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煤矸石淋溶液在地下水系统中的多组分运移研究(PDF)

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Title: Multicomponent transport laws of coal gangue leaching solution in groundwater system: an experimental study

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关键词: [矿山环境工程](#); [煤矸石](#); [淋溶液](#); [地下水污染](#); [多组分](#); [运移规律](#); [吸附](#)

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摘要: 针对矿区煤矸石山受降水淋溶释放出大量的无机盐类污染物质进入环境,造成周边地区广泛的土壤盐碱化和地下水矿化度的严重超标问题,通过室内土柱动态模拟试验,研究了煤矸石淋溶液主要污染组分总硬度、硫酸根和钠离子三者地下水系统中的多组分运移机理和污染规律。结果表明:总硬度的运移速度很快,硫酸根次之,而钠离子的运移速度最慢;对流、水动力弥散和吸附作用是造成这三者运移的主要原因,对污染组分的运移起主要作用;土壤介质对这三者都发生了吸附作用,且吸附强弱不同,对钠离子的吸附最强,硫酸根次之,而对总硬度的吸附较弱,且土壤介质对三者的吸附都符合线性等温平衡吸附规律。还测定了土壤的渗透系数、水动力弥散系数以及这三者在饱和砂性土壤中的吸附分配系数和

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迟滞因子,为矿区地下水无机盐类污染预测和数值模拟提供了可靠的实测参数。

Abstract: In view of the problem of coal gangue releasing a large quantity of Inorganic salts category polluting substances in to the environment by precipitation leaching,causing surrounding areas of extensive salinization with the soil and groundwater salinity far to exceed its normal, by laboratory simulated dynamic column experiment, the multicomponent transport mechanism and pollution laws of the main pollution components of total hardness,sulfate radical and sodion in groundwater system are studied.The results show that the transport velocity of the total hardness is the biggest followed by sulfate radical radical, and sodion the lowest. Namely,advection,mechanical dispersion and adsorption are the principal reasons of the transport of the total hardness,sulfate radical and sodion and play an vital role in the transport. Adsorption of total hardness,sulfate radical and sodion occurs in the soilmedium,while the adsorption intensity is different. The adsorption of sodion is the strongest followed by sulfate radical, and total hardness the weakest. In general, their adsorption conforms to the linear equilibrium sorption isotherm.