

Distribution of PCB and Nonylphenol in Mussel around Harimanada and Osaka Bay

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Polychlorinated biphenyl (PCB) is well-known environmental pollutants. In Japan, the total amount of PCB produced and imported from overseas by 1972 was approximately 58,000t. Despite of the ban and restriction of PCB usage since 1972, 90% of total products have still been untreated. PCB is transported in the environment(s) (water, air, and ecosystem) in various forms. Recently, nonylphenol has been attracts much attention as one of endocrine disruptors in Japan. Nonylphenol ethoxylates (NPEO) are used widely a raw material of surfactant in industrial processes and households. Nonylphenol (NP) is a major degradation product from NPEO. The usage of NPEO to household articles has been banned in the United Kingdom, Germany and Switzerland. But in Japan, NPEO are not regulated, and approximately 65,000 tons of alkylphenol including NP were produced in 1999. Thus, it was thought that the effect of PCB and NP for living things in water environments of enclosed water area like Seto inland sea and Osaka Bay.

Although many investigations for NP or PCBs have been conducted, few reports about their behavior have been reported, distribution changes in time or space in the water environments. Furthermore, concentrations of these substances in water environments are rarely reported. Taking into these considerations, Blue mussel was selected as an indicator of water environmental pollution and NP and PCB concentrations in vivo were investigated. We have tried to compare the distribution in Harimanada with that in Osaka Bay during the growing term of mussel from May, 2001 to November, 2001. In order to estimate the origin of these substances, we are also investigating the characteristics of isomeric distribution and homologous distributions. PCB has specific isomeric profiles and homologous distributions. For example, KC300 has low chlorinated isomer originated from non carbon paper. KC400, 500 used for condenser. KC600 contains high chlorinated isomer originated from the paints on the bottom of ships.

As a result of our investigation in Harimanada and Osaka Bay, it became clear that NP and PCB are accumulated in Blue mussel. Some kinds of factors including the following parameters were investigated; ①the difference in places ②the difference in substances ③seasonal change In the enclosed costal sea like Osaka Bay and Harimanada, PCB and NP which are insoluble in water are adsorbed mostly through plankton and particle, and they are not easily discharged to the open sea. Therefore, future investigation will be required and it is thought that the monitoring of PCB and NP using Blue mussel as a biological indicator is effective.