

## 三峡库区重庆段土壤某些重金属污染的矿物学方法评价

### The mineralogical evaluation of some heavy metals pollution in soils within Chongqing segment of the Three Gorges Reservoir

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中文摘要:

分析了三峡库区重庆段51件土壤样品的矿物组成, 结果表明, 石英、斜长石和钾长石是土壤中主要矿物, 大部分样品中石英的含量高, 主要粘土矿物是伊利石, 其次是蒙脱石, 其他矿物含量较低。同时, 参比国家水质标准, 根据土壤对金属离子的临界吸附量公式计算了样品重金属污染的阈值, 对样品进行了Cd、Hg、Pb、Cu的污染状况评价。结果表明, 土壤中污染元素的含量与生态效应评价价值并不一致; Cd和Hg的污染尚未达到临界值, 危险性较小, 但不能因此忽视地球化学定时炸弹的风险; Pb和Cu的污染严重。由于包括母岩在内的样品的评价结果显示污染, 可能反映研究区的地球化学背景, 需要采取有效措施改善和预防目前和将来的污染危害。

英文摘要:

The association and content of minerals in 51 soil samples from Chongqing segment of the Three Gorges Reservoir were investigated by XRD. The results indicate that quartz, plagioclase and K-feldspar comprise main mineral species in the soils, and quartz content is high in most samples. Clay minerals in the samples are composed mainly of illite and montmorillonite, together with minor other minerals. By reference to the surface water body quality standard, the authors calculated the thresholds of pollution of heavy metals Cd, Hg, Pb, Cu in the soils using the formula of critical adsorption capability of metal ions adsorbed on soil minerals, and evaluated the pollution situation of these soils. The results show that the contents of contaminative elements in the soils are inconsistent with their assessment values of ecologic effect. The contents of Cd and Hg in the soils fail to reach the critical values of pollution, and the risk of geochemical time bomb for the two harmful elements should not be neglected in the area. There exists serious pollution of Pb and Cu in the studied soils as well as in their parent rocks, which probably reflects the high geochemical background of the two elements in this area.

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