



## **Enrichment of Selenium and Its Relationship with Other Heavy Metals in Rocks, Soils, and Crops in the Area Covered with Black Shale in Korea**

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Enrichment level and dispersion patterns of Se in rocks, residual soils, and crops were investigated in the areas covered with black shale and slate in Korea. Selenium level in black shale and slate is in the range of 1.5-33.9 mg/kg. Soil pH ranges from 5 to 6 and LOI is in the range of 3 to 7 %. Mean concentration of Se in residual mountain, farmland and paddy soils is 4.4 mg/kg, 1.8 mg/kg, and 1.5 mg/kg, respectively. Relative ratio of Se in residual soils to underlying rocks is in the range of 0.25 to 7.95 with the mean ratio of 2.11. Significant level of Se was found in soils particularly collected from the uranium-enriched sites, and distribution patterns of Se shows very similar trend with that of U in black shale and slate. Selenium in soils shows significant correlations with As, Mo, V, and Ag. Mean concentration of Se in rice grains, rice stocks, and Chinese cabbage is 0.4 mg/kg, 2.2 mg/kg, and 5.0 mg/kg, respectively. Relationship between Se in soils and that in crop plants shows a positive correlation, and biological absorption coefficient(BAC) of Se in crop plants decreases in the order of Chinese cabbage > rice stocks > rice grains, which is similar with BAC of As and Mo. Daily intake of Se from the studied rice and Chinese cabbage was estimated as 48.7  $\mu\text{g}/\text{kg}$ .