

Preliminary Result of Groundwater Radon Survey around Tachikawa Active Fault Zone

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The Headquarters for Earthquake Research Promotion reported that occurrence potentials of earthquakes within 30 years around Miura and Tachikawa active fault zones increased due to the 3.11 Tohoku earthquake. We believe that a continuous monitoring of state of active fault zones by a geochemical method will contribute to reduce damages by big earthquakes forthcoming around above two fault zones, which are located at areas of high population density and around important facilities. We reported a result of a groundwater radon survey around the Miura active fault zone in the last conference. In this report, we will indicate a preliminary result of a groundwater radon survey around the Tachikawa active fault zone.

Sampling points were selected on a survey line in a direction perpendicular to the Tachikawa fault line. Analysis method of a groundwater radon concentration was as same as that used last year. Dissolved radon in groundwater was extracted by a gas-liquid equilibrium process in a PET bottle for a few minutes. A gas phase radon concentration was measured by an electrostatic collection and a semiconductor detection method. The gas phase radon concentration was converted to a groundwater radon concentration by a partition coefficient for radon and water.

The groundwater radon concentration around Tachikawa area was relatively higher than a mean value for Kanto area (Saito et al., 1993, 1994). A mean value of groundwater radon concentration of this study is as same as the Saito's results. However, a mean value of groundwater radon concentrations in an east area seems to increase, on the other hand, that in an west area seems to decrease. An amount of the radon supply from radium, which is included in rocks and has a 1600-years half-life, should be constant in a few decades. Hence, we checked a long-term changes of a discharging rate of groundwater in the east area and a flow rate of surface water of Tamagawa River in the west area. We have found that the discharging rate in the east area is decreasing and the flow rate in Tamagawa River is increasing. Therefore, our preliminary results indicate that a long-term change of a groundwater radon concentration is dominantly perturbed by a flow rate of groundwater.

We have to find an appropriate sampling point of groundwater on which an effect of a flow rate of surface water is negligible. Then, we would like to start a continuous monitoring of groundwater radon concentration for inspecting geochemical status of the Tachikawa active fault zone.

Keywords: Groundwater, Radon, Tachikawa Active Fault