

3 환경지질학

구두발표
10월 27일(금) 오전

3 1

THE CHARACTERISTICS OF THE GROUNDWATER FLOW AND CHEMISTRY IN THE UNDERGROUND LPG GAS STORAGE CAVERN, YOSU, KOREA

KIM, SANGGEUN* · LEE, JEONGHO · CHANG, HO WAN, School of Earth and
Environmental Sciences, Seoul National University, iskra72@hanimail.com

The TDS, EC, and Eh of groundwaters in the study area show the values of a wide range. (89 ~ 50,856 mg/l in TDS, 110 ~ 40,195 μ S/cm in EC, -127 ~ +751 mV in Eh). Nitrate concentration also varied from 0 to 38.48 mg/l. Some groundwaters show seasonal variation in ion concentration and characteristics of saline water. These features are very different, compared to those of groundwaters before the operation of caverns.

Before the construction of storage caverns, groundwaters moved from southern highland area toward the northern coastal region according to topography. The groundwater levels were 0m in the coastal area and +23m in area of 100m distance from seashore line. However, the distribution of hydraulic stress is severely varied after the operation of the caverns. The underground caverns play the role of discharge facilities, so the groundwater levels decrease with the range of 12.0 ~ 28.0 m. In addition, A large amount of the industrial water is injected to the underground through access tunnel in order to maintain the proper ground water level, so the direction of groundwater flow is changed from northern lowland topological area to southern highland topological area.

Due to the difference in depth between propane cavern and butane cavern, the groundwater levels in the propane cavern area show more sensitive variation to the operating pressure relative to those in butane cavern area.

As a result, the evolution patterns of the groundwater quality in the study area are more complicated and classified into several types.