



## Regional distribution of $^{222}\text{Rn}$ concentrations in groundwater in Korea

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Occurrence of radioactivity has been observed in groundwaters. Understanding the  $^{222}\text{Rn}$  concentrations in groundwaters is very important to determine the environmental issues and solutions since it has been used frequently as a tracer in hydrogeological processes. This study has been carried out to characterize the regional distribution of  $^{222}\text{Rn}$  concentrations in groundwaters in Korea. A total of 5,150 groundwater samples were collected to obtain  $^{222}\text{Rn}$  contents using LKB Wallac Quantulus 1220 liquid scintillation counter (LSC) equipped with pulse shape analyzer (PSA). Their concentration levels were used to construct detailed distribution maps. Relationship between chemical characteristics and groundwater sampling depth was investigated in terms of EC, pH, and temperature. The concentration of  $^{222}\text{Rn}$  in groundwaters ranges from 0.1 to 2,390 Bq/L with an average of 97 Bq/L. The average content of Rn in 14 regions indicates that Daejeon shows the highest concentration (209 Bq/L) and Jeju Province the lowest (19.0 Bq/L). No relationship is, however, appeared to the  $^{222}\text{Rn}$  contents and their physico-chemical components. The  $^{222}\text{Rn}$  contents show 170 Bq/L, 210 Bq/L, and 260 Bq/L with the depth of < 50 m, 50-100 m, > 100 m, respectively, indicating that the Rn contents in deeper groundwaters are relatively higher.

Key words: Groundwater,  $^{222}\text{Rn}$  contents, regional distribution, chemical characteristics, LSC