ALLIANCE™
(https://www.globalseafood.org)

Responsible Seafood ADVOCATE

Intelligence

Can a preservative reduce mercury in tuna, or is it a solution in search of a problem?

12 May 2025
By Jen A. Miller

Can a common preservative actually reduce levels of mercury in tuna — and ease concerns about methylmercury?

Researchers recently claimed that packing tuna in a known preservative can reduce levels of mercury, quietly reigniting one of seafood's oldest controversies. Shutterstock image.

In February, researchers from the Chalmers University of Technology **announced a stunning finding (https://www.eurekalert.org/news-releases/1072681)** about mercury in tuna.

By infusing the water used to pack canned tuna with the amino acid cysteine, they were able to remove up to 35 percent of the accumulated mercury from the tuna. Such an already known food-safe additive wouldn't need to disrupt the process of canning the fish, said Przemyslaw Pawel Strachowski, Ph.D., who worked on the study, because it would just be part of the water-packing process.

It seemed like a win-win discovery — and won positive press in a wide range of publications, including ***Food & Wine*** **(https://www.foodandwine.com/canned-tuna-cysteine-packaging-less-mercury-11681847)** and ***New Food Magazine*** **(https://www.newfoodmagazine.com/news/248192/new-mercury-reducing-packaging-solution-sets-a-safer-standard-for-canned-tuna/)**.

But it also kicked up the often-thorny topic of mercury in fish, one that has been debated for more than half a century. And since canned tuna is a ubiquitous global product, it might go on for another 50 years or more.

Tuna and mercury: A half-century of debate

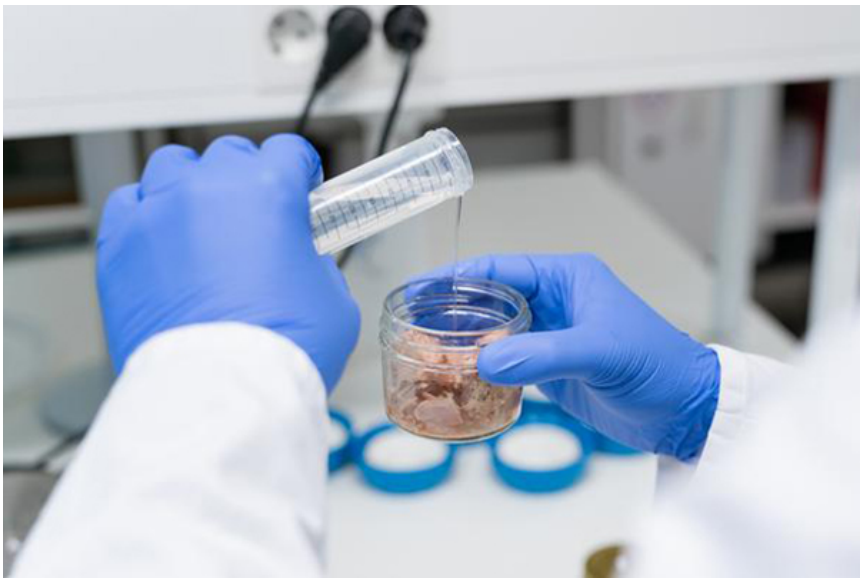
Mercury, a neurotoxin, is a concern regarding the consumption of four species of fish: tuna, shark, tilefish and king mackerel. The focus has been on tuna because it's the most commonly eaten and canned tuna is an affordable and accessible source of protein for millions of people.

In 1970, Bruce McDuffie, then a Binghamton University chemistry professor, tested a can of tuna from his kitchen and found that it had high levels of methylmercury. The next year, the U.S. Food and Drug Administration (FDA) ordered a recall of about 1 million cans of tuna, which was 23 percent of cans of tuna packed in the country at the time.

The level of mercury considered safe by the FDA, and who should be eating how much fish that could contain mercury, has ping-ponged since then. The current actionable level in the United States, meaning the level that would be harmful to human health, is 1.0 parts per million (ppm).

As of March 2024, (https://www.fda.gov/food/consumers/advice-about-eating-fish) the FDA and the Environmental Protection Agency (EPA) recommend eating at least 8 ounces (227 grams) of seafood a week as part of a 2,000-calorie daily diet (and less for children); women who are pregnant or breastfeeding should consume between eight and 12 ounces per week from seafood that have a lower risk of mercury, like salmon, anchovies, haddock or scallops.

Those guidelines haven't settled the debate, though, with different interests trying to press for change from each direction, either saying the guidelines are too strict, or they're not strict enough.



A Chalmers researcher pours liquid amino acid cysteine into a jar of canned tuna. Courtesy image.

