Contribution ID: **33** Type: **Poster**

Natural radionuclide as a tracer in groundwater-surface water interactions at the artificial recharge system

Tuesday, 13 May 2014 17:15 (1h 30m)

Determining the relationship between surface water and groundwater systems is critical to understanding hydrogeological systems, protecting riverine ecosystems, and managing water resources. Due to its high activities in groundwater, the radionuclide 222Rn is a sensitive natural tracer to detect and quantify groundwater. In this study 222Rn and stable isotope were used as a tracer in groundwater and river water interaction. The short half-life(3.8 days) and chemically inert properties of radon make it a powerful and potentially useful tracer of hydrological processes at the fast interface interaction between surface and sub-surface water bodies.

Study area is pilot artificial groundwater recharge system near Nakdong river in Korea. Rn-222 and stable isotope were used natural tracer to understand surface water recharge effect. Artificial recharge system was consist of four input and one pumping well. Rn-222 and stable isotope samples were collected during recharge operation time. For one day recharge operation period, Rn-222 concentration was decreased at the observation well groundwater. OBS-1 and 5 were decrease about 35 % due to surface water dilution effect but OBS-6 was 4 time increased due to surround groundwater input effect. The stable isotopes were similar trend with radon concentration but OBS-4 sample was different with other samples. This means different groundwater was introduced during recharge operation time. To understand surface water-groundwater interaction, 14 days artificial recharge experiment was performed and groundwater samples were collected during the operation time. This long-term experiment result showed radon concentration was not varied at the OBS-1 and 2. However, OBS-3 was increased and OBS-4 was decreased with time and about 200 hours passed radon concentration was not varied severely.

Primary author: Dr YOON, Yoon Yeol (Korea Institute of Geoscience and Mineral Resources)

Co-authors: Dr LEE, Kil Yong (Korea Institute of Geoscience and Mineral Resources); Dr HA, Kyu Chul (Korea Institute of Geoscience and Mineral Resources); Ms CHO, Soo Young (Korea Institute of Geoscience and Mineral Resources); Dr KIM, Yong Chul (Korea Institute of Geoscience and Mineral Resources); Mr JUNG, Youn Young (Korea Institute of Geoscience and Mineral Resources)

Presenter: Dr YOON, Yoon Yeol (Korea Institute of Geoscience and Mineral Resources)

Session Classification: Poster Session - Radionuclides in the Environment, Radioecology

Track Classification: Radionuclides in the Environment, Radioecology