and strongly influenced by geography.

So how much salmon can you safely eat? Science cannot yet provide a definitive answer. There are still too many uncertainties about the levels of contaminants in the salmon you consume and about their long-term impact on human health.

There are a few useful things that we do know. For one, you can reduce your exposure to PCBs by removing the skin, fat, and dark flesh from the fish before cooking it. We also know that it is better — for several reasons — to grill or bake it rather than frying it.

Women who are pregnant or nursing a child are advised to minimize their intake of food-borne contaminants, since studies have shown that they can pass from mother to child through the placenta or through breast milk. But even this warning should be balanced against the need for proper nutrition. A committee convened recently by the Institute of Medicine of the U.S. National Academy of Sciences concluded that such women (and their children) may benefit from consuming moderate amounts (two 3-oz. servings a week) of seafood that is high in omega-3 fatty acids. They also cautioned that these women and children should avoid consuming large predatory fish, such as shark and swordfish, that contain high levels of methylmercury, which is toxic to the developing brain.

The committee provided no specific advice about salmon consumption but noted that salmon is an excellent source of omega-3 fatty acids. The committee broadly concluded that the potential risks associated with PCBs from seafood are similar to those from meat, such as beef, pork or poultry.

The salmon issue illustrates the fact that it is easier to measure contaminants in our food than it is to assess the risks and benefits of consumption. It is important for consumers to educate themselves about what is in the food they eat. But it is equally important for scientists to carefully communicate the results — and particularly the uncertainties — of their research.

Chris Reddy, a chemist and occasional contributor, and Mark Hahn, a biologist, are scientists at the Woods Hole Oceanographic Institution. They eat both wild and farmed salmon.