



## **Radon concentration in groundwater of the Yongin area in Korea by using LSC**

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The precise determination of  $^{222}\text{Rn}$  concentration in ground water is very important to understand the interactions between the groundwater and surface water interactions because it has been used frequently as a tracer for many geohydrological processes. In this study, the measurement was based on the liquid scintillation counting technique using LKB Wallac Quantulus 1220 liquid scintillation counter(LSC) equipped with pulse shape analyzer(PSA). We have optimized the pulse-discrimination capabilities of the detector to achieve the best  $\alpha/\beta$  separation, which made the lowest detection limit possible. LSC was calibrated to optimize the PSA with  $^{241}\text{Am}$  and  $^{90}\text{Sr}/^{90}\text{Y}$ . The sample was collected from 100 groundwater sites in the Yoingin area, Korea. The relationship between chemical characteristics and depth was investigated in terms of EC, pH, and temperature. The concentration of  $^{222}\text{Rn}$  in ground water was measured to be about 0.6 to 678 Bq/l with an average of 217 Bq/L. However, there was no relationship between the Rn and other physicochemical components. The Rn concentration in ground water was 170 Bq/L, 210 Bq/L, 260 Bq/L for depth <50 m, 50-100 m, >100 m, respectively. When viewed from the average value,  $^{222}\text{Rn}$  in deep ground was relatively higher. It also was dependent on the geolocial legend: The high-Rn area corresponds to Jurassuc grabute and low-Rn to Sedunetary area. It was clearly demonstrated that the occurrence of radionuclides is closely related to radiogenic minerals.

Key words: Grondwater,  $^{222}\text{Rn}$ , LSC, chemical characteristics, geolocial legend