

生态资源环境

唐山市南湖城市中央生态公园土壤重金属形态特征研究

张春娜¹, 鲁叶江², 李良玉¹

1. 河北理工大学资源环境学院
2. 煤炭科学研究总院唐山研究院

摘要:

土壤重金属元素的存在形态是衡量其环境效应的关键参数。选择唐山市南湖城市中央生态公园为研究区, 采集了20个表层土壤样品, 采用BCR三步连续提取法对土壤中的重金属(Cu、Pb和Cr)不同形态(酸可提取态、氧化物结合态、有机结合态、残渣态)特征进行分析, 并采用相关分析探讨影响重金属化学形态的影响因素。研究结果表明: 土壤中Cr和Cu主要以残渣态和酸可提取态存在, Pb主要以氧化物结合态和残渣态存在; Cr的酸可提取态较其他元素高, 对环境的潜在风险较大。相关分析显示, 土壤pH值与重金属的酸提取态含量呈极显著负相关, 与Cu和Pb的氧化物结合态含量呈极显著正相关, 土壤有机质含量与Cu和Pb的有机结合态含量呈极显著正相关关系。在生态公园建设过程中, 可通过适当提高土壤pH的方法来减少重金属的酸可提取态含量, 降低其生态环境风险。

关键词: 唐山市; 重金属; 形态; 影响因素

Study on Chemical Form Distribution Characteristic of Soil Heavy Metals in Nanhu Ecological Park in Tangshan

Abstract:

The fraction distribution of heavy metals is the key parameter of its environment effects. In this article, form distribution characteristic of soil heavy metals (Cr, Cu, Pb) and its influencing factors were investigated in Nanhu ecological park in Tangshan. A total of 20 soil samples were collected and analyzed. Using BCR(European Community Bureau of Reference) sequential extraction procedure, four fractions of soil heavy metals, weak acid soluble fraction, reducible fraction, organic matter fraction and residual fraction, were extracted in the topsoil(0-20 cm), and its influencing factors were studied by correlation analysis. The results showed that Cr and Cu were dominated mainly by the fraction of residual fraction and weak acid soluble fraction, while Pb was existed by the fraction of residual Pb and reducible Pb; Only Cr indicated some potential environmental risks, because of its higher values in weak acid soluble forms. Correlation analysis indicated the soil pH value had very significantly negative correlation with the heavy metal weak acid soluble forms, very significantly positive correlation with the reducible fraction of Cu and Zn. The content of soil organic matter had very significantly positive correlation with the organic forms of Cu and Pb. In the process of ecological park construction, the environmental risks can reduce though out reduce weak acid soluble fraction of heavy metal, which can achieve by raising soil pH slightly.

Keywords: Tangshan heavy metals fractionation influencing factor

收稿日期 2010-07-02 修回日期 2010-10-13 网络版发布日期 2011-02-18

DOI:

基金项目:

“十一五”国家科技支撑计划项目; 国家“863”项目

通讯作者: 张春娜 河北联合大学资源环境学院, 河北唐山063009; 2河北省矿业开发与安全技术实验室, 河北唐山063009

作者简介:

作者Email: chunnazhang@yahoo.com.cn

扩展功能

本文信息

- Supporting info
- PDF(577KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 唐山市; 重金属; 形态; 影响因素

本文作者相关文章

- 张春娜
- 鲁叶江
- 李良玉

PubMed

- Article by Zhang,C.N
- Article by Lv,X.J
- Article by Li,L.Y

参考文献:

本刊中的类似文章

Copyright by 中国农学通报