Asian mussel watch program: Contamination status of polybrominated diphenyl ethers and organochlorines in coastal waters of Asian countries

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Abstract: Mussel samples were used in this study to measure the levels of polybrominated diphenyl ethers (PBDEs) and organochlorines (OCs) in the coastal waters of Asian countries like Cambodia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, the Philippines, and Vietnam. PBDEs were detected in all the samples analyzed, and the concentrations ranged from 0.66 to 440 ng/g lipid wt. Apparently higher concentrations of PBDEs were found in mussels from the coastal waters of Korea, Hong Kong, China, and the Philippines, which suggests that significant sources of these chemicals exist in and around this region. With regard to the composition of PBDE congeners, BDE-47, BDE-99, and BDE-100 were the dominant congeners in most of the samples. Among the OCs analyzed, concentrations of DDTs were the highest followed by PCBs > CHLs > HCHs > HCB. Total concentrations of DDTs, PCBs, CHLs, and HCHs in mussel samples ranged from 21 to 58 000, 3.8 to 2000, 0.93 to 900, and 0.90 to 230 ng/g lipid wt., respectively. High levels of DDTs were found in mussels from Hong Kong, Vietnam, and China; PCBs were found in Japan, Hong Kong, and industrialized/urbanized locations in Korea, Indonesia, the Philippines, and India; CHLs were found in Japan and Hong Kong; HCHs were found in India and China. These countries seem to play a role as probable emission sources of corresponding contaminants in Asia and, in turn, may influence their global distribution. ?? 2007 American Chemical Society.

Index Keywords: Coastal waters; Polybrominated diphenyl ethers (PBDE); Coastal zones; Concentration (process); Contamination; Ethers; Fish; Water pollution; organochlorine derivative; polybrominated diphenyl ether; sea water; Coastal zones; Concentration (process); Contamination; Ethers; Fish; Water pollution; bioaccumulation; bioindicator; biomonitoring; bivalve; coastal water; DDT; emission inventory; geographical distribution; organochlorine; PBDE; PCB; pollutant source; water pollution; article; Asia; Cambodia; China; coastal waters; comparative study; geographic distribution; Hong Kong; India; Indonesia; industrial area; Japan; Korea; Malaysia; mussel; nonhuman; Philippines; sea pollution; Viet Nam; water pollutant; Animals; Asia; Bivalvia; Geography; Hydrocarbons, Chlorinated; Phenyl Ethers; Polybrominated Biphenyls; Water Pollutants, Chemical; Asia; Cambodia; China; Eurasia; Far East; Hong Kong; India; Indonesia; Japan; Korea; Malaysia; Philippines; South Asia; Southeast Asia; Viet Nam

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