In Seafood-Source this morning.

Q&A: Nick Ralston, University of North Dakota

 *By April Forristall, SeafoodSource assistant editor*
6/25/2009 3:17:19 PM - In 2002, Nick Ralston took a position at the University of North Dakota working with the Environmental Protection Agency-funded Center for Air Toxic Metals Health Effects program. Last week, Ralston and his colleagues published the results of their seven-year-long study, which shows that current U.S. Food and Drug Administration methods for developing seafood consumption guidelines may not provide an accurate assessment of seafood safety. The study's results led them to develop the Selenium Health Benefit Value criterion, which predicts risks or benefits of seafood species based on methylmercury and selenium content. Ralston recently talked to SeafoodSource about the study's implications and what it could mean for the future of FDA's seafood-consumption recommendations.

Forristall: What led to the study?
Ralston: The bulk of the studies [at the University of North Dakota's Energy and Environmental Research Center] have involved studying mercury issues — how to capture it, clean it up out of the air. The part that got added when I joined was looking at human health effects. We figured we should get into the biochemistry of mercury, too.

The mercury issue got my attention because I understood the importance of selenium physiology and knew high mercury exposures would cause harm to the brain if it knocked out selenium metabolism. Since I initially thought there was far more mercury than selenium in seafood, I thought seafood consumption was causing a lot of harm to children. But after months of full-time research, it became clear that ocean fish contain lots of selenium and relatively little mercury, so I was perplexed about how harmful effects could ever occur. It wasn't until I learned that the studies that had found harm had involved eating whale meat and large sharks that did contain far more mercury than selenium that the story started to become clear.

Why hasn't there been research like this before?
Actually, in 1967, the first study of mercury-selenium interactions showed essentially the same thing that our work shows today. We understand selenium physiology better and can interpret the results better, but some of the early work in the '60s and '70s is hard to beat. Since that time, work on this subject has been largely overlooked or ignored. I am currently writing a manuscript with three of the selenium scientists that did work in this area (they are mostly retired) to get them some of the credit they deserve.

Why hasn't the selenium-mercury issue been more publicized?
For at least the last couple of decades, many have had the problem of dogmatically thinking they knew certain things about the mercury issue for sure. Dogmatic thinking always causes

trouble and it certainly did in this case. That is why dogmatic thinking is never supposed to be permitted in scientific research. However, politics and policy makers have different agendas and their attitudes toward dogma is quite different than that of scientists. Not wanting to be confused by facts, there has been a long-term tendency to ignore any and all scientific data that got in the way of policy.

Is the FDA taking the research into consideration?
In February, the FDA presented an examination of the data from all the human studies that does a great job of connecting all the dots for seafood consumers to consider. Basically, since all the biggest studies show substantial benefits when mothers eat increasing amounts of ocean fish, it's pretty clear the dots are pointing toward encouraging women to increase fish consumption during pregnancy instead of limiting it. They came to the same conclusion as us, but in a different way.

What effect will this study have on the public's perception of the dangers of mercury in seafood?
A lot of people have gotten a completely wrong assumption about what the EPA-FDA advisory actually says. The current advisory suggests that pregnant women should avoid shark, swordfish, king mackerel and tilefish because they contain high levels of mercury. Since we know shark meat can contain more mercury than selenium, I can completely endorse that suggestion. The mercury and selenium levels in the other three varieties on the do-not-eat list need to be examined further before I could comment. However, most people don't understand that the FDA-EPA advisory encourages women to eat up to 12 ounces (two average meals) of ocean fish a week. If the selenium-health benefit values (Se-HBVs) for the various seafood become more widely known, this will make it much easier for women to select ocean fish that are the most beneficial to their children's health. Omega-3 health benefit values (O3-HBV's) calculated in a fashion that is very similar to the Se-HBV are currently being discussed. And if properly done, these HBVs can be combined to create an overall health benefit value for each of the various varieties of ocean fish.

We developed a way of simplifying how to understand the mercury-selenium issue. If [a species] is not good to eat it will have a negative value. The better it is, the more positive the value; the worse [it is], the more negative. There is a real big contrast to normal types of ocean fish, between 20 and 200. Whales are -100. Seafood with negative values are kind of rare.

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