

Characteristics of radioactive elements in groundwater of Ganghwa Island related to geothermal environment

SE-YEONG HAMM¹ SUL-MIN YUN² IKHYUN KIM³
HYUNKOO KIM⁴ MOONSOO KIM⁵

¹ Dept. of Geological Sciences, Pusan National University,
South Korea hsy@pusan.ac.kr

² Dept. of Geological Sciences, Pusan National University,
South Korea ehds91@naver.com

³ National Institute of Environment Research, South Korea
stu9537@gmail.com

⁴ National Institute of Environment Research, South Korea
khk228@korea.kr

⁵ National Institute of Environment Research, South Korea
hyd009@korea.kr

In Seokmo Island west of Ganghwa Island, geothermal water of 62-72 °C takes place from the wells of 750-1280 m depths. Four groundwaters (LS1-LS4) occurring in Precambrian gneiss of Ganghwa Island were characterized by using radioactive elements (uranium and radon) for three years (2013-2015), in terms of geothermal environment. Mean and median values of uranium concentration in LS1-LS4 groundwaters are (12.72, 8.21), (14.18, 9.11), (208.47, 199.51), and (14.68, 12.48) µg/L, respectively. Mean and median values of radon-222 concentration in LS1-LS4 groundwaters are (6594, 6522), (8904, 10743), (15302, 13741), and (7370, 7394) pCi/L, respectively. The temporal trends of uranium and radon are different each other in LS1, LS2, and LS4, but are analogous each other in LS1. The uranium and radon-222 concentrations in groundwater of Ganghwa Island are much higher than those in groundwater in other regions in Korea, indicating a higher geothermal environment. This work was supported by 2-year Research Grant of Pusan National University and by National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIP) (No. NRF-2017R1A2B2009033).