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Investigations Of The Source Of Arsenic In Groundwater Around The Ayvacik District (Canakkale-Turkey)

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The main goal of this study is to investigate the source of arsenic problem in groundwater in the Ayvacık (Çanakkale) district, of Biga Peninsula, NW Turkey. For this purpose, hydrogeological and hydrogeochemical measurements were conducted at the selected locations of water sampling. Our field measurement results suggest that the water samples in the region is generally neutral and alkaline chemistry. Electrical conductivity, temperature and Eh values are of (327) – (1126) μS/cm, (17.4) – (28.2) and (-8) – (-62) mv, respectively.

As well as this, we carried out laboratory analysis for the collected water samples to further investigate their chemistry in detail. Major ions in groundwater contain Ca and HCO_3. High Ca and Mg values are related to Na and K ion-exchange reactions in water. Arsenic types in groundwater are in the form of arsenic acid (H_3AsO_3) where high concentrations of arsenic values are found in groundwater. These arsenic values exceed The World Health Organization (WHO) and Turkish Standards Institute (TS266 - Water intended for human consumption) limits (10 ppb).

Alterations and fracture zones are common in some parts of the Miocene Volcanics in the study area. The circulation of cold water in the underground is closely related to major fractured zones. We think that the source of high arsenic values in the groundwater is connected with alteration zones in this volcanics according to field data and results of chemical analysis.

Keywords: Arsenic, Groundwater, WHO, TS266, Ayvacik-Canakkale