

环境科学

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黄海近岸表层沉积物中DDTs、PCBs与酞酸酯的地理分布

摘要点击 144 全文点击 51 投稿时间: 2007-7-11 最后修改时间: 2007-8-3

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中文摘要

依据第二次全国海洋污染基线调查数据, 考察黄海近岸表层沉积物中PAEs、DDTs和PCBs污染物的地理分布、组成特征, 并基于相应的沉积物质量警戒水平, 进行初步的生态风险评价. 结果表明, 黄海近岸海区PAEs的高值站点集中在大连湾(1 389.8 ng/g)和旅顺(1 928.0 ng/g)周边海域, 已超出相应的警戒水平, 各海区主要组分为二丁基和2-乙基己基酞酸酯. 黄海近岸海区只有大连湾出口海域沉积物中PCBs浓度(24.2 ng/g)稍高于ERL警戒水平(22.7 ng/g); 而超过ERL警戒水平(1.58 ng/g)的DDTs较高浓度站点则主要位于大连湾(6.3~7.6 ng/g)、烟台-威海近岸(4.5~10.3 ng/g)、胶州湾(5.5~21.2 ng/g)和海州湾(27.4~62.9 ng/g)近海区域, 其中海州湾一 站点沉积物浓度甚至超过ERM警戒水平(46.1 ng/g). DDTs组成分析显示, p, p' -DDT的代谢产物主要是 p, p' -DDD; 在大连湾、威海、胶州湾和海州湾近岸海区以及山东半 岛东部外海仍存在有DDT的输入, 其来源可能是工业三氯杀螨醇和/或工业DDT产品. 这些海区表层沉积物存在一定的生态风险, 尤其是海州湾的个别站点, 潜在生态风险 更高.

英文摘要

Using the data of the second survey of marine pollution baseline, the geographical distribution and constitution were investigated, and preliminarily evaluated the ecological risk based on the corresponding sediment quality guidelines. The results showed that, the sites with high concentrations of PAEs over the corresponding guidelines were mainly located in the Dalian Bay (1 389.8 ng/g) and surrounding sea areas of Lvshun (1 928.0 ng/g), and the main components of PAEs were DBP and DEHP. Only at the outlet of Dalian Bay, the concentration of PCBs (24.2 ng/g) was slightly higher than the ERL guideline level (22.7 ng/g), while the sites with concentrations exceeding the ERL guideline (1.58 ng/g) were mostly situated in the coastal areas of Dalian Bay (6.3~7.6 ng/g), Yantai-Weihai (4.5~10.3 ng/g), Jiaozhou Bay (5.5~21.2 ng/g) and Haizhou Bay (27.4~62.9 ng/g), and the content at one site was even above the ERM guideline (46.1 ng/g). The compositions of DDT indicated that, the main metabolites of p, p' -DDT was p, p' -DDD, and there may be new inputs of DDT in the coastal areas of Dalian Bay, Weihai, Jiaozhou Bay and Haizhou Bay, as well as the outer sea area of Shandong Peninsula, where the possible sources were technical dicofol and/or technical DDT. The surface sediments in these sea areas had certain ecological risk, especially at one individual site in the Haizhou Bay with much higher ecological risk.

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