

Laterality of pollutants derived from domestic waste water in shallow groundwater in the east Musashino upland

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We study on processes of groundwater recharge and addition of pollutants derived from domestic waste water to groundwater in the ward district of Tokyo Metropolis that is one of typical urban areas in Japan. In this presentation, we will show the laterality of pollutants that are derived from domestic waste water in a shallow unconfined aquifer in local scale. We took groundwater samples from five shallow wells in the east Musashino upland and analyzed major dissolved ions, stable isotopes of oxygen and hydrogen and PPCPs. Scale of the study area is about 1.5 km times 2 km.

Cl^- and NO_3^- were found in the all samples and concentrations were from about 17 to 47 mg/L and from about 51 to 81 mg/L, respectively. These ions showed positive correlation. From the result of stable isotopes, these ions were derived from domestic waste water. Also, concentrations of both ions were correlated with land coverage. These results suggested that the leakage of domestic waste water was nonpoint source.

As for PPCPs, amantadine, carbamazepine, crotamiton, and N,N-diethyl-m-toluamide were detected. Although these substances have various uses, there was a tendency that several substances were detected simultaneously. However, there was no correlation between the concentrations of PPCPs and Cl^- , NO_3^- . From these results, it was suggested that distribution of PPCPs in groundwater in this area has high laterality.

Keywords: urban area, groundwater pollution, domestic wastewater, PPCPs, Tokyo Metropolis