

### 研究报告

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#### 几种矿物材料对污染土壤中铜形态的影响

#### Effect of several mineral materials on copper form in contaminated soil

**关键词:** [土壤](#) [铜](#) [形态](#) [改性矿物](#) [钝化](#)

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**摘要:** 采用室内模拟培养的试验方法,以膨润土、硅藻土、磷矿粉及其改性产物、高炉铁渣、钢渣作为改良材料,探讨了材料对铜污染土壤的修复效果及存在的规律.同时,对欧共体标准物质局提出的三步提取法(简称BCR法)进行了适当改进,以改进的BCR法提取并分析各形态铜在土壤中的变化.结果表明,除磷矿粉外,其他材料(膨润土、硅藻土)的改性都对可溶态铜含量的减少和残渣态铜含量的增加有明显的影响,并且随着改性材料用量的增加,钝化效果也明显增强.其中,以己二胺二硫代氨基甲酸钠改性的膨润土对铜的钝化效果最佳,在10:1(质量比)的土矿比下与空白对照相比,使可溶态铜含量降低了72.75%,还原态铜减少了86.78%,氧化态铜增加了104.94%,残渣态铜增加了77.19%,从而有效地降低了铜在土壤中的活性.

**Abstract:** In laboratory conditions, the novel materials, such as bentonite, diatomite, and phosphate rock as well as their modified products, blast furnace slag and steel slag, were used to remediate the Cu-contaminated soils. The forms and variations of Cu in soils were determined with the modified European Reference Materials Bureau (BCR) method, and the effectiveness and rule of materials in polluted soils were discussed. The results showed that, except for phosphate rock, the amount of soluble Cu in soils decreased and residual Cu increased. With the increase of modified materials dosage, the passivation effect of materials significantly improved. It also indicated that the bentonite modified by hexamethylene diaminedithiocarbamate sodium was the most effective one to reduce the Cu availability. When the mineral/soil ratio was 10:1, the amount of soluble and reducible Cu lowered by 72.75% and 86.78% as compared with CK. However, the oxidation and residual one increased by 104.94%, 77.19%, respectively.

**Key words:** [contaminated soil](#) [copper](#) [form](#) [modified minerals](#) [passivation](#)

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