

Research shows mercury may biomagnify more effectively in northern regions

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Mercury biomagnification rates in aquatic Arctic ecosystems are higher than in lower latitudes, says a new study from Queen's researcher Raphael Lavoie.

Mercury is passed along through food webs in all ecosystems through a process called [biomagnification](#). This process results in increasing concentration of substances like [mercury](#) in an organism at successively higher levels in a food chain.

But this new study expands what we know about biomagnification by showing that colder temperatures contribute to higher rates of biomagnification in Arctic food chains.

"High Arctic ecosystems are already affected by global changes. When contaminants from human activity end up in the Arctic, they tend to stay there," says Mr. Lavoie. "Mercury will always biomagnify, but we've found that depending on the latitude, the degree of biomagnification will vary."

Low temperatures mean slower metabolism and slower growth rate for Arctic marine life. As growth rate of organisms in this area is reduced, their bodies contain higher mercury concentrations than in areas with warmer temperatures where [growth rate](#) is accelerated.

"Our study indicates that fragile [arctic ecosystems](#) may be more at risk from [mercury pollution](#) than ecosystems in other parts of the world,"

says Mr. Lavoie. "In addition, arctic food webs may be slower to respond to current efforts to reduce mercury pollution. Our study highlights the need for consistent data collection and collaboration to monitor mercury in food webs across the globe."

While mercury is produced naturally by volcanoes and forest fires, global mercury production have increased hugely because of human activities such as coal burning and artisanal gold extraction.

Data was collected from over 7000 tissue samples in 205 aquatic [food webs](#) across 31 countries and oceans. Results from 69 different studies worldwide were collected and homogenized by Mr. Lavoie and his team to create the first comprehensive study of mercury biomagnification trends.

Provided by Queen's University

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