

乐安河-鄱阳湖段湿地表土重金属污染风险及水生植物群落多样性评价

简敏菲, 徐鹏飞, 熊建秋, 陈朴青, 李玲玉

江西师范大学生命科学学院

Risk of Heavy Metals Pollution in Surface Soil and Diversity of Aquatic Plant Communities in the Le' an River-Poyang Lake Wetland

JIAN Min-Fei, XU Peng-Fei, XIONG Jian-Qiu, CHEN Pu-Qing, LI Ling-Yu

College of Life Science, Jiangxi Normal University

摘要

参考文献

相关文章

Download: [PDF \(1014KB\)](#) [HTML 1KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 以鄱阳湖重要支流饶河-乐安河段及其入鄱阳湖口的典型湿地作为研究区, 采用单因子污染指数法、地累积指数法、内梅罗综合污染指数法和潜在生态危害指数法评价湿地表土重金属Cu、Pb和Cd的污染风险, 分析比较不同评价方法的优缺点, 并结合各样地水生植物群落的调查结果, 分析水生植物群落物种多样性与底质重金属污染的相关性。结果表明, 乐安河-鄱阳湖段湿地表层土壤中的重金属污染以Cu污染为主, Pb和Cd污染程度相对较弱, Cu污染的主要来源为铜矿开采区汇入大塍河的酸性重金属废水。4种评价方法对乐安河段上游受矿区酸性废水污染较严重的6个样点的评价结果表现出一致性, 均为极度污染; 而对重金属污染相对较弱区域的评价结果则出现微弱差异, 总体表现为自乐安河中游至下游, 各样点重金属污染的生态风险等级逐渐降低。4种评价方法中潜在生态危害法的评价结果较为客观。各样点水生植物群落物种多样性与综合潜在生态危害指数、Cu的单项潜在生态危害指数呈显著负相关。

关键词: 鄱阳湖 乐安河 表土 重金属污染 植物多样性 评价方法

Abstract: The typical wetland at the estuaries of the Le' an River and Raohe River to the Poyang Lake was selected as a subject for the study on methods for risk assessment of heavy metals (Cu, Pb and Cd) pollution of surface soil of the wetland. Four different methods, i.e. the single factor index method, the geo-accumulation index method, the Nemeru comprehensive pollution index method and the potential ecological hazard index method, were used and compared for merits and shortcomings. Correlations between diversity of aquatic plants communities and heavy metals pollution of the surface soil were also analyzed by taking into account results of the investigations of aquatic plant communities in various sampling sites. It was found that the surface soil of the wetland was polluted mainly by copper and much less by lead and cadmium. The pollutant of Cu came mainly with the acid heavy metals-containing wastewater discharged through the Dawu River from the copper minings. The four methods were used to evaluate the 6 sampling sites exposed seriously to pollution of the acid heavy metals waste water from the copper minings in the upstreams of the Le' an River and yielded similar conclusions, i.e. extremely polluted. But they differed slightly in conclusion when used to evaluate sampling sites not so severely polluted. Generally speaking, the sampling sites along the Le' an River decreased in ecological risk of the heavy metals pollution with their locations from the mid-streams to the down-streams. Results of the four methods were quite objective. Significant negative relationships were observed of the diversity of aquatic plant communities with the integrated potential ecological risk index of heavy metals pollution in the surface soil and the single-factor potential ecological risk index of copper in various sampling sites.

Keywords: Poyang Lake Le' an River surface soil heavy metals pollution plant species diversity evaluation methods

Received 2012-12-05; published 2013-07-25

Fund:

国家自然科学基金(41063003, 41161035); "十二五"国家科技支撑计划(2011BAC13B02); 江西省科协2011年度"远航工程"项目

Corresponding Authors: 简敏菲 江西师范大学生命科学学院 Email: jianminfei0914@163.com

About author: 简敏菲(1969-), 女, 江西高安人, 教授, 博士, 主要从事鄱阳湖湿地生态过程与环境重金属污染研究。E-mail: jianminfei0914@163.com

引用本文:

简敏菲, 徐鹏飞, 熊建秋, 陈朴青, 李玲玉. 乐安河-鄱阳湖段湿地表土重金属污染风险及水生植物群落多样性评价[J] 生态与农村环境学报, 2013, V29(4): 415-421

JIAN Min-Fei, XU Peng-Fei, XIONG Jian-Qiu, CHEN Pu-Qing, LI Ling-Yu. Risk of Heavy Metals Pollution in Surface Soil and Diversity of Aquatic Plant Communities in the Le' an River-Poyang Lake Wetland[J] Journal of Ecology and Rural Environment, 2013, V29(4): 415-421

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [简敏菲](#)
- ▶ [徐鹏飞](#)
- ▶ [熊建秋](#)
- ▶ [陈朴青](#)
- ▶ [李玲玉](#)

