

# 环境科学

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## 铅锌矿区及周边土壤铅、锌、镉、铜的污染健康风险评价

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### 中文摘要

从点、线、面3个角度利用指数和健康风险2个评价模型对东关镇铅锌矿区土壤中Pb、Zn、Cd、Cu的含量进行健康风险评价。结果表明,点、线和面土壤中Pb、Zn、Cd、Cu的平均含量都表现为Pb > [[KG-\*2]] > Zn > [[KG-\*2]] > Cu > [[KG-\*2]] > Cd;点和线土壤中Pb、Zn、Cd、Cu 4种元素的平均含量远远大于对应面中的含量,其中以Pb、Zn含量最为明显;土壤点、线、面中Pb、Zn、Cd、Cu 4种元素空间分布很不均匀;土壤中重金属Pb、Zn、Cd、Cu含量所引起的成人与儿童平均个人风险均是Pb > [[KG-\*2]] > Cd>Cu>Zn;儿童比成人更易受到土壤重金属含量的影响,总的健康危害风险是成人的3倍左右;东关镇全镇土壤中重金属Pb、Zn、Cd、Cu环境质量现状尚属安全,但越靠近矿区重金属污染的土壤对周围居民人体健康的危害风险越大。

### 英文摘要

Contents of heavy metals (Pb, Zn, Cd, Cu) in soils in terms of point, line and area around a lead/zinc mine in Dongguan town, Zhejiang, China, were investigated to evaluate environmental quality based on index and health risk assessment model for safety of soils-human. The order for average contents of Pb, Zn, Cd, Cu in terms of point, line and area were Pb > [[KG-\*2]] > Zn > [[KG-\*2]] > Cu > [[KG-\*2]] > Cd. The contents of Pb, Zn, Cd, Cu in terms of point and line were much higher than that in terms of area, especially Pb and Zn contents. The distribution of soil heavy metals was asymmetric. The calculated critical threshold in soil for adult was higher than that for children. The average order of individual risk index for children and adult health was Pb > [[KG-\*2]] > Cd>Cu>Zn. Children were more easily affected by soil heavy metals, for that hazard indexes for children were 3 times of adult health. The environmental quality of Dongguan town was mainly safe correspondingly. The heavy metal environmental quality in terms of point and line near a lead/zinc mine had higher hazard risk and might bring potential hazard to local residents.

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