

Why your tuna could have 36 times more chemicals than others

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Yellowfin tuna caught by Scripps Oceanography researchers studying levels of pollutants in the fish's tissue. Credit: Lindsay Bonito

Researchers at Scripps Institution of Oceanography at the University of California San Diego found levels of persistent organic pollutants as much as 36 times higher in the muscle tissue of yellowfin tuna caught in the more industrialized areas of the northeast Pacific Ocean and northeast Atlantic Ocean than in tuna caught in pristine waters of the

West Pacific Ocean.

Persistent organic pollutants (POPs) include pesticides, flame retardants, and polychlorinated biphenyls (PCBs)—compounds previously used as a coolant in electrical equipment and components before they were banned in the United States in 1979. Despite their restricted or eliminated use, these compounds persist in the environment and ultimately accumulate in organisms, including [fish](#) and humans. POPs have a number of adverse effects in humans, including interference with the body's defenses against foreign substances.

Most of the 117 [tuna](#) caught around the world analyzed in the study would be considered safe under current consumption guidelines, the researchers said. However, they noted that 90 percent of the tuna captured in the northeast Atlantic Ocean and more than 60 percent of those caught in the Gulf of Mexico contained pollutant levels that would have triggered health advisories for regular consumers and people at risk, including pregnant and nursing women or people with compromised immune systems.

The authors also found levels of a specific subset of these pollutants that is known to impair the human body's defense system against chemicals and toxins. This group of pollutants is known as Transporter Inhibiting Compounds (TICs). Surprisingly, TICs were present in all tuna with the highest levels again detected in the most contaminated sites.

"Surprisingly, only a few types of pollutants detected in tuna had regulatory information available to calculate meal recommendations," said Scripps postdoctoral researcher Sascha Nicklisch, who led the study. "An important issue raised by the study is how to guide science and policy on possible hazards associated with these chemicals in our food sources."

The study appears in the July issue of the journal *Environmental Health Perspectives*, which is published by the National Institute of Environmental Health Sciences.

Researchers previously had found a correlation between the amount of pollutants and the [body fat percentage](#) of the fish since the pollutants accumulate in lipids. In this study, however, Nicklisch's team found that the level of pollutants was often more closely correlated with the location where the fish were caught rather than the amount of fat in the fish. While the researchers could not establish a clear relationship, their data shows that the fat content in itself is not always a sufficient predictor of the overall pollutant load of fish.

The study suggests that catch location should be used to guide consumer choices and to help reduce unintended human exposure to these pollutants.

More information: Sascha C.T. Nicklisch et al. Geographic Differences in Persistent Organic Pollutant Levels of Yellowfin Tuna, *Environmental Health Perspectives* (2017). [DOI: 10.1289/EHP518](https://doi.org/10.1289/EHP518)

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