Mercury converted to its most toxic form in ocean waters: study

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University of Alberta-led research has confirmed that a relatively harmless inorganic form of mercury found worldwide in ocean water is transformed into a potent neurotoxin in the seawater itself.

After two years of testing water samples across the Arctic Ocean, the researchers found that relatively harmless inorganic mercury, released from human activities like industry and coal burning, undergoes a process called methylation and becomes deadly monomethylmercury.

Unlike inorganic mercury, monomethylmercury is bio-accumulative, meaning its toxic effects are amplified as it progresses through the food chain from small sea creatures to humans. The greatest exposure for humans to monomethylmercury is through seafood. The researchers believe the methylation process happens in oceans all over the world and that the conversion is carried out by microbial life forms in the ocean.

The research team, led by recent U of A biological sciences PhD graduate Igor Lehnherr, incubated seawater samples collected from the Canadian Arctic Archipelago. Lehnherr says conversion of inorganic mercury to monomethylmercury accounts for approximately 50 per cent of this neurotoxin present in polar marine waters and could account for a significant amount of the mercury found in Arctic marine organisms. The researchers say this is the first direct evidence that inorganic mercury is methylated in seawater.

The research was published earlier this month online in *Nature*

Geoscience.

Provided by University of Alberta

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