Evaluating temperature dependence of arsenic and boron adsorption onto sediments

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Subsurface temperature increase likely due to global warming and urbanization has been observed all over the world. This phenomenon may cause changes in physical, chemical, and microbial processes in subsurface environment, resulting in groundwater quality changes. The effect of temperature increase on subsurface environment including groundwater system has not been sufficiently clarified. The objective of this study was therefore to clarify temperature dependence of arsenic and boron adsorption onto sediments based on batch adsorption experiments under 20°C and 40°C conditions. Completely different two samples of Holocene (non-marine sediment) and Miocene deposits (marine sediment) were used in this study. The adsorbed amount of arsenic at 40°C was significantly higher than that at 20°C, suggesting clear temperature dependence for arsenic. Oppositely, the adsorbed amount of boron was not clearly affected by temperature.

Keywords: Temperature dependence, Adsorption, Arsenic, Boron, Sediment