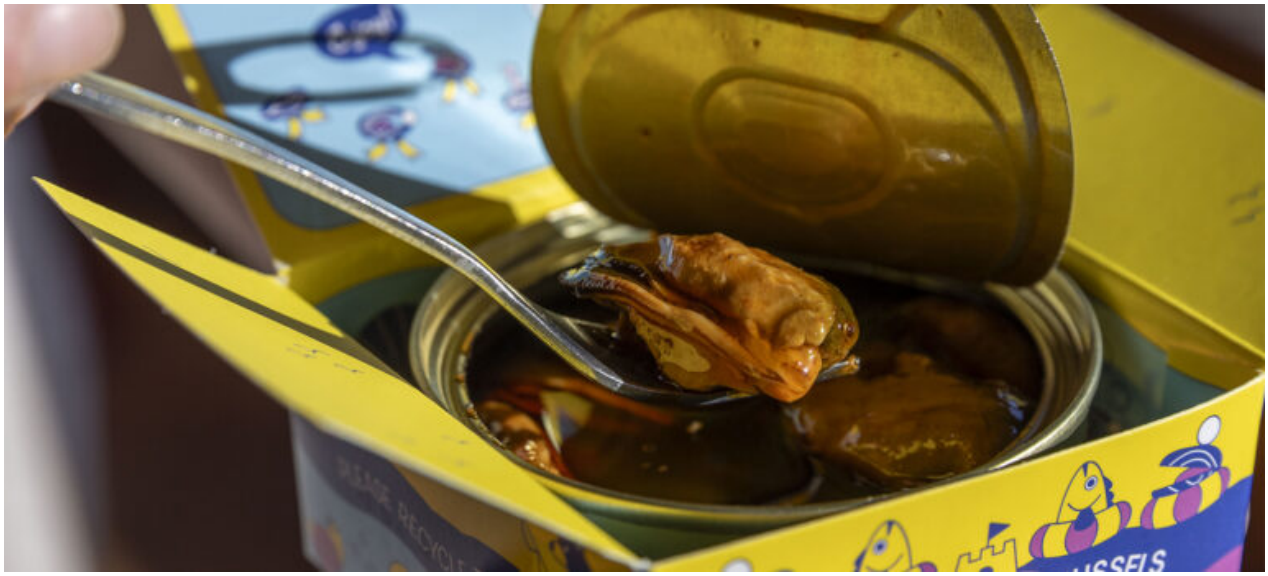
"For a long time, there was an active strategy amongst activist groups to promote the mercury myth," said Gavin Gibbons, chief strategy officer with the National Fisheries Institute (NFI), tying mercury concerns to groups that fought overfishing. "This was a very active effort to scare people away from seafood."

Gibbons calls it a "myth" because he says mercury poisoning doesn't come from eating seafood and instead is linked to industrial dumping. He said that Chalmers group's study shows it's good that there's an interest in "the healthiest protein on the planet," but that it's "really a solution in search of a problem."

Not everyone agrees. Like McDuffie in 1970, scientists are still testing store-bought cans of tuna and voicing concerns. In 2023, *Consumer Reports* **tested cans** (https://www.consumerreports.org/health/food-safety/how-worried-should-you-be-about-mercury-in-your-tuna-a5041903086/) of Bumble Bee, Chicken of the Sea, StarKist, Safe Catch and Wild Planet tuna, and found that levels of mercury, even between the same kinds of products, were inconsistent, said Michael Hansen, Ph.D., senior food scientist at *Consumer Reports*, and that one in five cans had spikes in mercury content. (A similar study run on randomly selected cans of tuna in Spain, France, Italy, the UK and Germany found the **same problem** (https://euroweeklynews.com/2024/11/14/mercury-levels-in-canned-tuna-are-over-the-limit/) with inconsistency in mercury levels).

Despite this, "we pretty much agree with most of the recommendations from the EPA and FDA about fish that are safe to eat and the quantity," said Hansen of where *Consumer Reports* landed on the issue.

But with one expectation: "We say pregnant women should not be eating *any* tuna," said Hansen. That's because they have no way of telling which tuna would have one of those spikes, and too much mercury could have adverse effects on a growing fetus, he added. *Consumer Reports* doesn't say that pregnancy means no fish at all, just that canned tuna especially should be avoided "because of those problem spikes."



Will 2024 be the year of the tinned fish?

Tuna/mercury solutions

The NFI called the 2023 *Consumer Reports* piece "embarrassing failure of journalistic ethics" when it was published, so clearly, this debate isn't going away anytime soon. But neither is mercury. While a **2016 study** (https://pubs.acs.org/doi/abs/10.1021/acs.est.6b04328) published in *Environmental Science and Technology* showed improvement in mercury levels in the North Atlantic Ocean due to the declining use of coal, a **2024 study** (https://www.acs.org/pressroom/presspacs/2024/february/mercury-levels-in-tuna-remain-nearly-unchanged-since-1971.html) from the same journal found that mercury levels in tuna fished from the Atlantic, Pacific and Indian oceans haven't changed since 1971.

In that time, how much tuna humans consume has increased, from between 500,000 and 600,000 tons each year globally in the 1970s to 1.9 million by 2018, **according to *Marine Policy* (https://www.sciencedirect.com/science/article/abs/pii/S0308597X2200063X#:~:text=The%20global%20consumption%20of%20canned,2050%20(Kawamot**

Smaller companies have been working to stop mercury from getting into cans by being selective in what they use. Safecatch, for example, is a California-based company that tests tuna for mercury before it's canned. They say one out of four fish don't meet its standards, according to its press materials. But doing that on a global scale may not be practical, or affordable for consumers. As of press time, a six-pack of Safe Catch 5-ounce cans of tuna costs $23.99, where the same amount of Chicken of the Sea chunk lite tuna in water costs $5.88 at Walmart.

The Chalmers mercury-absorbing solution is promising, but it's still in its early days, and industry has not yet called, according to Strachowski, though he now works for Atsorbi, an air purification company. He said that lack of interest is in part because the limits of what's considered safe due to mercury are "still quite high," he said. The European Food Safety Authority's (EFSA) general limit is 0.5 mg per kg of mercury, though it's 1 mg per kg for larger fish like tuna. Since there's little pressure on industry to lower mercury in fish, he believes "governments and industry need to push more."

Hansen of *Consumer Reports* said the innovation an interesting development, but not knowing what the original level of mercury is makes it difficult to see how useful it is, noting that "35 percent of 100 is a lot different than 35 percent of 1."

Author

JEN A. MILLER

Jen A. Miller is a New Jersey-based writer whose work has appeared in everything from The New York Times to Engineering News Record.