Offshore and onshore monomethylmercury (MMHg) and total mercury (THg) accumulation during Antarctic Krill (*Euphausia superba*) development along the Western Antarctic Peninsula (WAP)

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Western Antarctic Peninsula (WAP) Mercury (Hg) Dynamics and Methods

Coastal Hg deposition is enhanced along the WAP[1] through photochemical oxidation of elemental Hg in the atmosphere with reactive halogens depositing on surfaces of sea ice and snow.[2,3] During melt, deposited Hg may be released to coastal WAP ecosystems, where Hg biomagnification has been observed.[4] Antarctic Krill (*E. superba*), an important link in the WAP foodweb, develop along the WAP coast,[5] and once matured migrate offshore in widely distributed adult swarms.[6] Offshore (>100km) and onshore (<50km) krill were analyzed for monomethylmercury (MMHg) and total mercury (THg) to examnine how coastal Hg dynamics affect Hg bioacccumulation in WAP food webs.

Hg concentrations in Juvenile and Adult Krill

Coastal (n=14) juvenile krill accumulated higher MMHg (2.12±0.97 ngg^{-1}) and THg (9.23±3.09 ngg^{-1}) concentrations than offshore (n=11) adults (0.29±0.20 ngg^{-1} , 6.33 ± 1.74 ngg^{-1}) at ~65°S. MMHg and THg concentrations were correlated for both onshore juveniles (R^2=0.69) and offshore adults (R^2=0.41).

Future research will provide regional comparisons between coastal and offshore Hg dynamics using water, plankton, and krill samples along the WAP. In addition, stable N and C isotopes will be used to identify trophic niche and carbon sources providing explanations for differing Hg concentrations during *E. superba* development.

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