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大沽排污河和永定新河水样的生物毒性

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Biotoxicity of Water Samples from Dagu Drain River and Yongdong New River

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摘要

应用发光细菌法,对天津市大沽排污河和永定新河的水样进行生物毒性测试，并比较水样经亲水 疏水平衡（hydrophilic lipophilic balance,HLB）固相萃取柱富集前后的毒性变化情况，分析水样中有机污染物对发光菌生物毒性的贡献.根据水质毒性分级标准，对水样进行综合毒性评价.结果表明，大沽排污河和永定新河均对发光菌显示出一定的毒性效应，其毒性级别从低毒到剧毒，呈现较大差异.总体上说,大沽排污河水样的毒性高于永定新河，并且均表现为水样富集前的毒性大于富集后毒性.通过计算发现，南八里台等5个采样点的有机污染物对发光菌生物毒性贡献率超过90%；而其他7个采样点的有机污染物对发光菌生物毒性贡献率则在40%以下，这说明造成发光菌毒性的物质主要是不易被HLB柱富集的化合物.

关键词： 发光菌；大沽排污河；永定新河；生物毒性评价

Abstract:

Biotoxicity of water samples from Dagu Drain River and Yongding New River in Tianjin was determined using the Photobacterium phosphoreum toxicity test method. The toxicity change of water samples was analyzed before and after hydrophilic-lipophilic balance (HLB) enrichment, and toxicity contribution rates of organic chemicals were calculated. Comprehensive toxicity intensity of water samples was evaluated on the basis of toxicity rank standard. The results show that the water samples from Dagu Drain River and Yongding New River had toxicity to Photobacterium phosphoreum and their toxicity grades were from low toxicity to dramatic toxicity. Generally, the biotoxicity of Dagu Drain River was higher than that of Yongding New River, and the toxicities of water samples before HLB enrichment were higher than those after HLB enrichment. The toxicity contribution rates of organic chemicals for five water samples to Photobacterium phosphoreum were higher than 90%, while the toxicity contribution rates of organic chemicals for another seven samples were less than 40%, indicating that the main toxicity substances to Photobacterium phosphoreum could not be enriched by HLB.

Keywords: Photobacterium phosphoreum; Dagu Drain River; Yongding New River; biotoxicity evaluation

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