

DISTRIBUTION OF ORGANOMETALS IN OSAKA BAY, JAPAN

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The Osaka Bay constitutes a part of the Seto Inland Sea, the largest enclosed coastal sea in Japan (Fig.1), surrounded by Honshu (the “mainland”) and Awaji Island. The two coasts (Honshu and Awaji Isl.) show a clear contrast; the former is highly populated and most of the coastal linecoastline has been reclaimed and also suffered considerable pollution from domestic sewage and industries, whereas the latter still has a natural coast, and suffered suffers much less pollution from industry. Five large rivers flow into the inner part of the bay (NE coast) where stagnant character of the seawater is more stagnantstronger, and high concentrations of heavy metals are observed in bottom sediments. Bulk analyses of sediments have usually been employed for the marine environmental assessments., Howeverhowever, the bulk metal compositions are strongly affected by the mineral composition of sediments. In this study, we analyzed 14 organometals extracted by toluene-methanol mixed solvent for 42 samples in from the inner coast and 12 from the Awaji Island coasts of Osaka Bay. The extracted organometals were oxidized by 12% nitric acid and analyzed by the ICP-MS (HP4500). Comparison of organometal compositions of samples from both areas revealed the following features:

1. The concentration of organomagnesium is apparently higher by 2-3 orders of magnitude in comparison with other organometals, suggesting the large contribution of chlorophyll contained in phytoplanktons. The higher concentration of organomagnesium in inner part sediments from the inner bay suggests that human- supply supplied of nutrients may cause higher production of phytoplanktons. The positive correlations of organomagnesium with organoarsenic and organolead, suggest a the possibility that arsenic and lead are also concentrated by phytoplanktons.

2. Sediments from the mouth of Shin-Yodo River are enriched in Co, Cu, Hg, Ni, Zn, Sn, Se, and Pb and those from the mouth of Muko River are enriched in Co, Cu, Zn, Sn, As, Se, and Pb. Those metals may be suppliedorginate as an artificial contaminant pollutants from the river. However, all these organometals are not necessarily as artificial human-derived, but because some may be organizedorginate from by other processes such as absorption of inorganic metals onto terrigenous high-molecular weight organic matter and organization by the from biological activitiesactivity.

Fig.1 Sediment sampling sites

