



Secondary Cadmium Accumulation Migration in Typical Region of Pearl River Delta

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The situation of cadmium pollution in China is generally not optimistic. Soil cadmium pollution has caused the quality of agricultural products such as rice and vegetables to decline and the quantity to decrease. It also seriously threatens the physical and mental health of local residents and affects the sustainable development of agriculture. As an important economic belt in China, the Pearl river delta accumulates a large number of environmental problems while the economy develop rapidly, among which heavy metal pollution attracts much attention because of its wide area and long duration. The upper reaches of xijiang river and beijiang river carry a large amount of cadmium elements, which are absorbed by the fine particles in sediments during the river transport process and transferred by the river dynamic transport, forming a distribution pattern of large amount of cadmium enrichment. The change of groundwater chemical environment will lead to the remigration and enrichment of cadmium, which is mainly realized by the transformation of cadmium occurrence form. The typical area with high background value of cadmium in shunde and jiangmen of the Pearl River delta is selected as the research object. Through field study, sample collection and test analysis, the basic physical and chemical properties of groundwater and soil in the unsaturated zone-saturated zone are obtained ;Multivariate statistical analysis (MSA) and factor analysis (FA-MLR) are used to determine the coupling relationship between cadmium concentration accumulation differences and morphological changes in soil and groundwater and geochemical environmental factors ;Through the laboratory soil column simulation experiment, the influence mechanism of groundwater physical and chemical conditions on the accumulation and migration of heavy metal cadmium is quantitatively analyzed ;Based on Hydrus-1D, a secondary enrichment migration and transformation model for typical areas with high background values of cadmium is established. Can not only solve the scientific questions like coupling relations between spatial distribution difference of cadmium and the morphological changes and the main environmental factors , as well as grasp the regularity of cadmium migration and enrichment in solid and liquid phase in soil and water system, and to provide scientific help for cutting off cadmium migration pathway, controlling its pollution influence range and endangering human health through food chain.