Biomagnification of Methylmercury in a Marine Plankton Ecosystem

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I. Marine plankton system

A) The spatial pattern of MMHg in zooplankton is similar to that of phytoplankton, as MMHg from food is the main source for MMHg in zooplankton. The microbial community plays an important role in the trophic transfer of MMHg.

III. MMHg biomagnification

Magnification ratios between trophic levels (TMRs) in two representative food chains: prochlorococcus (small) -> HZ1 (a) -> CZ1 (b) and diatoms (large) -> HZ4 (c) -> CZ2 (d).

There is almost no MMHg magnification in small zooplankton, which is opposite to large zooplankton.

Large zooplankton dominant in eutrophic oceans have sufficient food intake, which results in higher accumulated MMHg than their prey.

In oligotrophic oceans, e.g. subtropical oceans in the Southern Hemisphere, TMRs of HZ are low, while TMRs of CZ are high.

In oligotrophic oceans, phytoplankton grow slow and suffer less grazing stress. So the grazing flux for HZ is lower than in eutrophic oceans. For CZ, despite sufficient food in the eutrophic oceans, the larger food uptake fails to compensate for the reduced MMHg concentrations caused by larger biomass.

II. MMHg in plankton

A) The spatial pattern of MMHg in zooplankton is similar to that of phytoplankton, as MMHg from food is the main source for MMHg in zooplankton. The microbial community plays an important role in the trophic transfer of MMHg.

B) The spatial pattern of MMHg in zooplankton is similar to that of phytoplankton, as MMHg from food is the main source for MMHg in zooplankton. The microbial community plays an important role in the trophic transfer of MMHg.

References
